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# THESE

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THEME

## THE STUDY OF THE DYNAMICS OF THE STREET SPACE

## THE CASE OF STREETS IN THREE MAJOR AREAS IN

## CONSTANTINE

**Sous la direction du Pr SAHNOUNE Tayeb**

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# ABSTRACT

The dissatisfaction with the design of the urban environment as a whole and with the public realm of cities that is to say its streets has led, since the sixties, researchers within the academic frame, to investigate and to work out models and schemes which will sustain qualities such as safety, pleasure of strolling, and discovery. However the ever-growing number of motor-vehicles and the problems of congestion and of parking it has caused averwhelmed professionels who went on seeking totally new approaches to the street-space. Mobility and transportation where the two key-words in relation to the design of the street which has been reduced to conveying traffic and in this perspective the street has been deprived of its relationship with the built space. We cannot deny the good and noble intentions which guided the leading figures of that era such as Soria y Mata, Henard, Le Corbusier. However their deterministic attitudes prevented them from seeking instruction from urban history in term of urban form, strcuture, physical and spatial components and the pattern of activities it sustained. Their attitude fragmented the multiple dimensions of the street and overlooked its genuine characteristics. This study is to point out the following weaknesses:

- The reduction of the street to a channel and its function to conveying traffic.

-The overlooking of the street‟s position at the interface built/open space and private/public space.

-The reduction of man either to a motorist or to a pedestrian when he is, in fact, both of them. The segregation of pedestrians and vehicules has led to irrealistic schemes.

- The neglect of urban historical developments and the lessons they embody.

-Although the problem of traffic has been aggrandized , the fact that the car is embedded in our daily life and consequently in our living space (private and public) has been dismissed which led to numerous problems and dissatisfactions. For example many activities are taking place without a specific space for loading and unloading and for parking which is having many invalidating consequences on the quality of the street life and the urban space and to many conflicts .

-The misconceptions of modern practice which are still in use particularly “ the building in the park” concept are highlighted.

-The “publicness” of public spaces and the relationship of fronts and backs.

-The dismissalof the social and human dimensions of the street space.

On the one hand, this study attempts to establish the interrelations between built and open space and what broader range of uses should be considered in the design of streets mainly by examining the potential of the traditional street in term of spatial configurations and uses. The multiple interrelations between the street-space and the built fabric are pointed out by focussing on social and commercial activities and people‟s subjective needs.

On the other hand, this section of the research is undertaken on the base of insights and advances in the field of urban design. An assessment of the numerous theories, concepts, design principles and findings of surveys and investigations for the purpose of drawing design principles, recommendations and design guidelines . In addition the processing of complex set of developments is undertaken in order to constitute a coherent body of knowledge to introduce urban design. This field is well established in different universities in the world (Brookes University in Great Britain and Harvard in the U.S.A) and may be defined as the bridge between architecture and planning within which the three-dimensional nature of the urban space is examined. Besides this discipline is outlined by a search for a human dimension in the urban environments as a whole (streets, squares, places), in other words the interaction man-environment. However, because of the complexities of human perception, needs and values the everyday street life is to constitute the base for this study and has made

sure to avoid any simplistic and mechanistic conception as stressed in the behavioralist approach. The interpretations is to identify some invariant structures (qualities, networks, enjoyable experiences) .

Finally, this work highlights the need to bring scholars and professionels from different field, mainly from architecture, planning, urban design, sociology and psychology, to work together as a team as well as to learn how to use community participation in order to call together the measurable and the numerous not readily quantifiable qualities of the urban environments within which the street constitute an essential element.

# Chapter 1: INTRODUCTION

## 1.1- Introduction

The street has been at the core of studies, proposals and schemes of architects, planners and engineers for more than a century. The tremendous expansion of vehicular traffic has led these professions to seek new approaches to the planning of cities in general and to the street in particular in which the vehicular traffic has often been aggrandized to the extreme: this intrinsic element of the urban space has been "pulled out" of the urban fabric and considered independently, dismissing its built/open and public/private interfaces, its human scale and the social dimension of the street. The street has been reduced to a technical management, to a road. Comprehensive schemes have often witnessed of divergent attitudes: some have been "linear" when others have been radial. Nevertheless in both of them arteries and transportation are the backbone of the city. In the early 1880's Spiniard Arturo Soria y Mata stated: "A single street of 500 meters width and of the length that may be necessary- such will be the city of the future, whose extremities could be Cadiz and St Petersbourg, or Peking and Brussels" (Collins, 1972; 204).

The street in this study is considered as a major element which integrates architecture and planning (built form and open spaces) and which sustains and enhances public and not so evidently private life.

The street has undergone alterations by many professionals , both through architecture and through technical managements since the onset of the industrial area. The expansion of cities and the enormous growth in the number of motor – vehicles may be considered the main factors which have led planners and traffic engineers to design at a scale where the street is treated as a channel for movement (mainly vehicular), and to facilitate access to residential areas , and little else. A segragation between pedestrians and cars has been a large approach to the problem of traffic in the streets. Accordingly , the street , this integral feature of urban space , has been deprived of its role as a structural element in the city , as a support of the transitional space between public and private realms and of the urban aesthetic , and as a place for social interactions.

The built space and the street system have been considered within two dissociated perspectives. The main characteristic of many built environments, in this century, is a segregation between the street system and the buildings which are not knitted together. This urban form was principally advocated by the modern movement in planning and design philosophy, in which the street was considered merely as a means of technical management .The new urban structure was based on goals, whilst positive in themselves, had negative results for the quality of the city as a whole.

The new structure was presented as an ideal reconciliation between town ( density ) and countryside ( ecological advantages of open green spaces ). Architects and planners established a boundary between their professions. They overlooked the fact that transportation, activities and built space are superimposed and that the user is unique. In addition the psychosocial dimensions of the street as a place for social encounter and for leisure activities such as strolling was overlooked. Pedestrian freedom of mobility was progressively eroded by systems of vehicular transportation.

The growing problem of traffic brought the street into focus in 1970s , in some European countries , within planning regulations , but the main issue considered was safety ; there has been a cumulative increase in streets converted primarily for pedestrians .With the establishment of environmental concern in the 1980s , during which the creation of a physical environment designed to meet wider human needs became a subject of widespread interest , there has been renewed interest in open urban spaces in general and most particularly in streets and squares.

**1.2- Problematic**

**"**The intermediate position of streets in the environment intersecting public and private, individual and society, movement and place, built and unbuilt, architecture and planning, demands that simultaneous attention be given to people, the physical environment and their numerous interrelations" (1).

The major aim is to understand the complex functionning of cities and their streets and to built a correlation between built space ( in term of architecture and planning) and conflicts at the level of the street_space. This study accounts for the physical environment as a variable in human activities.The study of the interaction man-environment in order to improve

the quality of life within the urban public spaces is becoming a field of widespread interest. The main task in this research is to bring out the main aspects of the street-space wich appear at the core of these studies. Findings based on considerable behavioural analyses in different street-environments are gathered and integrated into this research to constitute an effective body of knowledge which is currently scattered. This study also contains substantial elements of personal observations. The duration of my stay and my visits to different street environments has been a continuous opportunity of studying the quality of out-door space and provided me with deeper insight into the topic. In addition this academic work includes the gathering and the processing of an extensive number of investigations relating to different design aspects of the street , undertaken by many scholars , which appear objective and effective in relation to the aim of this study.

The reasons for undertaking a more comprehensive study of the street – space are threefold . First , the street's importance as a major component in the urban pattern, as a major component of the public realm in the city, as an intrinsic element of the architectural and the planning systems , as an open space which affects the experience of the building form , and as a potential realm for movement, interaction and actions such as strolling and sitting . Second, a major part of the approaches and practical measures relating to the street - space in the twentieth century appear reductionist , in the sense of considering the street only as a traffic channel . Third , " streets " is a topic that opens to extensive literature in many fields , although not always directly ; and the compilation of some works is to constitute insights in order to broaden designer's approach to streets and to the built form .

Four objectives are addressed in this study , they are

To examine the development of the main design principles of modern planning and architecture , insofar as these relate to the issue of the street to identify the contribution those have made to the neglect of the street as a pedestrian , social "living space", its reduction to a transportation role, the reduction of the transitional space and the overlooking of the intermediate position or the street between architecture and planning, individual and social, private and public and movement and place.

To analyse a range of historical street configurations , in order to find out the range of forms and uses which streets might potentially adopt.

To review recent developments in urban design theory , to investigate the extend to which these address the potential for form and use exemplified in the historical configurations , and to built a broader approach to the design of the street.

This research is mostly based on an investigation of academic sources and to numerous studies, concepts, theories, sketches, plans and how the street has been considered, and built correspondence between different aspects of the street space (architecture, planning, movement). In addition issues related to the street and to its significance in urban life are examined. It includes findings from previous research and observations. It consists of a study and the assessment of a complex , interrelated set of movements , concepts and theories established by academics who focus on the loss of the human dimension in the urban environment on the whole.

The notion of the three-dimensional nature of urban space in general and of the street-space in particular, the interaction man-environment are at the core of the development of the field Urban Design since the late sixties. The process involved in the transactions between people and their environment is considered central to enhance the quality of urban spaces and to bring a "human" dimension to our urban public life. A review of the established literature on man-environment interaction and the multidisciplinary field of environment , behaviour and design is undertaken in order to identify the major themes in current urban design practice. A definition of the key concepts in that field is undertaken, in addition to an exposition of the two advanced research methods most commonly adopted in urban design teaching.

**1.3- Hypotheses and Research Programme**

In order to achieve these objectives an appropriate methodology was elaborated. This resulted in a format of seven chapters ; each of which will now be separately and briefly outlined.

In chapter 2 the prevailing planning approaches during the industrial area are examined. A comprehensive assessment of the resulting street environment is undertaken , in addition to a detailed study of the design principles in so far as these relate to the street to identify the extend to which issues such as psychosocial needs and the study of precedent urban patterns were neglected.

In addition the major influences on the street since 1950s are identified and assessed. This research highlights design principles of the crucial street design since 1945.These attempted to deal with the growing problem of traffic and postulated new forms of streets through which a questioning of the modern Movement principles was initiated.

In chapter 3 modern planning and architecture theories will be examined. Thez dissociation of the street from the built form in many approaches is assessed, as well as the dissaprearance of enclosure and the public space network.

In chapter 4, 5 and 6 an account of research into the potential of pre-industrial street-space, in terms of its spatial configurations , richness of uses and the urban life it sustained as these existed before the problem of traffic became overwhelming ; a topic which appears to have been overlooked since the beginning of modern town planning, is undertaken. it includes ( i ) a street etymology, ( ii ) the major morphological development of streets of the Greek Era , the Roman empire , Medieval , and Renaissance periods , and ( iii ) a report on behavioural studies in some of these still existing street – models.

The insights gained from what preceeds has constituted a tool to help undertake an overall study in three major areas in constantine. Different problems relating to the design of the street-space including the street-channel (vehicular and pedestrian), the public and the private buildings , the numerous activities they house and their consequences on the quality of the street-life are studied. Recommendations and design guidelines are constituted .

Chapter 7 is a case study in the city of Constantine.Are concerned three major streets ( City centre; a street in the residential area of El fedj and a street in a multi storey housing estate of Zouaghi Slimane Ain el Bey. ( method see chapter 7 )

The final part ( chapter 8) synthesizes the findings of each of the seven previous chapters in order to point out the misconceptions which have been embodied in the design of streets ,highlight the concepts which appear to be at he core of the task of improving the design of streets environments , present design principles which have been studied by scholars , and enumerate established characteristics which have been outlined by academics as methods of analysis and open space , and finally attempt a comprehensive list of the features which are part of the street and whose analysis would lead to a better understanding of the factors which would contribute to bring out the street's multiples dimensions, the sustenance

of the built environment and whose finality is the betterment of the living urban space as a whole. The major aim of this study is to help students and designers to take a step towards strategies which would promote sustainable strategies to enhance the local environment and the quality of urban life as a whole and to bring out the street's multiple dimensions which are strongly dependent on the structure, hierarchy of the built form.

**1.4- Methodology**

In accordance with the objectives of the study two separate and complementary research approaches were developed. This research is mostly based on an investigation of academic sources and to numerous studies, concepts, theories, sketches, plans and how the street has been considered, and built correspondence between different aspects of the street space (architecture, planning, movement). In addition issues related to the street and to its significance in urban life are examined. It includes findings from previous research and observations. It consists of a study of a complex , interrelated set of movements , concepts and theories established by academics who focus on the loss of the human dimension in the urban environment on the whole.

In chapter 7 ; a set of hypotheses is tested, in accordance to the following theories:

-The dimension of closure in the street space.
- The need for a back space.
-The back to back principle.
-The failure of the segregation concept.
-The building- in- the- park misconception.
-Cultural values, architecture, and public space.
-The need to intelligibility, variety, robustness, personnalisation, etc...
-The interaction man-environment and its dimension within the street-space.
-The interrelations of the street space , planning, architecture and people.

The method adopted is mainly qualitative based on observation. The choice of the methodology is made according to the problem set by the researcher. The approach may be deductive or inductive. The deductive approach implies that according to pre-estabished

principles observed phenomena are studied. The inductive approach is based on the observation of a set of phenomena and draw conclusions which constitute the recognised patterns and structures (the choices established in Responsinve Environments have been built on a inductive approach). The former starts with the cause and point out the effect while the latter observes an effect and searches for a cause. The deductive approach implies some prior knowledge of the problem which is the case in this study. In addition this issue , the street multiple dimensions is at the core of urban design: architecture, planning and human interaction with the urban environment are highlighted. The last four decades has provided us with valuable academic works to enable a deductive approach. The diagnostics, the proposals and the recommendations are undertaken in the light of the insights gained from the concepts and the advances in the field of urban design developped in this study. Observations of the street-space, involvement in the daily life and discussions are the key elements in this study.

**References**

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## CHAPTER TWO: THE REDUCTION OF THE STREET SPACE TO A ROAD

**Figure 1**: This scene (traffic congestion) is one of those which may have misled planners and architects when coming to tackle the problem of traffic. The multiple dimensions of the street-space were often overlooked. (from Tafuri, 1979 : Gustave Doré, "Embarras de la circulation à Londres", Bibliothèque Nationale, Paris). (1).

## 2.1-Introduction

The streets in the past were filled with people. The industrial era and the development of vehicular traffic have developed suddenly propelling the pedestrians on the sideroad and causing numerous problems of transport which has led professions to find out new solutions in term of street-space. The car was considered in term of mobility, in the design of urban spaces, overlooking the intricacy of this element in our daily life and consequently in the living environment.

The major planning theories and approaches ,are examined, from the nineteenth century to the 1950s , to assess how they shaped the definition of the street's role and its spatial configuration and by so doing participated to some extent in the transformation of the quality of outdoor spaces. But the street-space has continued to be the subject of many dissatisfactions and conflicts. In addition , a brief but comprehensive review of the psychological and social effects of major characteristics of the resulting street–space is undertaken.

## 2.2-The stage of traffic control, sanitation and drastic dissociations

The leading figures , the essential conferences , and the main movements which account for the definition and the transformation of the street form and role are reviewed in the following sections according to a chronological order. The industrial revolution in Europe characterised by a centralised production which has led to the development to the uncontrolled expansion of cities. Towns like Manchester grew from 35 000 to 353000 inhabitants between 1801 and 1841. When in 1900 only ten towns were with more than a million inhabitants, in 1930 they were more than twenty seven (Mumford, 1975). Le Corbusier was alarmed by the growth of Paris which shifted from 647 000 in 1800 to 3000 000 in 1910. Expanding production and consumption under the pressure of power, speed, quantity and inventions became almost uncontrolled. The city was affected at different levels. Growing too fast the city adopted new forms of housing which lacked the most elementary services. In addition to this the industrial revolution gave birth to a burgeoning commerce, under the leadership of the bourgeoisie , which concentrated in the central areas of the city. The process of industrialisation developed rapidly into a centralized system of production. The people who constituted the proletariat settled around the factories which to some degree replaced the , earlier , small workshops. As innovation continued, the industrial and commercial economies became more salient and

spatially dominant. Both the commercial town ( for consumption ) and the industrial town ( for production ) evolved and expanded whilst the social life of the working class gradually deteriorated ( Dickens , 1949 , Zola , 1968 et al , 1970 ).(2).

Philosophers may be considered as the first speakers for an ideal city for men particularly after the development of knowledge. An ideal environment for man and his mind were considered vital for building a healthy society. Laugier (1755), developed his concerns: "Our towns are still as they were, a mass of houses piled up pell-mell without system, economy or design. This desorder is nowhere more evident and shocking than in Paris. The center of this capital has remained almost unchanged for three hundred years : there one still sees the same number of small, narrow and tortuous streets, exhaling nothing but dirt and filth, where the meeting of vehicles causes obstruction at every instant." (3).

Rousseau in 1732 (4) and Voltaire in 1749 (5) wanted Paris to be a beautiful city through its streets. The reality did not sustain their dreams.The sharp expansion of the population and the intensification of industrial activities brought pollution of air and water in many areas ; the problem of adequate drainage and sewage added to the difficulties particularly in streets which were not straight. Regulations concerning street width and line were introduced and supported by doctors' associations and planners who put emphasis on sanitation and hygiene "there is an urgency to free the city centre of Paris" (report on cholera in Paris in 1832) (6), in Roncayolo , 1983 ; 94) .Ecological studies ( les topographies medicales ) which emerged in the XVIIIth century stressed the effect of the environment on people's health and spirits.

In France the medieval city , such as Paris and Marseille , was the principal object of this critique. In England the "bye-law" street – the straight , wide , continuous way – was a result of the Public Health Act of 1875 ( Creese , 1966 ; 76) (7) . The small narrow streets were also considered inappropriate by les architects- voyers (road – surveyors) ( who , later , with the professionalisation of their calling gained the title of the road engineers ) , for heavy goods vehicles which were associated with factory expansion , and trade activities made possible by a heavy machine industry and more production in the workshops ( Guillerme , 1987 ) (8). This thinking led to the idea of renovation and transformation. Public hygiene was also used as a reason to ligitimise the urban operations of those who graduated from The Ecole Polytechniques, constituted in 1795, and those influenced by Saint – Simon 's and

Fourier's ideas. The city was considered as a ground animated by forces and movements , and its infrastructure – communications - , not as a living space (Vilder , 1986 ; 58 ) (9). The search for a solution to problems of disease, congestion and transportation became acute. The interests of strategic communication were in fact the underlying reasons which led to the reduction of the street to a road.This concept was initiated in 1850. Moreover the street appeared to be at the core of a conflict between life in the city (supposedly with its dirty overcrowded streets ) and life in the country ( healthy conditions) . The metaphors that represented the new cicumstances addressed the problems of cities in term of the reconsideration of the street form.

The radical transformation (if not its disappearance) was considered a major objective in the transformation of cities to meet the requirements of an industrial economy, hygiene and traffic.

It appears that, between 1903 and 1914 the street reappeared as an important issue in Europe. For instance , in France , some road engineers looked for a degree of autonomy from the two powerful rivals ; the Ministry of Public Works and the Service of Bridges and Roadway (le Ministere des travaux Publics et son Service ordinaire des Ponts et Chaussees) ,and the Ministry of Interior and its Roadway county Services ( le Ministere de l'Interieur et ses Services vicinaux departementaux) . The street was distinguished from road and track (Guillerme, 1987) . The pavements approved by the state in 1843 are given peculiar attention by the above services ( Guillerme , 1987 ; 25 ) (10) . Lastly, the development of modern architecture in the first thirty years of the twentieth century also had substantial influences on the quality of the street–space ( see sections 3.1 and 3.2.1 ). This stage illustrates the consciousness for a reformulation of architectural theory and practice.

**2.2.1- Les boulevards: the end and the beginning of a new planning**

The widening of the street channel appeared as the ineluctable action to undertake in order to clear up the industrial city and to save the dignity of the French nation. In effect the industrial revolution in France was marked by a spectacular increase of population and of social disorder. Inflation , the problems of provisioning , the high cost of living , low salaries , insufficient health care , increase in land and property values , were but a few of the problems which created tensions in the city. Haussmann's strong influence on urban layout – L'Aussmannisation – took place influenced by these phenomena , supported by the lack of

financial and legal instruments ( Roncayolo , 1983 ; 74 ) (11) . Furthermore , some historians have stressed Haussmann's deference to Napoleon III –s concern with matters of internal security , while others pointed out that they shared a preoccupation towards the reorganisation of Paris for political and prestige reasons (Choay , 1969 ; 15 ) (12) . During his exile in England it appears that Napoleon III realised the significance of the 1789 Revolution and wanted Paris to reign supreme as the urban capital of Europe. Furthermore, he decided to replan to make possible the effective use of artillery. A system of straight and broad streets (arteries ) , such as Wren had proposed for London after the Great Fire of 1666 , constituted a practical scheme which also met his aesthetic vision ( Pinkney , 1958 ; 4 ) (13) . The execution of this project was given to Georges Haussmann.

Paris had seen a concentrated accumulation of outstanding buildings (for the bourgeoisie) – Les embelissements – During the reign of Louis XIV , Louis XV and Napoloen 1(Lavedan , 1956 ; 129 ) (14) amidst dark quarters and narrow streets in which the general population survived. These important developments constrained Haussmann's work to a certain extent , but he also sought to satisfy the requirements for vehicular traffic. Furthermore the development was carried out in the manner of classicism derived from the Ecole des Beaux Arts which was highly ranked in academic circles. The overcrowded housing problem which was very acute at that time was not taken into account. Haussman's principles were developped in most countries under the French rule particularly the major cities in Algeria (fig 2 and 3).

The major roads established in the North African cities were to give control over the city to the armed forces and to ease their movement. In Paris Haussmann projected a conspiccuous network of streets and extended the existing series of boulevards, incorporating them in a city-wide system of circulation. A series of diagonal streets was created to connect the interior and the exterior boulevards- Les grandes croisées- It appears that the urban block which preexisted was not preserved by Haussmann . His intervention was characterised by the tracing of technical traffic devices regardless of topography and of existing built environments ( Panerai , 1980 ; 240 ) (15). Nonetheless, in many colonial cities , the old and the new fabric was scrupulously connected.

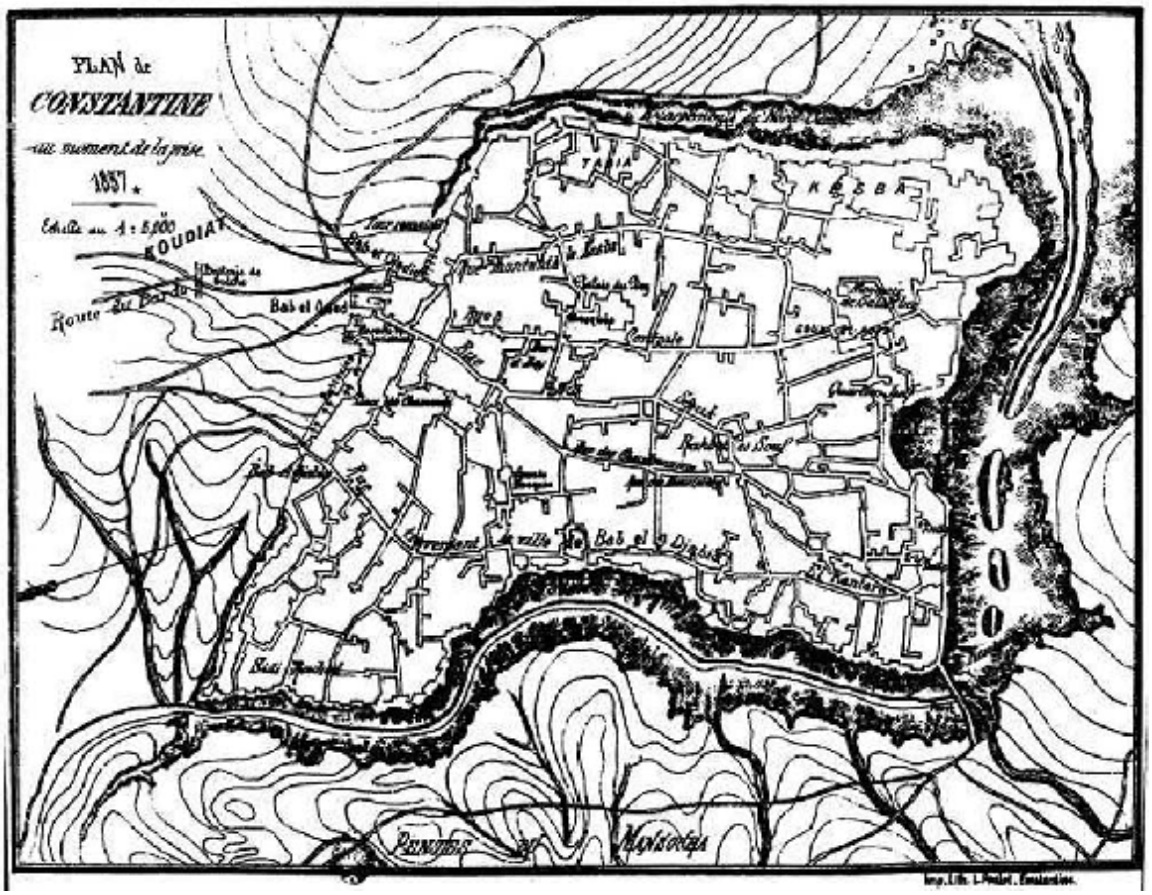
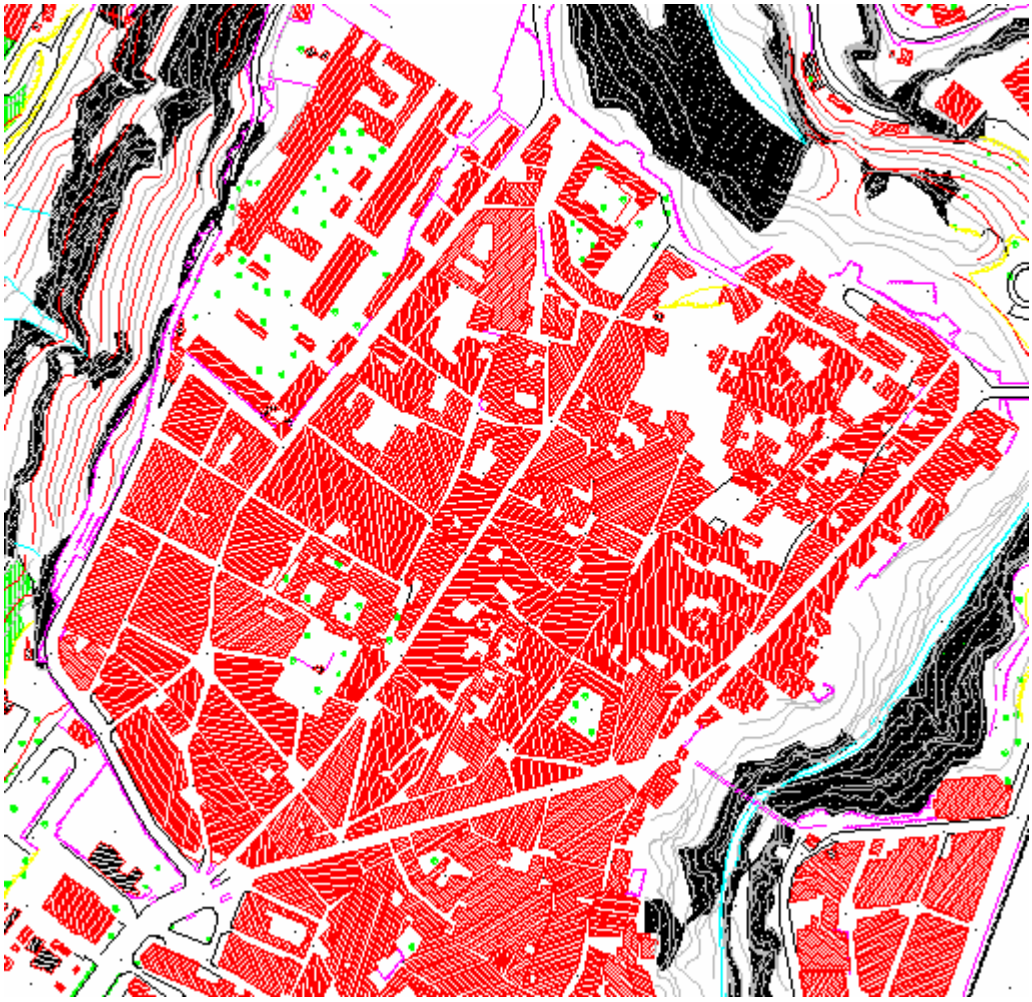



**Figure 2**: Constantine, “The old city”. The map shows the irregular street pattern.



. **Figure 3** : Constantine after Haussmann's operation. Major elements of Constantine street elements appear with the opening of thoroughfares in the medina. (from URBACO 1984).

The establishment of the boulevards was undertaken on the basis of the following major objectives:

Creation of the so-called grande croisee. It consisted of the opening up of styrategic north-south , east –west lignes of communications between the major streets , places , administrative and business buildings , and from one public facility to another (such as schools , hospital , and rail – stations ) (Evenson ,1979 ;15-20) (16).A new identity was brought to the monuments by isolating them from the surrounding*s* buildings and 1inking them visually one to the other (Panerai et al, 1977; 19) (17).

The piercing of the wide street through built up neighbourhoods reduced the size of the block. Within it the plot lost its depth and was standardized (115, 300, 400, and 460 square meters). The courtyard, a private individual space, was "hollowed out" and became endowed with a «hybrid status", belonging neither to the plot nor to the block [see Figs. 5-6J.

In addition, these new developments were based on a segregation of functions : the system of linkage highlights an ideology which announces and originates at some levels the practice of zoning (Panerai . 1980 ; 17 ) (18) . Later, the single-use characteristic of many towns has negatively influenced the quality of urban spaces because it reduced their degree of activity (shopping streets became overcrowded during daytime and deserted in the evenings while housing areas were merely for situating houses or for parking cars, and nothing else . Moreover the possibi1ity of friendly encounter is much reduced by this separation as we shall see later in section 1.6.1. Haussmann’s intervention transfigured the pre-existing pattern. On each side of the boulevard channel, arbitrary forms have been established. However the new and the old built form was scrupulously joined.[from Panerai , 1980 ; 27] (19).

The process of classification and geometrization reappeared in suburban design as we shall see in section 2.5.1. Haussmann’s direct influence was immense in many European countries where industrialization developed, and also in colonial cities. Amongst the followers of Haussmann's approach to traffic management were the visionaries Henry-Jules Borie and Eugene Henard in France, Baumeister and Stubben in Germany, and Paxton in England (20).

Borie was the author of a schema of "aerodromes", a new form of housing applicable for big cities such as London, Liverpool, Manchester and New York, characterized by a multilevel system of circulation which would occupy nearly three-quarter of the city surface (21).

Henard was author of the rotary intersection for Paris a radical approach which regularises traffic flow around plazas and of a process of widening and straightening streets. At the end of the 19th century, planners showed a growing concern for traffic considerations and a geometrical bias without any consideration for the pre-existing urban morphology. However Henard included an attempt to vary Haussmann's street-facade model which he

considered uniform and lacking interest, by proposing two types of building alignment, one called alignment brise ( broken alignment. ) and the other *boulevard a redans* (boulevard with setbacks) (Evenson, 1979;29) (22) [Figs. 4-5].

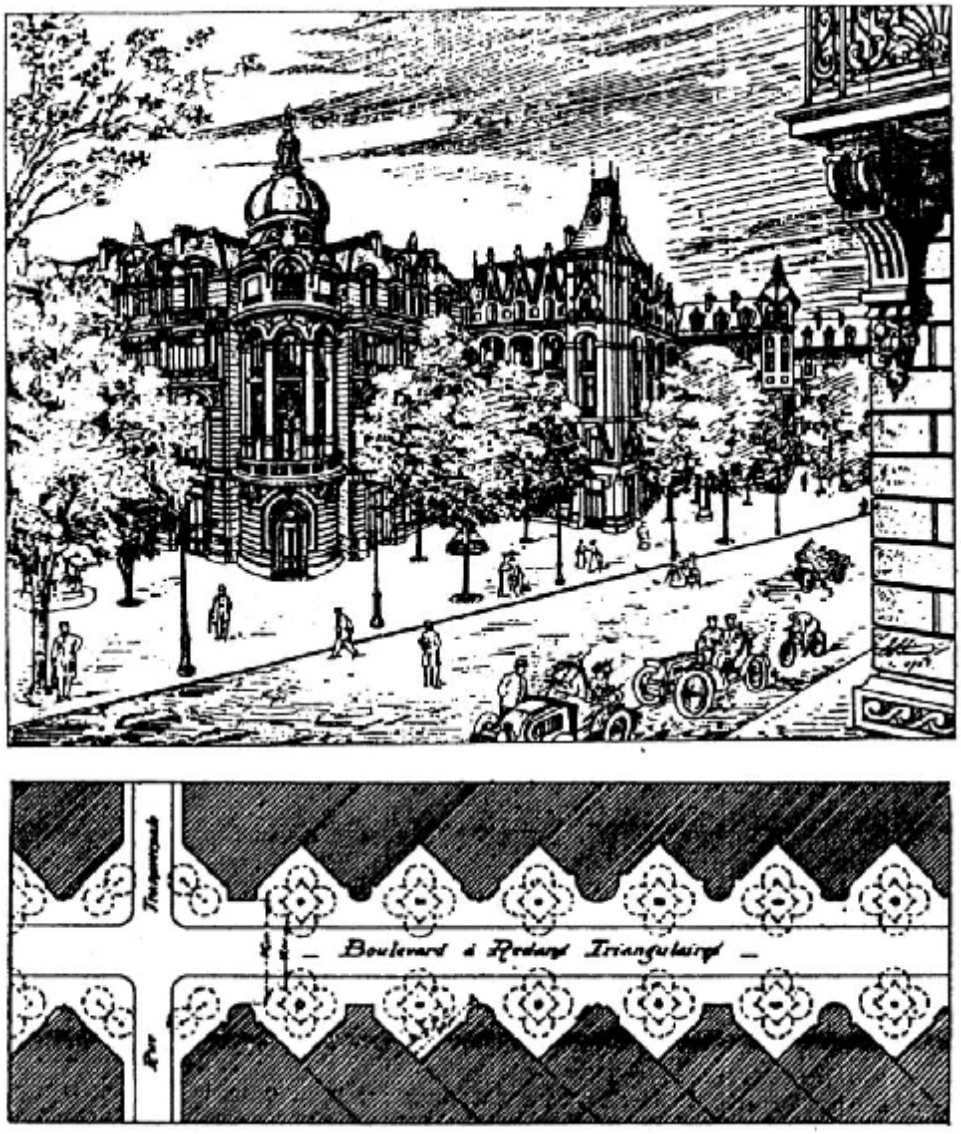



**Figure 4**: The alignement brisé proposed by Henard , 1906.

It was produced by placing each rectangular building so that a corner , rather than a single side , faced the pavement. This arrangement would provide an increase in street frontage and space for greenery.[From Evenson , 1979 ; 29 ].

The German admirers of the French School of planning in Paris (see Handbuch by Stubben , 1890 ) subordinated city building to traffic considerations , but still paid some respect to the creations of the past. Stubben evolved a hierarchy of street types , classified according to the importance of their arterial function : through-streets as opposed to local streets , diagonal streets that cut across existing networks , belt-roads that ringed a city nucleus and single and double ring boulevards designed in place of ancient ramparts , and incorporating old and new features such as gates or sections of wall (Choay , 1969 ; 21) (23) , Collins , Crassmann , 1986 ; 36 )(24) .

In England, Paxton (1803 – 1865) designed what is considered by Creese (1966 , 55 ) (25) and Choay (1969 ; 22 ) (26) as the prototype of the new city park , in which the circulatory system consisted of two completely independent networks : an irregular one of narrow pedestrian paths , and a roadway for carriages and horses that ran all around the outer edge of the park dividing it across the middle. From that scheme [Fig . 9] it appears that Paxton adopted Haussmann's principles only partially. The winding paths and the artificial mounds seem to be a rebellion against the straight line and the continuous plan. He presented a model in which dwelling and open spaces were interrelated for hygiene and leisure purposes. This led some historians , such as Creese and Choay , to consider him as the pioneer of the design of public urban spaces which integrated architecture, planning and landscape (27) and ((28)(Creese , 1966 ; 55 , Choay , 1969 ; 22 ).

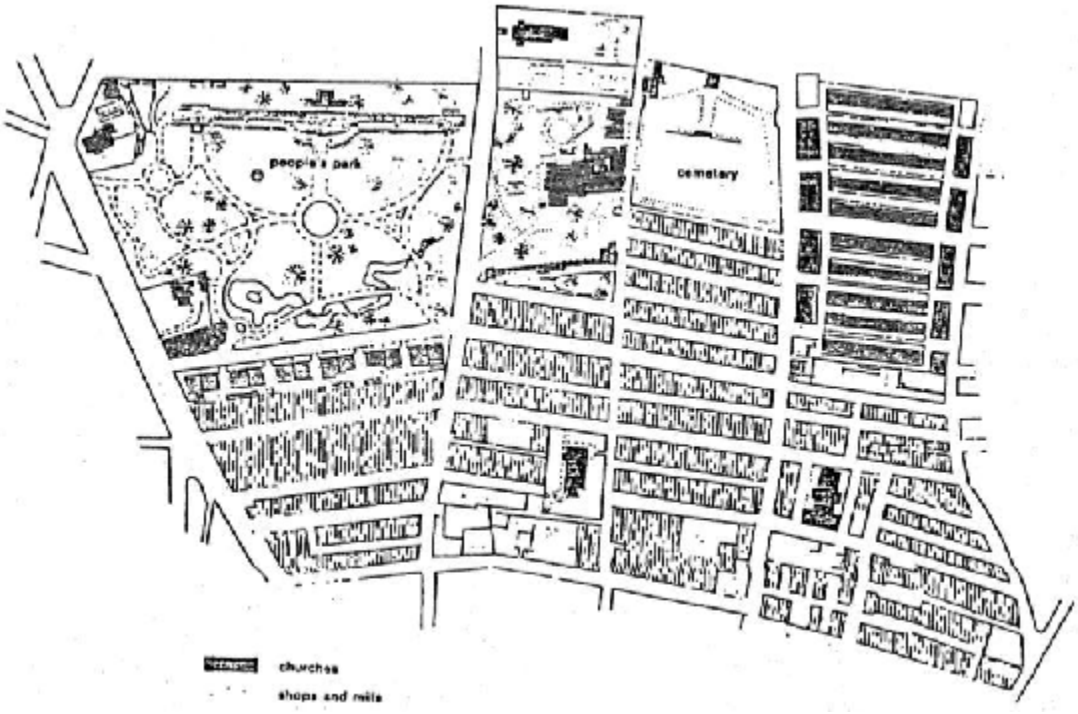



**Figure 5** : Map of People's Park, Halifax, Liverpool.
Joseph Paxton, 1856-57.
The circulatory system in the park contrasts sharply with the pattern of the Estates around. ( from Greese, 1966; 49).

### 2.2.2-The street in the close

In England, many writers such as Charles Dickens (1812- 1870) and Victor Hugo in France, in their books (30), give testimony of the social and economical problems of the the 19th century.The Garden Cities movement was initiated as a response to the many problem of the metropolis of the 19th century. The synthesis of Ebenezer Howard's (1850-1928) ideas concerning the improvement of the living conditions in cities originate a design in which the layout of individual houses was organized within a close (31). . The schemes were conceived on two levels: urban reconstruction and the betterment of social conditions in order to achieve an integrated urban life..

Howard published Tomorrow: a Peaceful Path To Real Reform(1889), re-issued with slight revisions in 1902 under the title Garden Cities of To-morrow in which he explained the Garden City model, using diagrams which have had a major influence, not only on the post

Second World War programme of New-Towns developed in England, but also on the Gardenstadt in Germany, on the 1930s Greenbelt Cities in the USA, and on Les Cites jardins in France. In the United States, the Radburn type, so called from the town of Radburn, New Jersey, built between 1929 and 1933, was developed by Clarence Stein (with Henry Wright) after their visit to the first garden cities and had many applications mainly in the USA and in Britain (see section 4.3.2 for a detailed study of this principle). The social revolution was to be established on a detailed programme of elementary changes in the distribution of wealth and power.Howard considered that decentralisation would be an efficient counterbalance to the concentration of capital and power which existing cities contained.

The actual city would have to be an adaptation of the diagrams put forward to its specific conditions. The Garden City conceived by Howard was meant as the solution to the crowding and congestion of London and to the emigration from rural areas. He opted for towns of a limited size planned for work as well as for living; a community of 30,000 persons, of small enterprises and agriculture based on a social reformation. He recommended a type of zoning based on concentric principles, a low density but compact housing pattern, and a radial transportation system. It appears that he was been unaware of the possible social functions and of the three-dimensional nature of the street and neither praised nor condemned the older street form and life. The town centre was to have an active atmosphere and be occupied by different public buildings and spaces (Howard, 1946).

The first garden cities, Letchworth (1903) and Welwyn (1920), designed in cooperation with Barry Parker, Sir Raymond Unwin and Louis de Siosson as architects, present diversified buildings and a standard for low density housing (12 houses per acre) established by Unwin (32)(Mumford, 1346; 31). The dwellings in the close were designed on the basis of intimacy and withdrawed from the street. This last is reduced to the role of supporting movement of traffic (Fig. 7).

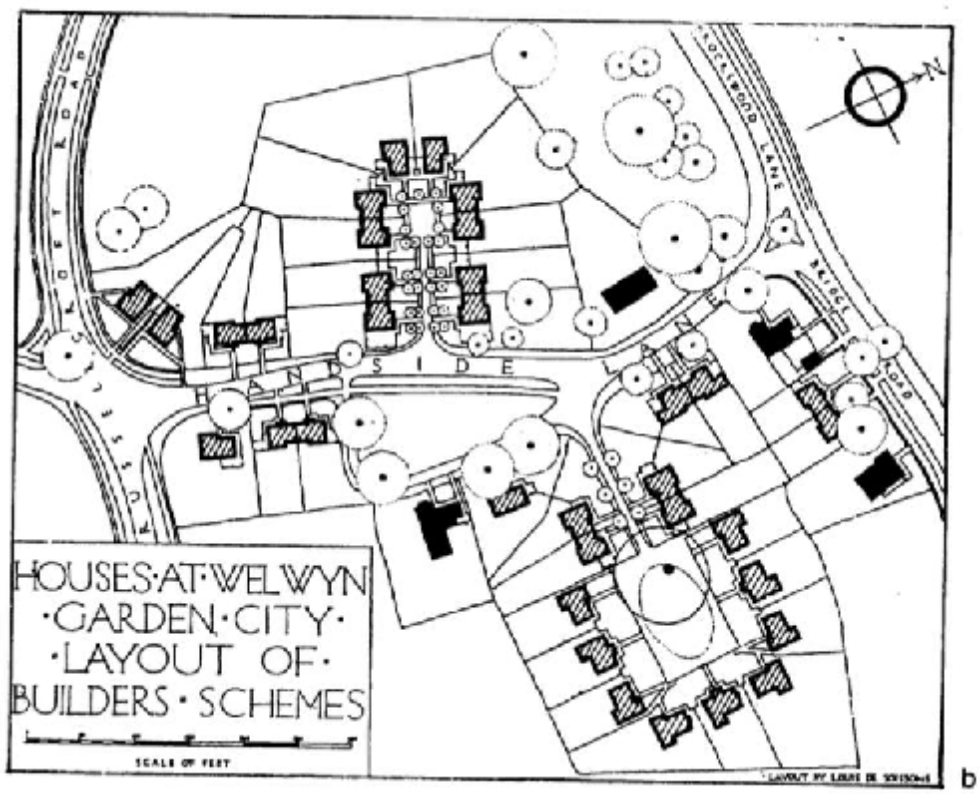



**Figure 6**: The close in the Garden City. (from Panerai, p. 25)

The width and direction of some streets followed the bye-law type, although these were relatively shorter and with a set-back of houses. Other houses were set at unusual angles to the road line sometimes as a response to a natural feature. in Letchworth the street-channel is separated from the houses by many screens: trees, hedges and grass verges. The extensive use of this device to separate public and private life led to some dissatisfaction. In practice it has been reported that the inhabitants complained that the trees overshadowed the houses and did not allow light or a view of the outside (Creese, 1966; 209) (33). Besides it has been suggested that uncontrolled landscaping may bring incoherence into the whole; when the distinction between built space and open space is destroyed the urban experience is impoverished to a large extent, despite the attention given to domestic architecture (detailing, styles, materials) (Gibherd, 1972; 96) (34) (see also legibility in section 4.5.4). There are few indications in Howard's writings that he actually opposed city-life. Mumford suggests that the term "garden" has led to a misinterpretation in this regard, and that garden cities have been confused with suburbias.The Garden City, as Howard defined it, is not a suburb: not a more

rural retreat, but a more integrated foundation for an effective urban life (Mumford. 1946; 35) (35).

The close has persisted in the design of housing in Britain and its formulation has been varied. Surveys and analysis in different innovative estates, of regular users, identified numerous problems, low level of satisfaction and convenience inherent to the layout of these estates established on the principles of the close (36) (Brookes University, Buildings Research Team, 1891) (figs 7-8).

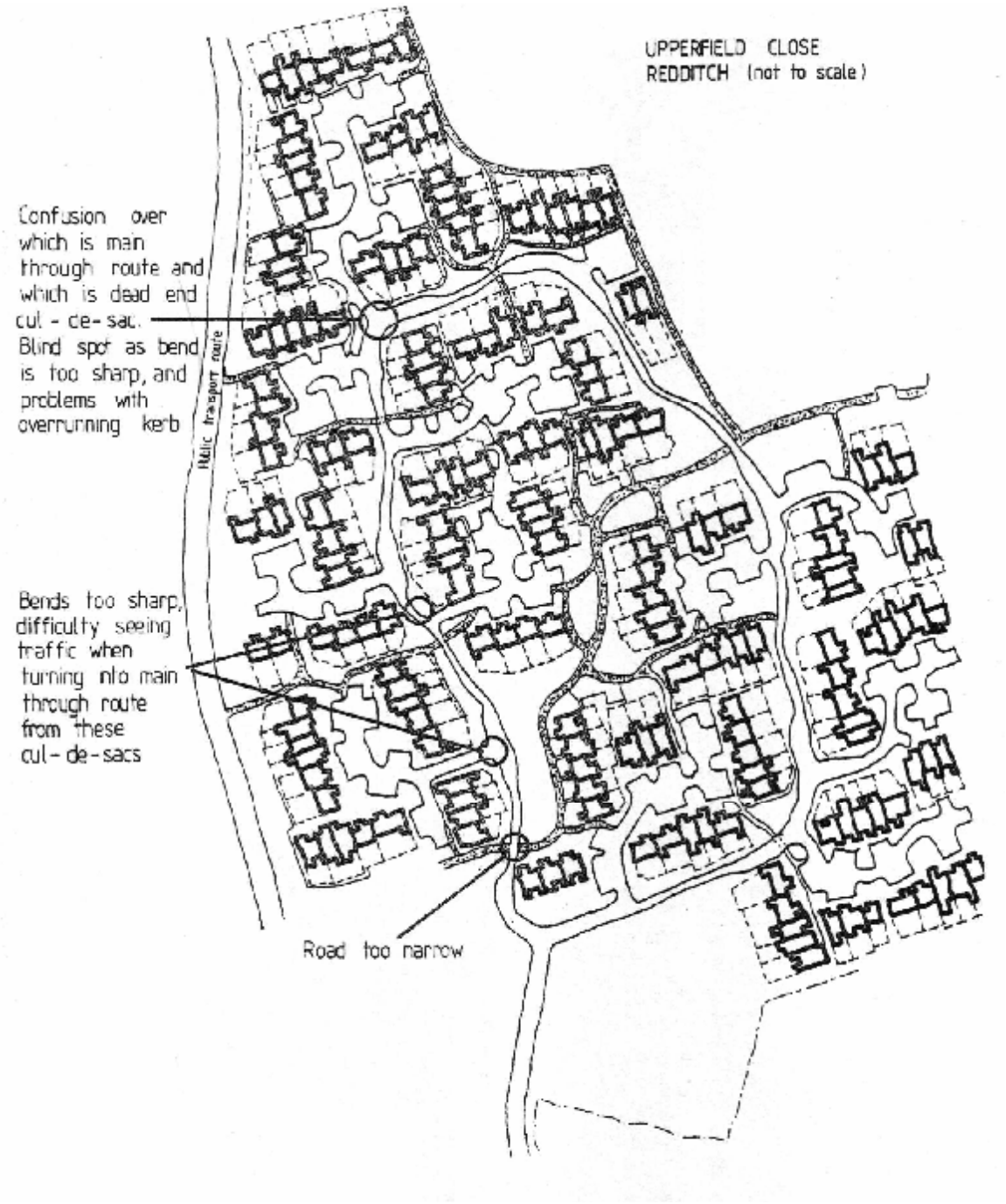



**Figure 7**: The Frankley Estates, Birmingham.
From Brookes University, Buildings Research Team, p 36).

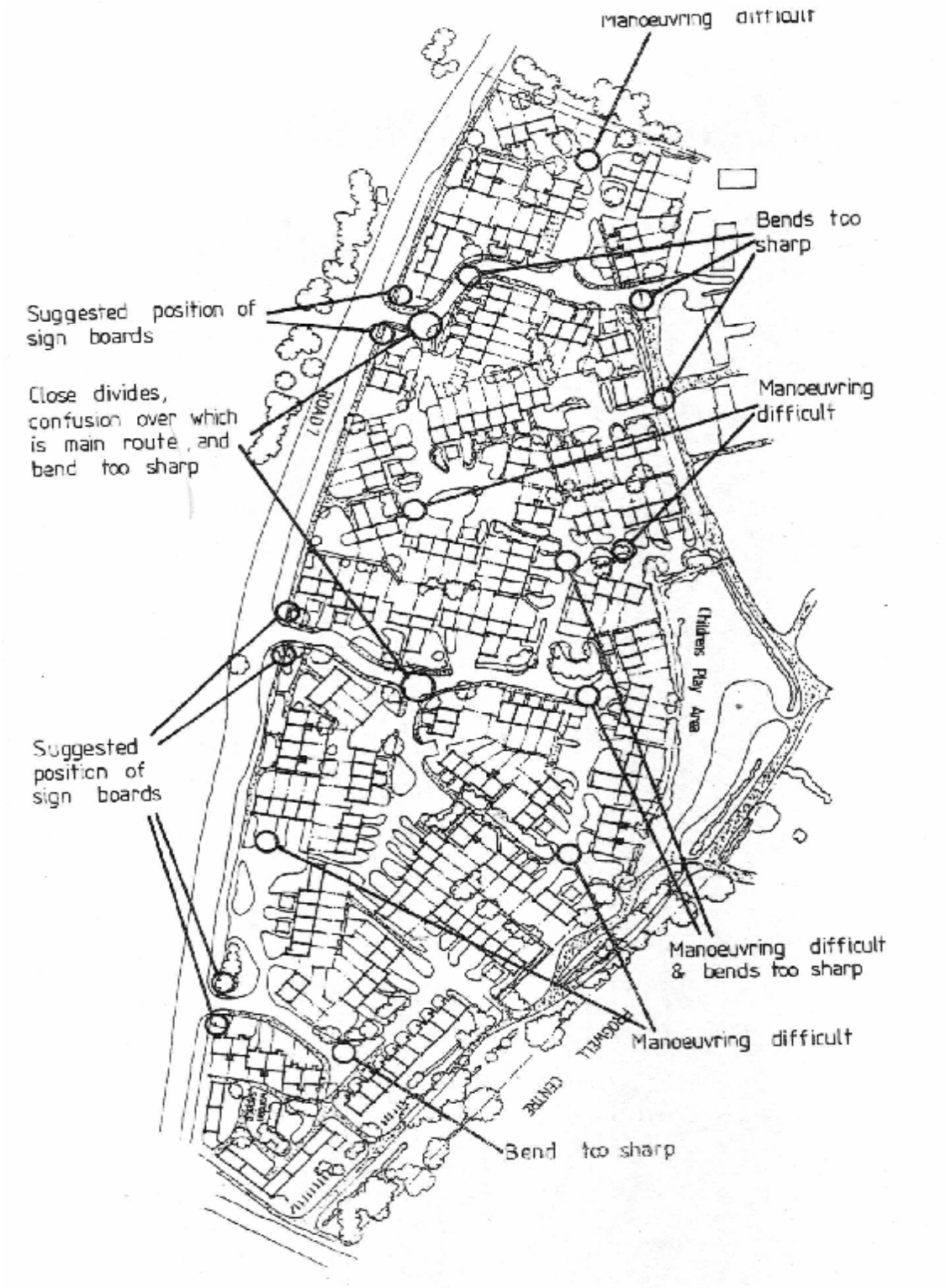



**Figure 8**: Upperfield Close, Reddith.
From Brookes University, Buildings Research Team, p 44.

-Rapid orientation was found a major problem ( particularly in case of emergency, fireman, ambulance).

- Large number of dead-ends which characterise cul-de sac layouts.

- Difficulty of differentiating access road from cul-de sac at certain points causes problems when a quick decision is needed.

-If wrong turning is taken, then manoeuvring in tight parking areas is difficult and time consuming.

-Even when the correct cul-de- sac is reached in some places house number are not visible from the road and some houses are even more difficult to find as they have no direct vehicular access.

-Some bends felt to be too sharp and so difficult to negotiate for large vehicles.

-Visibility poor at many junctions owing to twisting roads and landscaping.

- Difficulty passing parked cars. The parking spaces in front of garages were intended to be used as passing places and for turning. However if cars are parked here , this obviously causes manoeuvring problems particularly for large vehicles.

-Roads generally are too narrow.

-In some layouts there is only one access to many houses, and if the road becomes blocked for any reason, it becomes impossible to reach many points in the layout.

In addition the road safety is a problem on these estates:

- Children are playing in road.

-Pedestrians are walking in road.

- Footpaths are too narrow.

-Lack of room for prams or wheelchairs.

However innovative features have been successful in reducing speeds , modifying driver behavior and increasing awareness of other users in residential areas.

The conclusion is that many drivers felt that they had too many things to think about at once. They mentionned that wider straighter roads were needed with cleare numbering.

## 2.3- The street issue: the international debate

The genesis of the idea of new forms of streets to house the vehicular traffic can be traced in many parts of the world. Architects, planners, urbanists came to a stage where the need to confront ideas and principles became imperative. They began to realise the full implications of the rise in car ownership and planning.

### 2.3.1-The 1910 international conference

International gatherings, which had begun with that of Brussels (1898) on "L'art public", are considered as preparatory sessions to the more substantial and elaborate studies contained in the report which emerged from the conference (Collins, 1986; 46) (37).The 1910 international conference organized by the Royal Institute of British Architects brought together eminent personalities who may be considered as the town planners of that era, and as the founders of modern town planning (38)(Choay, 1969),

The conference included sections devoted to the cities of the past, cities of the present, city development and extension, cities of the future, and architectural considerations in town planning.The survey of the history of cities which included the planning of Hellenistic Cities and town planning since the Renaissance, appears to have been undertaken in an attempt to seek inspiration from the past; and suggests that some contributors to the conference were aware of the importanceof the architectural dimension of buildings in relation to the townscape quality of the street (for instance, see Bonnier's Paper; in RIBA, 1911; 222-231) (39) . However, the sections which followed this, although not condemning the city prior to the industrial era, related the problems of congestion to the spatial configuration of the older narrow street. Sanitary conditions in the street and the problems of urban transport were the basis of attacks on the traditional street; the statement that the narrow street was “ill”adjusted to new conditions" was widely supported (40)(Mulford & Robinson, in RIBA, 1911; 201). Another participant emphasised the unhygienic conditions of the street resulting from lack of sunlight. He referred to his paper for the International Congress of Hygiene and Demography (Berlin, 1907) which had pointed out the interconnection between open space, public health and land speculation; and stressed the necessity of introducing parks and gardens to "ventilate" the city (41) . This view was supported in discussion and the absence of the civil engineering professions from the conference was

regretted (Durham, in RIBA, 1911; 284) (42). Cottage styles, recreation grounds, landscaped parks, and boulevards were solutions proposed by the majority of the speakers.

Zoning was to be established, thé city was to be divided into residential and industrial areas and parklands, and the designers focus turned forward to urban mechanical transportation .

The conception of the street layout was established according to two principles: the adoption of curved and straight lines according to local requirements and the conservation of the continuity of the street wall . The "widening" was to be drastic: new streets were to be characterized by a minimum width of 22 meters, with five-storied buildings of equal height. From 1870 to 1875, in Germany, a series of new measures about housing and town planning were introduced with the "Building -I.ine Act", based on a selection of the winning schemas in a competition for Greater Berlin. The winning schemes proposed not only a detailed map of building lines, but also a real plan for the development of a town and the layout of its streets.

The street and its role as a channel for traffic, transportation requirements and rapid transit were put into focus . The schemes were based on:

1. Rays of broad avenues called "sally-streets"(Aufallstrasenn ) which emerged from the centre to enable fast motor traffic to move from the town.
2. New thoroughfares to be opened through residential districts.
3. Avenues 1ined by colonnades with a tendency towards monumental architecture (Stubben , in RIBA, 1911,310 ) (42).

The critique of the old street spread to other countries in Europe and focused on its unsatisfactory sanitary conditions through comparative street sections .The architect for the city of Paris, concentrated on the bad drainage, sanitation and venti1ation of the street and their negative consequences on the health of the inhabitans. He built his argument on an apparently scientific estimation of the considerable number of germs in a cubic metre of air in the rue de Rivoli, compared to that of pure air on thé open sea or in the mountains (Henard, 1911; 363).

The new technical conception he proposed was based on the segregation of different types of traffic. The upper level, was destined for pedestrian and automobiles while the lower levels accommodated trains, longer distance journeys, freight, and services. Accessibi1ity and control were the only aspects taken into account in the design of this new form of streets. The underground space was used as a device to house improvements conducive to heating and comfort such as sewage, heating and water supply which constituted an additional argument for the straightening of streets ( such as sewage, heating and water supply). Aesthetic matters were only to be considered in the context of the city of the future, with dwellings as possible terraces, and "great high roads" (Henard, in RIBA, 1911; 365 ) (44) able to bear aeroplanes. Even the landmarks would be designed to assist the aviator rather than the pedestrian, mainly in keeping to a desired course .

In London the misery and overcrowding of the narrow streets of that area was presented as an argument for street" widening by The District Surveyor of Whitechapel.. With regard to London traffic issues, a report of the Traffic Commission, which was published in 1905, was recalled:

The chief difficulty that stands in the way of improving the means of locomotion in London is the narrowness of the streets, and the fact that they were not originally laid out on any general plan.... in order to relieve overcrowding, means must be provided for taking the population into and out of London, not in one or two directions, but in many directions, at rapid speed, frequent intervals, and cheap rates. ).
The width of "the main avenues" was defined as 30 meters, "secondary business" thoroughfares as 24 meters and "subsidiary" streets as 18 meters, with footways limited to 3m and 3m 60 (R.I.B.A., 1911; 410) (45).

The conference concluded that the street was mainly considered as a technical management problem in the hands of traffic engineers. This is made clear in the proposed outline scheme for the gradual remodeling of old areas which stressed widening and straightening the street channel which in turn determined building lines.

The next, important event in the history of the definition of the concept of the street which emergerd as a result of the freeflowing spatial structure advocated by functionalist theorists. It appears more relevant to assess this movement in design and physical planning since it has been largely implemented in Algeria.

### 2.3.2- The Functionalist Approach

The dramatic growth in the industrialised cities continued to undergo internal contradictions and to accommodate new sources of instability. The urbanisation of a country is to be completed when about 80 per cent of its population is accommodated in its cities. Functional distribution (dwelling, work, recreation, and transportation ) was claimed as the rationel system to which the planning and organization of urban space,, must be subordinated. Through circulation, considered largely as the problem of traffic, the street appeared as the major theme in different "observations" and "requirements" related to the problem of cities. Established on four continents and embracing some thirty countries, the series of congresses which begun with the La Sarraz declaration ( 1928 ) focused on The Athens Charter (1933) which determined to a large extent the transformation of the conception of the city, taking into consideration the economic values based on the methods of industrial production (le Corbusier, 1933; 7) (46).

Clause 16: Structures built along transportation routes and around their intersections are detrimental to habitation because of noise, dust, and noxious gases .

Clause 17: The traditional alignment of habitations on the edges of the streets ensures sunlight only for a minimum number of dwellings .

Clause 18: The present network of urban streets is a set of ramifications that grew out of the major traffic arteries. In Europe , these arteries go back in time far beyond the middle ages, and sometimes even beyond antiquity .

Clause 19: The main transportation routes, origina1ly conceived in terms of pedestrian arid wagon traffic, no longer me et the requirement of today's mechanised means of transportation .

Clause 53: The dimensioning of streets, ill adapted to the future, impedes the utilisation of the new mechanized speeds and the ordely progress of the city .

Clause 54: The distances between street intersections are too short .

Clause 55: The width of the streets is inadequate. Attempts to widen them are often very costly and ineffectual operations .

Clause 56: Confronted with mechanized speeds, the street network seems irrational, lacking in precision, in adaptability, in diversity, and in conformity .

Clause 57: Magnificent layouts, intented for show, may once have constituted awkward obstacles to traffic flow, and they still do .

Requirement 27, 28, 29, 59, 60, 61, 62, 63 :

-The alignment of dwellings along transportation routes must be prohibited .
- The resources offered by modem techniques for the erection of high structures must be taken into account (Requirement 28).
- High buildings, set apart from one another, must free the ground for broad verdant areas (Requirement 29).
- The whole of the city and regional traffic circulation must be closely analyzed on the basis of accurate statistics- an exercise that will reveal the necessary traffic channels and their flow capacities (Requirement 59).
- Traffic channels must be classified according to type and constructed in terms of the vehicles and speeds they are intended to accommodate (Requirement 60).
- Traffic at high-density intersections will be dispersed in an uninterrupted flow by changes of level (Requirement 61).
- The pedestrian must be able to follow paths other than the automobile network (Requirement 62).
- Roads must be differentiated according to their purposes: residential roads, promenades, throughways, principal thoroughfares (Requirement 63).

The Athens Charter approach to city design stipulated the following main operations for the transformation of the whole built environment, based on the preceding comprehensive observational analysis. It includes the division of the city into functional areas, the separation between built form *(*habitation) and the street, the segregation between vehicles and pedestrians, a network of fast roads for automobiles, and footpaths for slow-moving pedestrian and the geometrization of the city.

The design principles which emerged from the functionalist approach were largely implemented not only in Europe as well as in Algeria , through housing. The assessment of these developments particularly of the street space is undertaken.

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## Chapter 3 : THE MODERN THEORY IN PLANNING AND ARCHITECTURE AND THE DESIGN OF THE STREET SPACE

### 3.1- Introduction

The influences of technological progress which offered new materials and a tremendous variety of new structural shapes which architects idolized, in addition to those of the Cubist and Futurist movements, were added to by the Deutscher Werkbund association, the Rationalist School, the authority of the *Ecole des Beaux Arts* in Paris which emphasized technical methods, and the belief that the designed environment has a major impact on social behavior. Le Corbusier advocated the creation of new architectural forms as a visual plastic art ( the shape is emphasized; use of conctrete without coating) and defined architecture as the play of volumes under the sunlight (Le Corbusier, 1927)(1) . All these elements led to the dismissal of established design principles, and of the social, cultural and aesthetic values of the user in public urban spaces ( fig 8). However it cannot be denied that from the development of modern theories of form in architecture, and from scientific and technical methods of planning, have stemmed many highly inventive designs and theories, introducing a new awareness of mobility into city design.

**Figure 9**: Le Corbusier's Plan Voisin. Paris. France.
This plan which was never constructed illustrates the contrast between The linear nodal points of Le Corbusier and the structure of the old Fabric. (from Trancik, p.28).

Between 1920 and 1940 we observe a sharp increase in the number of buildings in order to offer a flat for the majority of the citizens in England, France and in Germany. It reached the number 400000 apartments in France, 350000 in England and 250000 in Germany. Gropius and Le Corbusier in their analysis of the architectural fact established a new structure and a new composition of its elementary features. The house is the basis and is a serial product. The town is composed of different parts and different functions. Gropius and Le Corbusier hesitated between choosing the individual house and the collective form in housing. According to them the former presents many advandages ( freedom, a back garden) but is more expensive when the latter makes the autonomy limited but enhances community life . They ended by choosing the collective form and considered that between ten and twelve storeys they bring many advantages: more open space, a lessening of the cost not only of the buildings but of the external spaces (streets for examples).

**3.2 - The dissociation of the street from the built form**

Le Corbusier went a stage further in his deterministic vision and campaigned in 1929 for the creation of new urban planning. This influence can be seen in different aspects of the modernist approach. The leading principle was that of unity in order to construct the parts with the whole; this was considered a primary aim of architectural aesthetics. Le Corbusier, as Fourier earlier, advocated the idea of a harmonious society living in an ideal city and governed by a single law. He claimed that there will be the richness and complexity gained from the combination of two or three simple elements, in the community, A notion of a universal man, or *l'homme type",* was built up, human needs were reduced to a limited number -*"besoins types" - (dormir, manger, se reproduire),* and the built forms were seen to conform to geometrical laws (Vidler, 1968) (2).

The critics of modern architecture and town planning in their analysis state that the publications of the so-called masters of modem architecture such as Gropius, Mies van der Rohe,Le Corbusier are not theoretical statements, but are an attempt to justify their buildings (3)(Banham, 1960). Le Corbusier had written The City of To-morrow ( 1929 ) (4) which contained applications of the Athens Charter requirements (5) (1933). The analysis of the Charter (see above sect 3.2) reveals that the idea of the street as a major component of public

urban space was dismissed in favor of the assumption that the central problem of city was to create an urban freeway system.

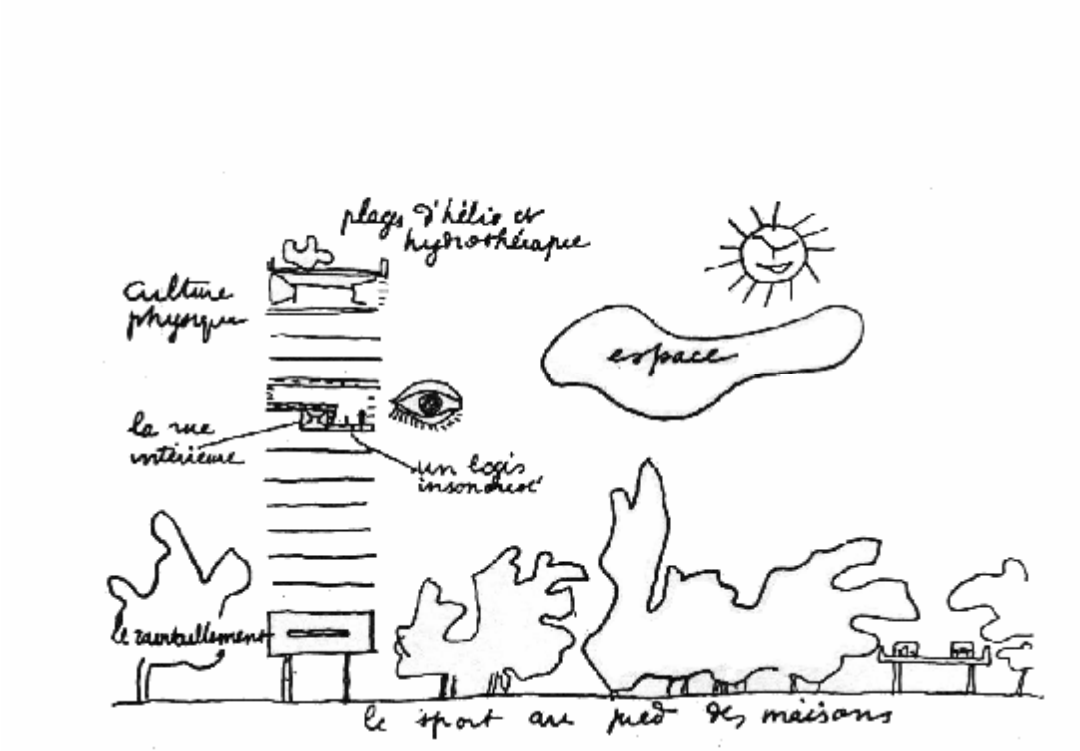



**Figure 10**: Le Corbusier's drawing to advertise "l'immeuble".
"Pilotis" and green space characterise the public urban space and make clear the street has been erased in modern urban planning.
(from Benevolo, vol 2, 1979, p 279.

Though their concern was with social matters, the architects during the first decades of the twentieth century are recognized to have attempted to impose their values on the public, rather than attempting to understand its needs (6) (Brolin, 1976; Lang; 1974). Little consideration was given to the interaction between man and the environment. Because of the analytical methods used (those of the Athens Charter) it was impossible to understand why our housing had turned out to be so inadequate; it was hygienic, correctly spaced, with excellent wide roads. What was missing was Man (7). (Crosby, 1956;33).

Le Corbusier for instance admitted that walking in a winding street might be a better experience than in a straight one, but did not develop this observation (8) (1929; 209).
Finally, the functionalist option, and the division of the city into working areas, living areas, leisure areas, and transportation system isolated the urban dweller's life into "compartments".

Moreover “les pilotis” coroborate the fact that Le Corbusier did not value the ground level in general and the street in particular.

Giedion, was more explicit in proclaiming the death of the corridor street. In Space, Time and Architecture he wrote: “The first thing to do is to abolish the rue corridor with its rigid lines of buildings and intermingling with traffic, pedestrians and houses. The fundamental constitution of the contemporary city requires the restoration of liberty to all three, to traffic, to pedestrians, and to residential and industrial quarters. This can be accomplished only by separating them... Today we must deal with the city in a new aspect, dictated originally by the appearance of the motor car and based on technical considerations” (9)(Giedion, p 19). He praised engineers’s aesthetics and was oriented towars the open city.

As cities are now formed, only the dominant functional interests are usually expressed. The city as a commercial center is not much more than a decorated warehouse , empty during shopping hours , where the main thing to see is goods and the main thing to do is buy them....This is a city that urban design must save from the city planners (10) (Wingo, 1963; 122).

The separation of commercial, institutional and residential activities, (or zoning, fig 11) may be considered a major factor in creating dead- land streets. Le Corbusier and Jeanneret Ville Radieuse, 1931, is organised in parallel bands which include, from the top, a civic center, offices, a railway station, hotels and restaurnts, housing (the green city), to industry.

"The need for mixed primary uses" is one of the four conditions defined by Jane Jacobs to sustain "city diversity" -to help to understand cities, sustain city safety and social interactions- and the street might be a measure to enquire into this condition:

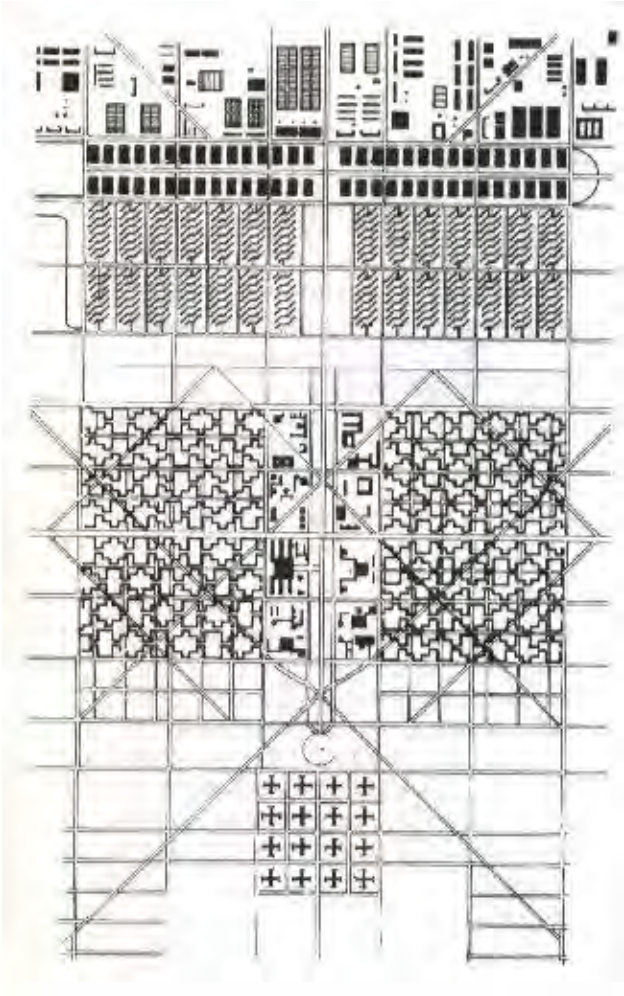


**Figure 11**: Ville Radieuse by Le Corbusier who recognized that mobility would be fundamental and implemented. An organisational concept but in which we point out the lack of mixed uses. (from Architect's Year XI, p 169).

**" The district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two. These must ensure the presence or' people who go outdoors on different schedules and are in the place for different purposes, but who are able to use many facilities in common** " (11)(Jacobs; 1982 ; 164 ).

The functional interests of getting from one zone to the other saw the street as a transportation channel .It. may be suggested that the potential of the street-space has been dismissed because of a uniformisation and a simplification and partition of vises and activities , and a division of people into shoppers, housewives, workers, students, and so forth within the city (12) (Duplay, 1982 ; 359).

### 3.2.1- The public space network

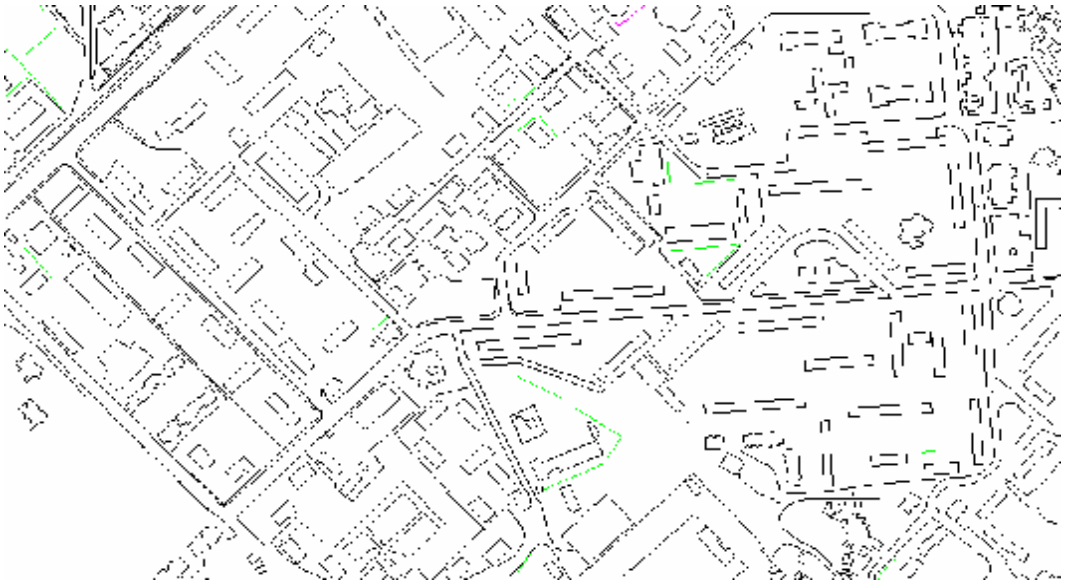
The spatial visualisation of the functional city was based on "the aeration of the city'. Sky-scrapers set out on large open spaces supposedly offered an apt solution to business needs and to the problem of the sitting of dwellings. The explanation given by Le Corbusier (1929; 166) is that the more dense the population of a city, the less the distances that have to be covered. The "vertical" density, as opposed to the "horizontal" densities in historical, and garden cities, was seen as the device which would allow the planning of open spaces (13) . The high building-in-the-park metaphor, which became a pervasive notion was inferred from the rational influence of science and technology and was symbolized in the Eiffel Tower and its poetic connotations:

."**the very act of mounting gives me a feeling of gladness; the moment is a joyful one, and also a solemn one. And in proportion as the horizon widens more and more one's thought seems to take on a larger and more comprehensive cast**."(14).

The "park" area ended by being in many built projects a " dead " space of no use , or a vast " concrete" platform assigned to parking cars [Fig. 10] (See also sect 3.2). Traffic concerns and visua1 impositions seemed the starting point in the thinking of modern architects. The mechanization of the city as the machine age developed was considered unavoidable, and a position sign of progress (15) (Giedion 1982; 19-25).

Cité Ziadia. Constantine.


Cité Boussouf. Constantine.



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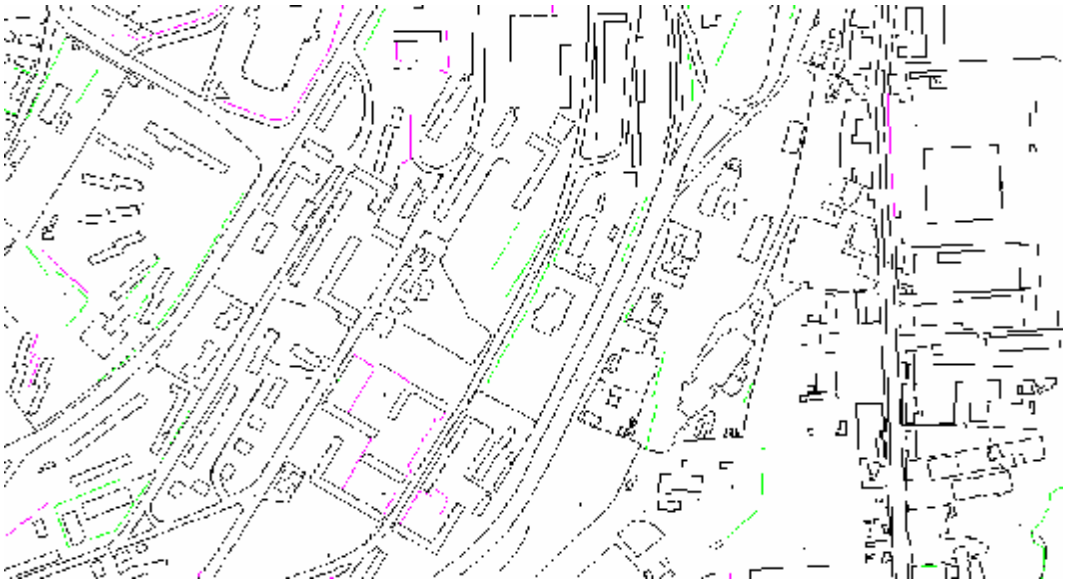

Cité Fadila Saadane. Constantine

**Figure 12** : Modern housing development , Constantine (Algeria ).

These models, designed on the base of “the building in the park” concept are recognizable in almost all cities in Algeria. (author, 2008).

The problem of shortage in housing led the government to adopt the “building in the park image” without questioning its adequacy to the Algerian citizen and the hot climatic conditions. The green space on the desk of the architect became “dead space”.

The street configurations of the pre- industrial era were considered inefficient in housing the growing volume of traffic le and the life they sustained ( pedestrian and cars intermingling, social activities, noises, etc) were not appreciated by Le Corbusier and some other members of C1AM (16)(Shane, 1978; 49). The concept of the street-space of older cities in which the buildings and the street channel reinforce each other was rejected . The street was considered as a "corridor" of noise, dust and traffic congestion (17) .

The transformation of the block appears to be at the core of the initiation of the function list approach and o f the transformation of the quality of the street-space.

Three main and significant stages mark the gradual setting back of the block from the street, in conjuction with the transformation of its structure which was initiated by Haussmann , illustrated by the following schemes o f Le Corbusier.

a. The Blocks of Dwellings [see Fig. 11].

Both the communal internal space and street space in Le Corbusier's schemes are debatable. The former presents an ambiguous character; it is neither private since all the flats over look it , nor public , because it is enclosed by the buildings and is situated at the back of the flats which therefore exercise a symbolic control over it. The street space where the fronts are still relating to fronts, is primarily providing for a traffic network and parking lots. Most pedestrian activity is eventually drawn into side streets and subways.

Le Corbusier, in this scheme, dismissed an important condition in the distinction between front and back in the buildings. This assumption is based on comparative analyses between this model and the typical block structure in the traditional city, undertaken by Bentley (18) and Ellis (19). Admittedly, the block in the latter model is made-up of buildings that have a basically different condition of back and front: fronts relate to fronts forming a public space, backs relate to backs generating a courtyard space or a garden in which private activities out of doors particularly vulnerable to overlooking take place screened by barriers between individual properties.

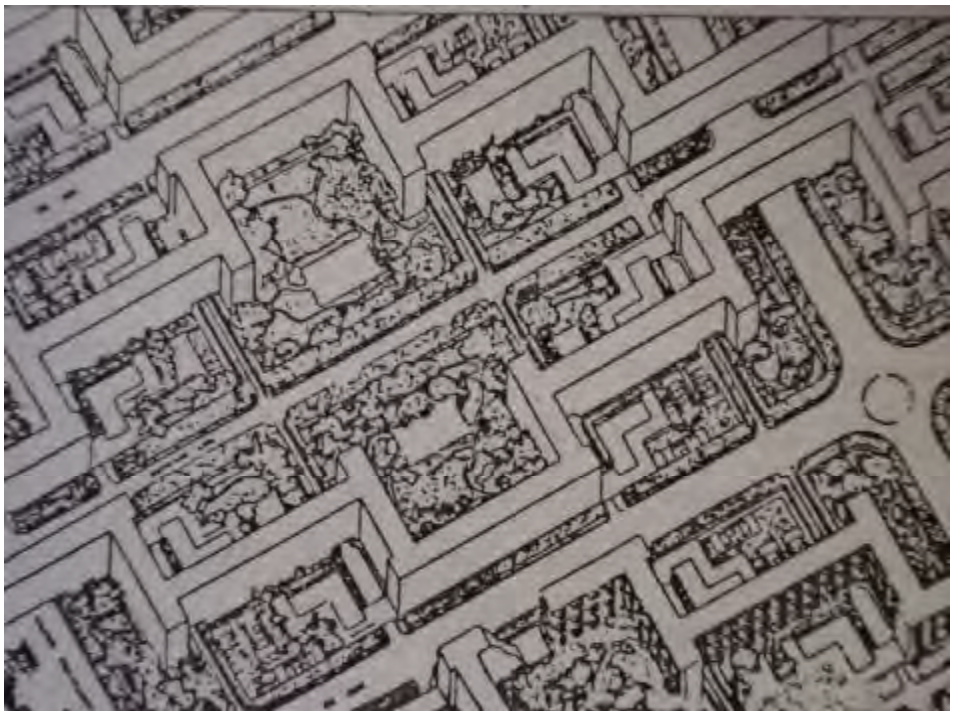

**Figure 13**: Block of dwellings with set-backs. (Ellis, in Anderson; p.116).

The block in this scheme (fig13) of Le Corbusier's is reduced to a bar (block without width, depth) and the hierarchy of space from public to private has been dismissed. What is the front for one section of the bar faces the back of the opposite section. There is no effective differentiation in the open space in term of private (hidden) and public. In addition, Castex (20) and Bentley (21) established a relationship between the width of the building, and the variety of uses within the block and in the public space:

The larger the blocks, the coarser the mesh of the public space grid, the few the choices o f routes through it and therefore -ail things being equal the less its ability to support, increased variety in the long term. On the other hand , larger blocks can more easily support a variety of uses within the block itself, because the extra size allows the uses to be placed further apart; and t herefore any marginal incompatibilities between them can more easily be handled at the level of detailed design .

Moreover, in the situation of a strong hierarchical, maze-like layouts of some recent developments, the possibility of encounter is reduced, the variety of experience is then lacking . The "Voisin" Scheme or Tower Blocks [see Fig. 19-20]

This proposal presents the widespread scheme subsequently adopted which has been seen as a response to the need for largo-scale, high-density housing developments. This particular configuration, which has been largely used in housing developments in Algeria since the 1950s (ZHUN, Zone d'Habitat Urbane Nouvelle), is often wasteful of urban land, has created derelict areas, lacks public amen it les, does not meet people's traditional. values (transitional spaces between public and private domains) and led to a disequilibrium in the use of other parts of the city. According to an investigation (22), the following findings have been substantiated ;

First, the essence of the new residential space is characterized by an absence of customary urban life. The inhabitant s seem inhibited by the spatial qualities of the open space. Conversely, the centre of the old town (Arab and colonia1 sections) are on the other hand highly used, although means of transport are lacking between the new residential areas and the old urban centre. People wish to "go down town" for daily and exceptional purchases, or a meeting point and place for leisure activities.

Second, the notion of district (neighborhood) appears to have been reduced to only one physical element, the flat. Third, the inhabitants of the town centre have been disadvantaged because the overflow and concentration of people in this area of the city "The old neighborhood is not ours any more , the street belongs to everybody" .

### 3.2.2- The disappearance of enclosure

The new approach to the city is illustrated by two features, the systematic use of the right angle and the straight 1ine, and other factors which may be worth considering in the design of street-environments were dismissed in favour of traffic consideration. These determine the layout of whole cities, in the adoption of the "gridiron" System of main roads, and dual carriageways. This led to piecemeal areas, isolated from each other and made the town difficult to experience on foot, ( Mil ton Keynes is a regrettable example of the case).

The “Plan Voisin” or Tower Blocks , by Le Corbusier . This scheme illustrates Le Corcusier ‘s basix principles:

We must de-congest the centers of our cities.

We must augment their density.

We must increase the means of getting about.

We must increase parks and open spaces. (23)

(Le Corbusier , 1929 ;166)

This determinism and universalism erased regional and cultural identity , anticipated uses which came to be different from what happened in reality in the famous Pruit-Igoe Housing Project (24)(Lang et al , 1974 ; 6) and reduced the street to a traffic channel.

The long straight street was criticized by Camille Sitte (1899) (25) who is considered a pioneer of urban design and an eloquent critic of mechanical planning and who has been echoed by townscapes observer (such as Cullen, 1961 ). In Sitte's enumeration of the back of "artistic merits" in the modem city, the rectangular System is considered as the first step towards the 1oss of street character: As soon as geometrical layouts of "blocks" became dominant**,** art was silenced .

This assertion is given support by his observations of wide new thoroughfares in different cities in Vienna and by comparing them to older streets. Sitte referred to the element of closure. He considers that built space should give definition to open spaces such as squares and streets. The sense of enclosure is considered (by Sitte and some scholars such as Sharp, (26) as a key factor in the richness of serial vision such as we experience in medieva1 street environments:

The harmonious relationship of man with his environment stemmed not only from a compactness that gave ready accessibility from all parts of the town to the centre, but also from the visual satisfaction that enclosed spaces could offer. Moving along a meandering street, flanked by buildings which adhered to no regular building line, but formed sometimes convex, sometimes concave and sometimes straight frontages, a pedestrian would encounter a continua1ly changing succession of visually enclosed spaces, each differing from others .

The continuity of the building line appears to be au intrinsic feature of the notion of enclosure (sect 6.4). It has to be stated that the critique of geometrical layouts does not imply the celebration of winding layouts for their own sake. But, as illustrated in many traditional mode1s (such as High-Street in Oxford), townscape analyses reveal a solution which reunites the pictureque curves and elements (such as a tree ) in the site with traffic requirements.

The quality of the open street space is also strongly related to the density of the built space. Density has been noted as low in the proposals of the garden cities movement, and "Vertical density" is advocated in the modem movement's Athens Charter. The former recommendation has led to an open suburban character of detached houses in Large gardens while the latter has led to the erection of high-towers in open spaces. The open space may be considered as a symbolic separation between the street channel and the house or the street-space (27)(Shumacher, 1986 ; 1.41,). The hierarchy of space based on a transitional space from public to private and its coherence are significant factors which are linked to the spatial definition of the street- space and to its quality.


**Figure 14**: Cité Boussouf. Constantine. This plan illustrates the lack of transitional Space and the lack of enclosed spaces. The discontinuity of the built form, which caracterizes modern planning, creates no conceptual space.(Constantine's map).

### 3.3- Conclusion

The urbanisation has brought complex problems in the city. The organisation of individual and public realm became urgent. Moreover the circulation of goods, workers was a huge problem even in that era. This may explain the emphasis on transportation requirements , which did not. provide the city with a recognizable framework and a comprehensible urban context.

With the advent of the modem movement in architecture and planning, the city became an assemblage of large areas (residential areas, industrial areas, business areas, etc ) . The consequence of this separation of functions is acute for the street, which lacks a variety of uses and activities and so is reduced to the role of mere circulation. The transformation of the block, the reduction of the depth of the plot, app e a r t o beat. the core of the functionalist approach and have participated in the creation of the maze-like pattern of some modem developments.

The concept of "the building in the park" has led to the separation of the street-channel and the built space on the one hand and has impoverished the spatial quality of this open space and led to the loss of transitional public/private spaces on the other hand. The importance of the interconnection between the buildings and the street space emerges (section 1,6.3 above ) . Urban zoning has contributed to social segregation. Residential areas are social areas: in each unite (or housing estate) uniform social categories may often be identified. this segregation does not. encourage social interaction . The growing dissociation between dwelling, work, leisure, consumption and the use of the car, has contributed to the disintegration of the urban community. Furthermore the conditions of work and implied timetables, the spatial mobility of people within a city or from one city to another, have reinforced this spatial separation. The concept of neighborhood, its spatial and social connotations, was no longer viable in many developments.

On the other hand, this overview pointed out, that the industrial era may be a source of valid technologica1 and operation al device to solve the problem of traffic circulation which is embedded in our daily life. Architects in the 1950s became aware that the subordination of the design of cities to the modem movement functional and rational principles and the consideration of the street as a mere traffic channel in the preceding decades did not bring the social blessing they have believed in.

The awareness of potential and existing underlying mechanisms of human behavior was lacking and the benefit of understanding precedent city models and design principals was not recognized. It appears that modern planning theory (since Haussmann) has been highly deterministic.

The most elusive variable in terms of physical planning is the configuration of the public environment. The design of the street space continued to illustrate this observation through the utopian architectural projects in the next chapter.

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## CHAPTER 4: THE FIRST ATTEMPTS TO BRING TOGETHER STREETS, BUILDINGS AND PEDESTRIANS

### 4.1- Introduction

The street has been at the core of different new design proposals and concepts particularly during the first half of the twentieth century. Large scale development and large scale urban housing have been “innovative”. The urban architectural models and traffic management approaches which emerged in the 1950s, mainly as a consequence of dissatisfaction with the functional hierarchy of concepts of the modern movement and the growing problems of traffic due to an increase in the use of motor vehicles, have been selected because their application has had important consequence on the concept of the street. They are examined in order to clarify the misconceptions which prevailed in the consideration of the public/private interface and to point out the narrow scope within which the street was considered .

### 4.2- The utopian forms of the street in urban architectural projects

The major theme explored in the new design was the reformation of society within a new city form and community groupings on arbitratry basis were estabilshed. We may distinguish two different attitudes. The first highlights the relation between the city and the country (see section 2.2.2). The second illustrates the technical achievements in term of form and structure illustrated by the megastructural projects. Mobility was the main issue addressed in these designs.

Academic works, competitions, and conferences form the evidence which since the 1950s attests to the preoccupation with the quality of urban space. The fragmentation of the city plan into functional zones, the "building-in-the-park" principle, and the independant circulatory system did no t. bring the ideal environments they envisaged. Urban living space was subordinated to functional preoccupations and did not take into consideration the complexity and the variability of people's psychosocial needs.

The second stage of The Congres Internationaux d'Architecture Moderne (CIAM) (1933-1947) was dominated by the personality of Le Corbusier who, in his proposals "City of Three Million" and "Plan Voisin", had denounced the "rue corridor" but the third and final

stage of CIAM (1947-1958) saw the hegemony of liberal idealism over the materialism of the early period.

The CIAM (6) held in Bridgewater in 1947 and CIAM (8) held in Hoddesdon (England) in 1951 and the CIAM (9) held in Aix-en-Provence (France) in 1953 give evidence for the questioning of the modernist approach and highlighted the preoccupation of the participants with a new approach to urban space which would take into consideration the complexity of human needs in relation to the built environment (1) (Shane, 1978; 154-155).CIAM 6 was called to examine the core of the city. This theme was prepared under the auspices of the English MARS group which continued to develop it further for CIAM 8. Some participants questioned the segregation of functions, attacked the preoccupation with traffic, and praised Mediterranean public life style with its parade.Van Eesteren identified the problem by asking "whether the elements we are introducing are really in accord with the actual habits and desires of the people of the town", while Bakema noted that "there is an absence of what one can call 'the element of the core' in our social life today and we need to find forms to crystallize such elements" stressed the need to take into account walking distances and man ' s angle of vision and his well being (2). A new interest arose in the continuity of human experience "How did those before us handle certain problems?" (3).

This diverging movement led to a decisive split which took place at the CIAM 9 where a new generation led by Alison and Peter Smithson and Aldo Van Eyck challenged the Athens Charter and searched for the structural principles of urban growth and for a significant urban structural framework which would support the individual unit (wel1ing) (4).

Basing their statements on the analysis, in 1950, of the sti11-existing East End London bye-law housing which dated from the turn of the century, they drew on notions of Identity and association, and highlighted the sociocultural vitality of the street:Man may readily identify himself with his own hearth, but not easily with the town within which it is placed. "Belonging" is a basic emotional need-its associations are of the simplest order. From "belonging" -identity- comes the enriching sense of neighborliness. The short narrow street of the slum succeeds where spacious redevelopment frequently fails (Smithson, quoted in Frampton) (5).

The conception of the Golden Lane Housing proposal of 1952 was based on this appraisal.

### 4.2.1- The street in The Golden Lane Housing proposal

The Smithsons are considered the pioneers of the idea of the generic street in modem theory (6). Their aim was to build a network of pedestrian streets embedded in the built space. The approach they proposed took account neither of modem architecture nor of the earlier historical context; in other words neither Le Corbusier and the functional city, nor Sitte's traditional model were taken into consideration. The Smithsons proposed a new model in which they viewed an ideal community built up from:

> **a hierarchy of associational elements... (that) tries to express these various levels of association (The House, The Street, The District, The City)... The problem of re-identifying man with his environment (contenu and contenant) cannot be achieved by using historical forms of house groupings, streets, squares, greens, etc., as the social reality they presented no longer exists** (7).

The redefinition of the street emerged at the moment when Team 10 drew apart from the other members of the CIAM. The Smithsons and some other members, at CIAM 9, Aix-in-Provence, in 1953, observed that the functional hierarchy of the Charte d'Athènes - the House, the Group-the Community, the Core, had proved unsatisfactory to produce solutions for the problem of dwelling. They referred to the lack of social support which appeared in the housing projects based on these principles. The street appeared as a major issue in this evaluation, and its importance as a vital living space was highlighted:

In the suburbs and slums the vital relationship between the house and the street survives, children run about, (the street is comparatively quiet), people stop and talk, dismantled vehicles are parked: in the back gardens are pigeons and ferrets and the shops are a round the corner : you know the milkman, you are outside your house in your street . Furthermore, the urban dimension was identified. The street was regarded as "the second finite city element" which articulates the "first finite city element" , the house, to the "third finite city element", the district (8) . However if the "idea of street" (considered in relation to the house and within the city) was retained, its previous form was dismissed.

The Golden Lane Housing proposal was based on a pyramidal order of House, Street, District, and City. The house was clearly the family unit; the street was a System of one-sided

large gallery access elevated into the air which was meant as a semi-public space which would create a link between houses . The district and the city were regarded as variable domains that lay outside the bounds of physical definition. Ease of movement and possibility of increasing the density as the total population increases were two major considerations. The elements maintained were that of enclosure, of creating effective group-spaces (the re-identification of the street as the outside of the houses), and the effectiveness of horizontal communication,, by contrast with vertical communication between housing was pointed out.
The Golden Lane Project was based on the following assumptions , which stemmed from questioning of the modern movement, the analysis and bye-law streets , and the intensity of social interactions in tower blocks:

i) That horizontal communication at the same level is more effective in forming friendships than vertical communication.

ii) The element of enclosure may encourage encounter.

iii) The street when it had a large number of people dependent on it for access would not be a corridor but a place.(9)

The Golden Lane Project , although it is established on a critique of the modern movement still presents some features of the modern concept of space , such as the building in the park , vertical density , which result in urban discontinuity and the non – identification of backs and fronts.

Three developments, illustrating the “street in the air” concept have been built in constantine in the late fifties and in the sixties: cité les Chasseurs, cité Benboulaid, cité el Bir (fig 14). The apartments were were entred directly from an exterlal corridor located at each floor. These multilevel streets have all been integrated within the internal space of the flats not only because the appartments are very small but also because of numerous problems such as people gathering and making noises in front of the house,
children playing at any moment and the question of keeping it clean.

**Figure 15**: Cité Les Chasseurs. Constantine. This development is an illustration of "the streetin the air" concept. (Constantine's map).

**Figure 15**: View of the "street in the air development", Cité les Chasseurs, Constantine (the author).

This "street" is the realm of many problems because there is no boundary

Between public territory that is the responsability of the city (council) and
The private territory which is the responsability of each resident. (author, 2008).

In Sheffield, England, a housing project using essentially the same idea of street decks as the Smithson's Golden Lane Project was built. The appartments were entered from an exterior corridor located at every third floor that ran the full length of the turning building. Its width was important- 12 ft- which allowed gatherings, children's plays and even deliveries by small vans. After six years , a survey was undertaken ( one in five tenants gave their reactions). The decks as a means of access were very successful : people liked the fact that they were "dry", "sheltred". However the decks were little appreciated as generator of social gatherings.

The Smithsons in the Golden Lane Project attempted to develop a web of "streets-in-the-air" within transformed unite type housing blocks. Similar approaches may be identified in the following projects: Louis Kahn for Philadelphia, Bakema for Tel Aviv, and Woods for Toulouse-Le Mirail in which a multilevel network, or platform section, with or without buildings attached on the sides, was developed . These projects were based on internalized, raised, artificial ground levels for pedestrians and a system of channels at ground level or below devoted to motor traffic.

Le Corbusier's project *1'Unite d'Habitation is* elevated from the ground on "pilotis" and interior streets run through on every third floor. The roof was to be used as a surface for play "because the roof is quiet and safe , unlike the urban street" (10). Jenks sees implied in this project the lack of public realm and political space that are implied in an autonomous unit of this nature (Jenks, 1973; 147).

Many criticisms have been directed at the work of the Smithsons and that. of the Team 10 members, the so-called avant-garde of the multi-level city (11). Le Corbusier claimed that the segregation of pedestrian and vehicular traffic , the building in the park , and the street in the sky , were the fundamental conditions which put man in contact with nature .The "rue – corridor" was considered obsolete. Le Corbusier 's determinism and unbalanced jugements (total praise for the former type and scorning for the latter) appear to have been the main reasons why solutions in which the positive aspects of both models could have been tried out did not eventuate.

The rationalization process of the 50s has been compared to that of the CIAM and a common theme bas been found, namely the lack of urban continuity, the spatial weakness of the articulation between the house and the public space. Moreover their mode1s fail to generate the generic form (based on the psychosocial attributes of the traditional street such as neighborliness at which they aimed, because of the spatial configurations they adopted. This may be identified as follow:

- The Golden Lane Project did not have a yard that was in any way corresponded to the bye-law street and the street itself was separated from the ground and did not accommodate community 1ife.
- The street in the Golden Lane project, characterized by its one-sided nature had only the capacity to stress the linearity of the route rather than to support a community 1ife which in the bye-law street was strongly linked to the presence life on both sides of the street .

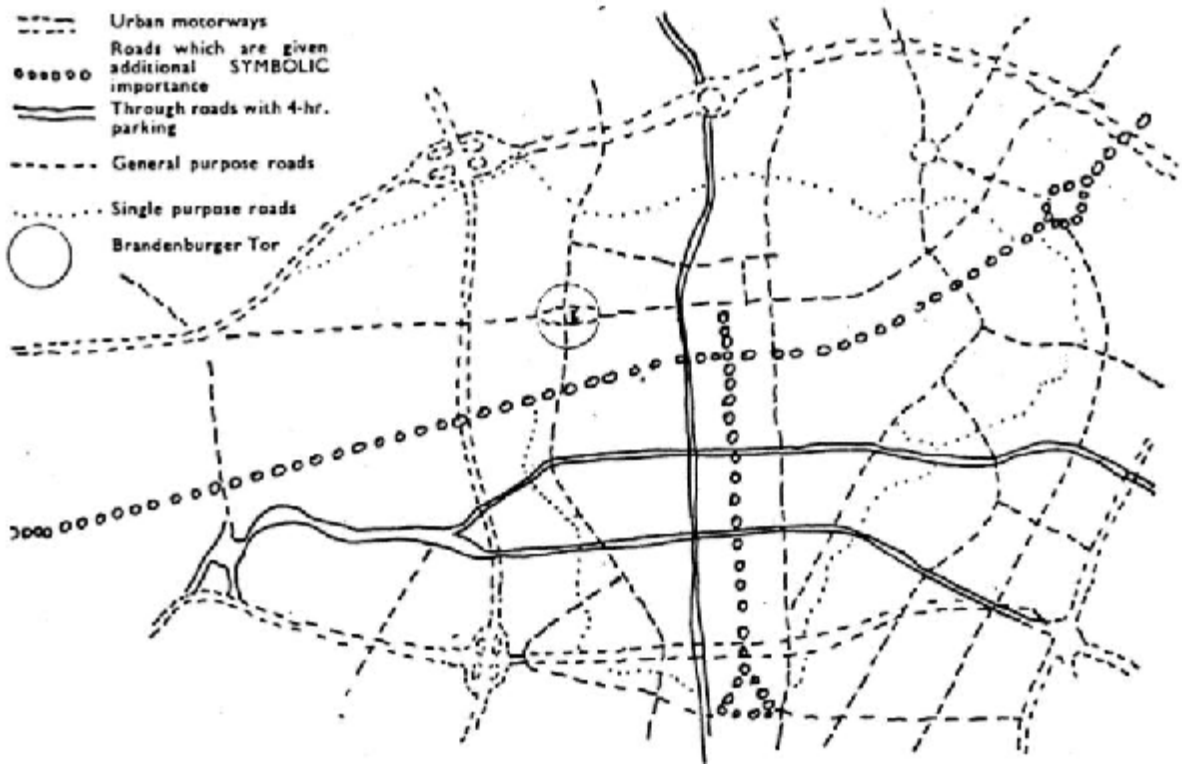



**Figure 16**: Hauptstadt. Berlin by Alison and Peter Smithson and Peter Sigmonde- Wonke. Hierarchy of vehicular routes. (from Nitschke, 1974, p 169).

- The segregation of traffic and the devotion of the ground level to the motor car have been highly criticized (11).

The Smithsons readjusted somewhat their commitment to the multi-level city. They produced critical sketches of their early career in which they recognize that above the sixth floor one lost contact with the ground . The freeway failed to impart 1andmark identity to this important size and at, the same time its large scale did not provide for those needs of association and identity (12). Following their argument, that habitat should be integrated into the 1andscape, the Doorstep became for some members of Team X "*la plus grande réalité du seuil"*): "Hearth and doorstep are symbols which used together present to most men's minds the image of a house "(13).

### 4.2.2- The Street in the Technological "original" cities

The responses to the problem of accommodating future growth emerged through projects domonated by a sense of analogy. Schemes of large buildings of a massive, even monumental supporting frame which would house all functions or part of the city functions and which might be constructed of modular units, capable of great or even unlimited extensions, a structural framework into which smaller structural units ( for example rooms , houses , orsmall buildings of other sorts) can be built, or even "plugged-in" or "clipped-on" after having been prefabricated elsewhere, a structural framework expected to have a useful life much longer that that of smaller units which it might support (14).

The most extreme subordinations of all other functions of the city to the gadgetery of traffic and precinct separation are probably, according to Jane Jacobs (15), the theoretical studies by Louis Kahn , Which are enormously influential in US school of design today. In his suggestions for the renewel of the Philadelphia city centre in 1953 Louis Kahn tried to relate architecture organically to types of movement: "Architecture is also the street. There is no order to the movement on streets at the moment. Streets look alike, reflecting little of the activities they serve- Carcassonne without walls, cities without entrances, indiscriminate movement without places to stop. The design of the street is the design for movement".

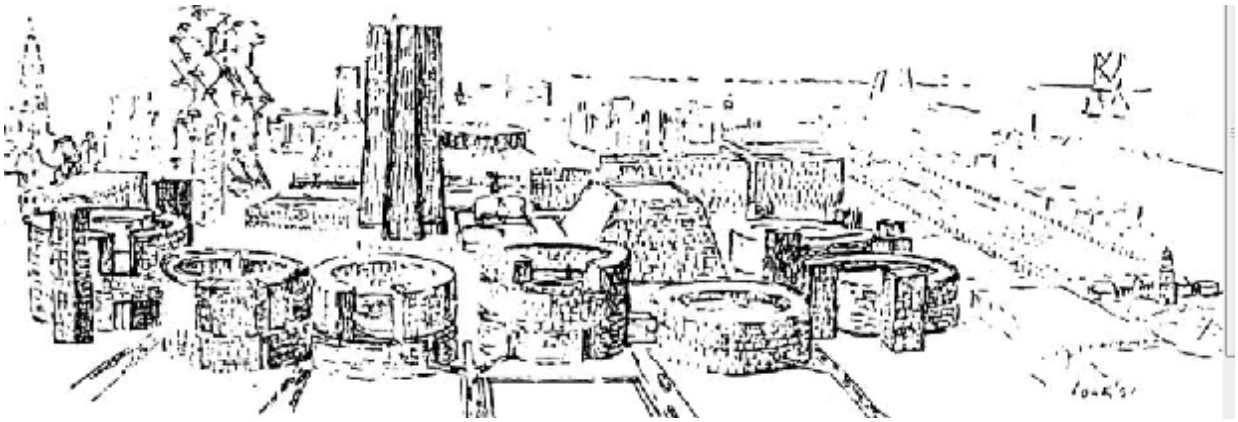


Figure 17: Louis kahn1956 study for Philadelphia.
(from Nitshke, 1974, p 170).

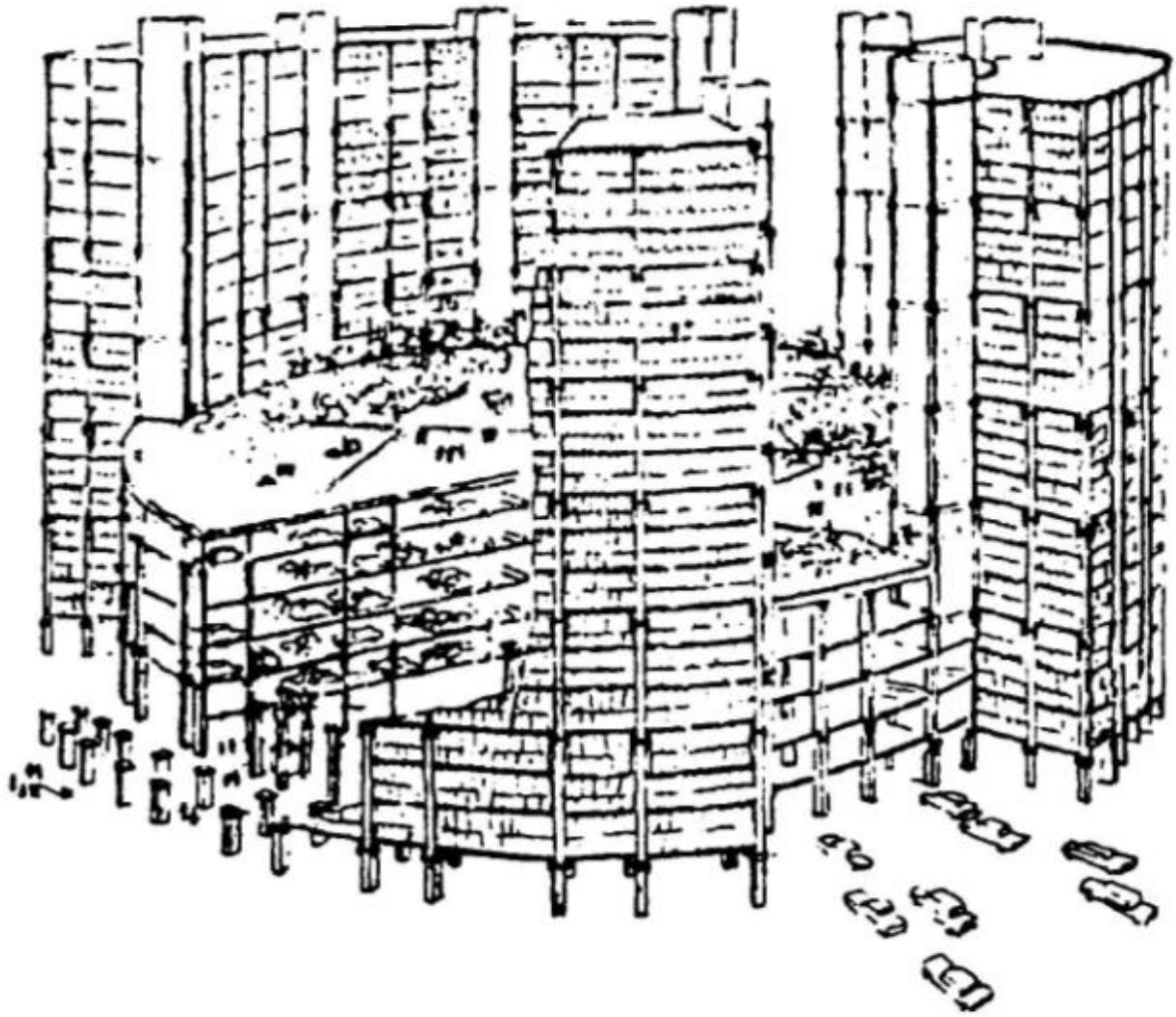


**Figure 18**: "Port". A 1956 drawing by Louis Kahn showing a parking garage With offices, shops and hotels on its periphery.
(From Nitshke, 1974, p 169).

Kahn designed specific streets for the movement of buses and trolleys, specific streets for go-traffic, and others as terminal streets for stopping, etc. He creates an orderly discrimination of traffic. Zoning grows out of the type of movement and architecture tends to relate to the type of movement (figs, 16, 17). He introduces the concept of the “port” as a connection between the high-way speed and the urban motorway (55-70mph) and the much slower speeds to which he intends to have the center restricted .

The following definition given by Maki (1984) (16) to "Collective Form" contains two paradigms in addition to megastructure which ought to be included because they may be considered as "versions" of megastructural forms:

- Compositional Form: groups of buildings composed according to modem movement precepts (e .g. Brasilia).
- Mega-Structure: a large structural frame containing all the functions of a city, mostly housed in transient short-term containers.
- Group Form: accumulation of identical elements of specific massing and spatial patterns (such as historical hill-towns) .

In the next section will be reviewed three ideologies and concepts which may be identified within megastructural forms of cities and which have drawn a large attention. Developed in the 1960s, they referred to a new definition of public space on the whole and consequently to this of street-space.

The English Archigram group ideology was closely tied to the so-called technocratic theories of American innovator Buckminster Fuller. Both adhered to a 'high-tech" light weight infrastructural approach which took its form from science fiction models. In effect the solution, although an outstanding graphic, was unlikely to be realized and its use by society would be problematic (Frampton, 1976; 291). Public participation consisted of manipulating the controls of sophisticated technical installations managed by experts staff, massively computerized and connected to national electronic linkages. However the famous Plug-In City by Peter Cook was presented in an unprecedently comprehensive design for a mega city. It gave a level of detailing from which, Banham assumes, a working mode! could be built (17).

Among the monumental urban structures of the metabolist group, Isozaki's sketches of gigantic Doric temple was a subtle suggestion to the long lasting image of the machine.

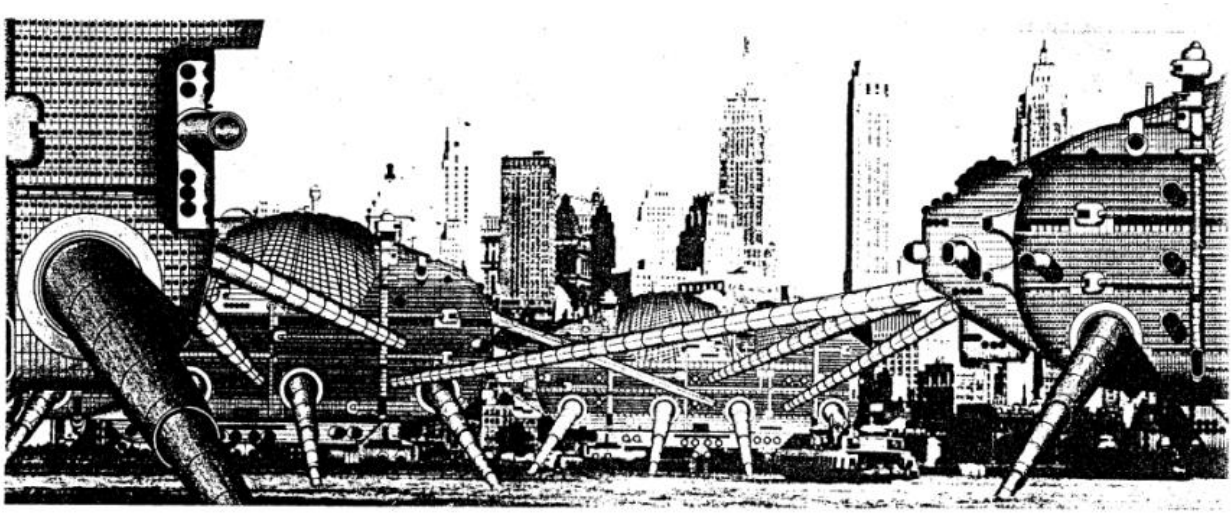


**Figure 19**: "walking city" by Archigram. (Banham, 1976; p. 36).

**Figure 20**: "Spatial town" by Isozaki.
(Banham, 1976; p. 30).

Key metabolist features were identified by Kenzo Tange in 1959 when introducing Kikutake's projects :

In this project the architect is thinking of the future of the city. He has divided it into two elements, one permanent and one temporary. The structural element is thought of as a tree -a permanent, element, with the dwelling units as leaves- temporary elements which fall down and are renewed according to the needs of the moment. The buildings can grow within this structure and die and grow again- but the structure remains (18) .

The emergence of metabolism in Japan is related to a new monumental manner of using concrete to a peculiar visual affect and to the necessity to create artificial land in overcrowded cities. The different elements, of different geometrical forms, would have different rates of metabolic-change.

The first major scheme acknowledged as a megastructure was by Kenzo Tange, namely the Boston Harbour project in 1959 [Fig.29]. This scheme features a central monumental axis of governmental and other public buildings along a pair of parallel highways. The human scale is totally missing in this project:

> **an enormous over-water communications structure connecting megastructures, served by megastructares, and made of megastructures** (Banham, 1976; 51).

Although some critics recognized the quality of this type of Project as "a work of art in its own right", and although social and financial justifications presented by Tange (the sea becomes the "land" on which congested cities can expand, that people would riot have to commute, prosperity, etc...), many critics considered it incomprehensible to ordinary human beings (Banham, 1976 ; 54).

The Japanese Megastructure movement s (1958- 1962) influence on European architects stimulated a climate of challenge. *Urbanisme spatial,* a French concept (built by a Dutch painter-utopian working in Paris Yona Friedman ), has been defined as a very light network carrying multi-level and, usually, changeable provision for the whole life of a city, and its appellation, "spatial" is chosen to give a notion of liberating the plan from the ground. The development by engineers of lattice structures and some tension models made "visions" -twenty or more Eiffel Towers connected by bridges, roads, and platforms (Persitz, 1962; *2,* quoted in Banham, 1976; 57)- realisable, at least on a rectangular pattern.

Yona Friedman is the best known figure among urban *specialistes* because of his body of ideas: he sees mobility and change as basic human needs -change within the house (and mobility of the house's location- within the "urban frame" as an amusement or "play" ,

### 4.2.3 - Distribution as an attempt to associate architecture and planning

Candilis, Josic and Woods in Le Carré Bleu (1961) (19) highlight the importance of correlating architecture and town planning. Town planning is defined as the organisation and the distribution of activities when architecture is the housing of these activities. The problem of mobility is at the core of their reflexions. They proposed:

1-To distribute ancillary activities throughout the domain of housing insted of localising them in certain fixed places, to bring together as many activities as possible, to bring the sum of life to all parts. A linear organisation ( a line has neither shape nor size) is the truest reflection of an open society.

2-To define the use of the automobile which covering greater distances in shorter times, enables us to imagine a totally new organism in which vehicular and oedestrian traffic is entirely independent.

3-To determine points of contact between transportation and dwellings as a way towards the realisation of a collectivity and hence to the identification of the individual.

4-To re-establish multiple access in collective dwellings, to have more than one way into one’s house.

Two principles, the “stem” and the “web” , may be underlined in their proposals. The former principle corresponds to a pedestrian street in which commercial and leisure activities are housed (in the buildings “defining “ the street-channel) and in which human interactions are encouraged . The latter is a system of interconnected stems. Both the stem and the web are open-ended and can grow and change.

Toulouse Le Mirail (figs 21-22) which is the extension of the city of Toulouse in France to house 100.000 inhabitants illustrats their approach.

The plan shows a linear center accomodating habitat and used also as a structuring device. The stem contains commercial, cultural and leisure activities. Housing units are plugged into the linear system of relationships. The segregation between pedestrians and vehicules is one of the intention of this team: parkings,service roads and courts are provided to free the pedestrian in his movement. The buildings along the stems are of six, ten and fourteen storeys with streets -in-the air through buildings.

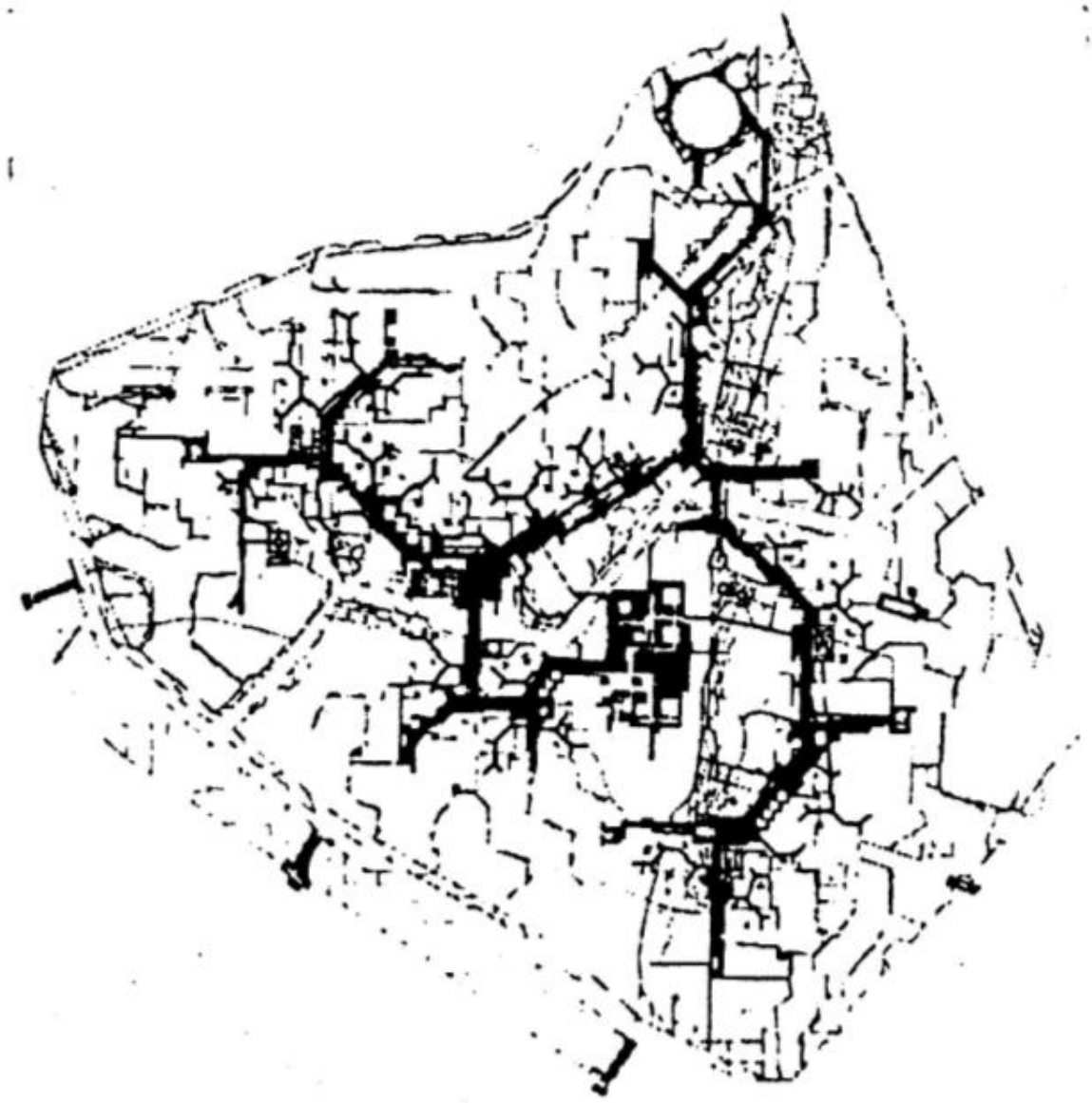


**Figure 21**: Toulouse le Mirail : the development of a new town planning which

,Although in search of a reconciliation between architecture and planning still dissociated vehicular and pedestrian traffic. (from Architects Year Book XI; p. 190).

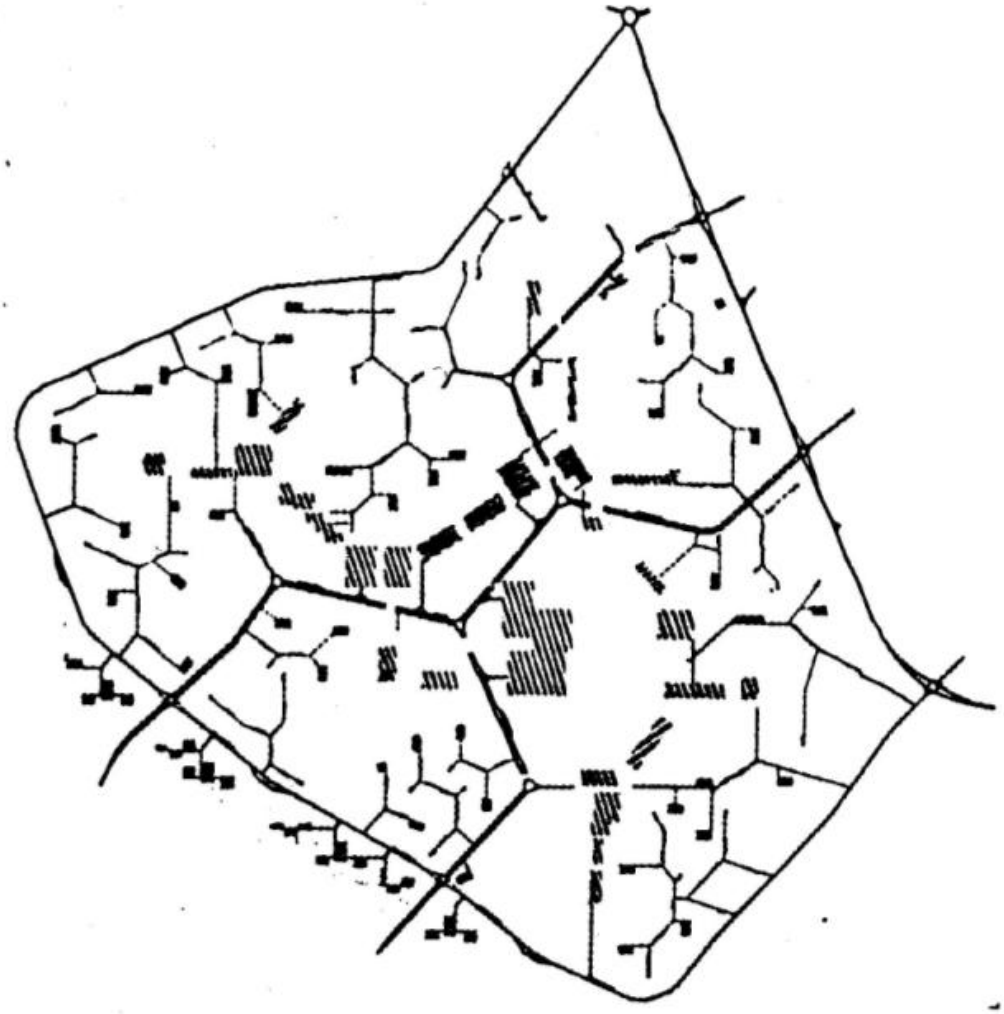


**Figure 22**:Toulouse Le Mirail. Roads and Parkings. Hatched areas represent parking under the pedestrian ways and plazas.(from Architect's Year Book XI; p 190).

### 4.2.4- Appraisal of the street form in the urban architectural projects

1970 may be considered as the year when the megastructure, after being institutiononalized by the academics as a concept, became a buildable proposition. Megastructural projects such as Montréal's Exp'67, Scarborough College, and Cumbernauld Town Centre had been commissioned in the early 1960s, which gives an idea about how long it takes to realize projects of this type, Most of them were based on the use of raw, off-the form concrete which was highly fashionable at the time. Universities were the most consistent clients for magastructural buildings, where , as with Japanese metabolists,

distinction between permanent structures (faculty and teaching laboratories) and the more transient structures (student housing) was made.

With the rise of urban design theories in the 1960s the universities appeared to present an ideal model of an urban plan on a limited scale (eg Scarborough College, England, McMaster University Health Sciences Center, Hamilton, Ontario). The concept of a pure pedestrian street "street-campuses" (Banham, 1976; 131) as a human environment and as a device to articulate the different parts was extensively discussed and projected (Banham, 1976; 130-131). In addition Candilis, Josic and Woods' project for Frankfurt, in 1963, may be considered a "positive" form of megastructure, or rather as a compositional form which made a return to the vernacular while presenting an orthogonal counterform.
It was considered by Frampton as a moderate and buildable proposition (Fig . 23) This group not only endeavoured to cater for the motor car but also to continue the tradition of urban culture. This stage of critical interpretation of Team X was a response to Van Eyck's appeal for an urban form able to house a pluralistic society (20).

**Figure 23**: Candilis, Josic and Woods Project for Frankfurt, 1963. (Candilis, 1978; p 16).

It was considered by Frampton as a moderate and buildable proposition (Fig 23). This group not only endeavoured to cater for the motor car but also to continue the tradition of urban culture. This stage of critical interpretation of Team X was a response to Van Eyck's appeal for an urban form able to house a pluralistic society (21).

Even Banham, who is known for his support for technocratic ideology found himself caught up with a list of refutable arguments in his attempt to legitimize positive opinions, images and usages of these projects. He cites (22) the advantages of the concentration of social and commercial activities in a single location, put it into a historical perspective and recalled its popularity with architects. But he overlooked other features of these historical models which have specific character in term of density, layout, public private transition, and neighborhood concept.

Banham cited monumental and symbolism, in the tradition of Giedion the author of the polemical Nine Points in monumentality written in collaboration with Fernand Leger and Jose Luis Sert in 1943. The reaction in favour of monumentality was initiated by some members of C1AM in the late 1940s. Some scholars (23) suggest that in fact the attitude of some members of CIAM at that time arose because the practice of architecture was facing a problem of representation. It has further been argued that monumentalism was a form of the large centralized authoritarian state and by definition unable authentically to represent the hopes and the desires of people as individuals.

The form of public open spaces for small gatherings is totally missing in these structuralist functionalist projects. This may be due to the impoverished relationship between the building as whole and the individual domain and between the unite (the house) and the public space. Most of the authors of megastruotura1 projects "attempted to reduce dwelling to the individual capsules" (24 ) . On the whole the individual human scale tended to be overlooked ( section 4.2.2). Banham , after a thorough analysis of the possible (positive) meanings of megastructure, joined Peter Hall, who considered megastructural visions as "monumental follies" with the exception of Beaubourg Centre, and concluded: Peter Hall was obliquely right; "autodestruotive" was a prophetic as well as an important word, *and* since no architect who considers himself worthy of his craft can bear to stand by and see his design destroyed, especially grand designs on the scale of the cIty, megastructure proved to be a self-cancelling concept (24).

This study of magastructural projects points to the negative impact on social life of zoning, of imitating the design of cities to finding solutions to rational problem such as

production , hygiene and transportation, and finally of the break-down in human experience due to this of urban planning and architecture (26).

The condemnation of post-war urban solutions in the 1970s came from many scholars. In the recent years one may observe that there is a tendency towards a greater horizontal density in the design of housing layouts, which has brought more support to public life within the street space. The reconstruction of a vernacular language was officially established by new planning framework which defines standards of building design, housing layout and aesthetic criteria. This can be found in the Essex County Council's Design Guide For Residential Areas (27).The Guide was written to improve the environmental quality of" post-war housing and to re-establish the local identity which, as in other areas, has been subject to erosion (28.

The Luxembourg architects Robert and Leon Krier raised the importance of the study of the 19th century European city, with its pattern of streets, squares and quarters to provide "desirable models of collective life" (Krier quoted in Maitland), as opposed to zoning of planners, and highlighted the relevance of the concepts of urban space as discussed by Camillo Sitte (29). The traditional street corridor and the square room are claimed to be the elements to which the reorganisation of the city should be subjected. In addition the interrelation of building block and urban open space have been considered significant. The size of the building block, its density and form, have been examined in order to demonstrate its effect on the character of public space. Their study of historical precedents begins with an arbitrary categorization of all types of urban spaces as either streets or squares (30) and they are further classified according to their basic geometry: square, circle and triangle, the number of entrances and the proportion of wall or side to entrance [.Figs . 31-32].

The foreword to Krier s Urban Space ( ***Stradtraum)*** by Rowe (31) contains a relevant and balanced assessment of the "exhaustive encyclopedia" of urban spaces which has been put together in this text. Firstly, Rowe observes that Krier, in his search for a harmonious space/object equilibrium, order and accident, seems to show an exaggerated preoccupation with space at the expense of the object. Secondly, public spaces are defined at the intersections of prime movement, an assumption which underrates the problem of traffic and its psychological effects (one would better choose the safer channel of traffic). Thirdly, Krier

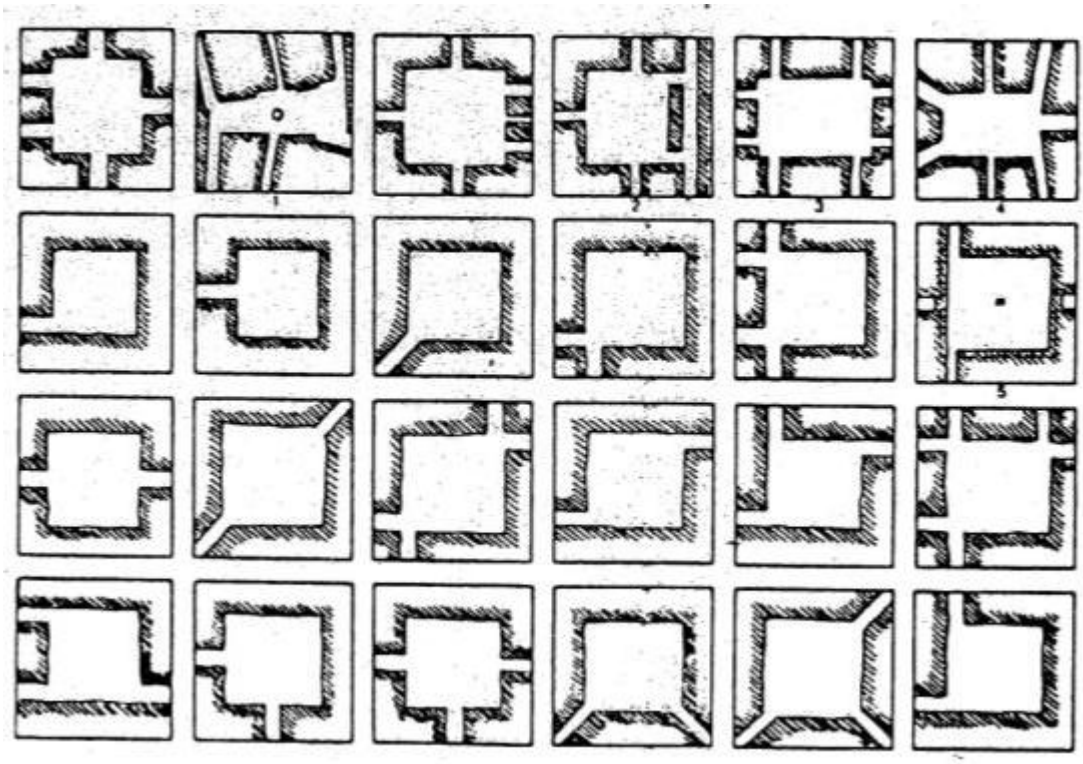
is compared to Le Corbusier (by Rowe) because both are recognized to have failed to perform "the most necessary of operations, the discrimination of back and front". Finally too much attention has been given to the façade and too little to the hierarchy public/private .

Classification of urban spaces by Rob Krier.

This approach to urban space concentrates on three geometrical basic shapes and some modulating factors ; the third dimension , the social meanings, and the city as a whole appear to be overlooked

(see the forward to Urban Space , by Colin Rowe)

(Krier , 1979 ;29]



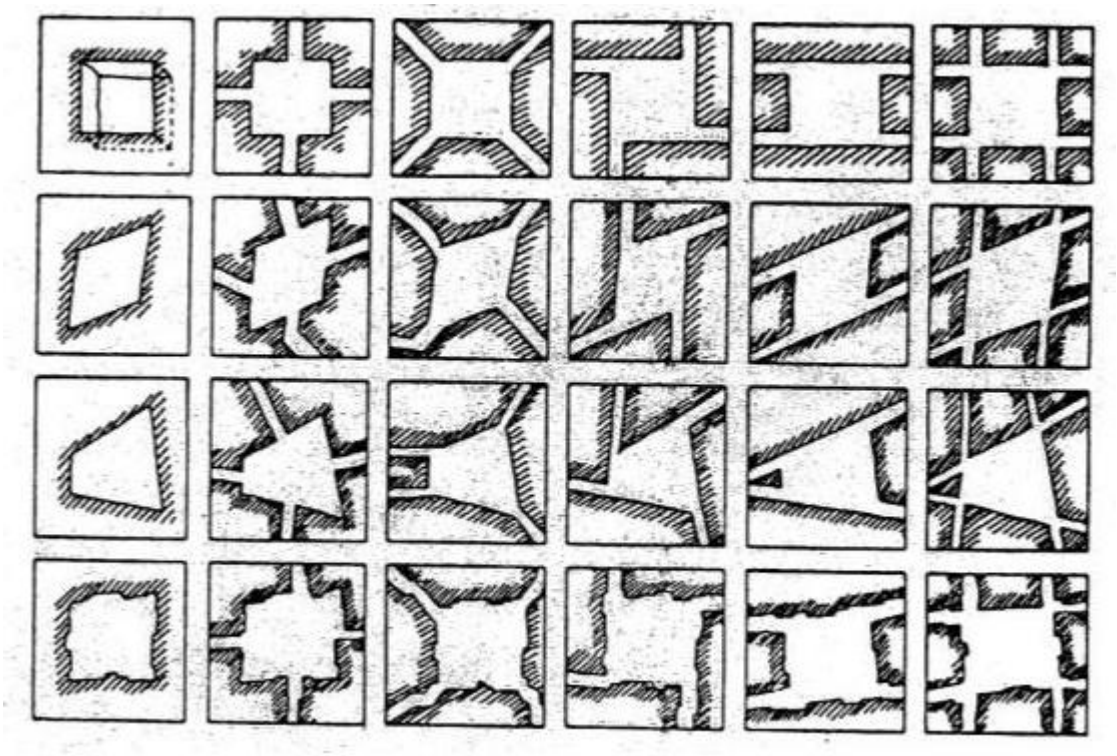


**Figure 24**: Morphological series of urban space.
Regular and irregular geometrical shapes of streets and squares . This encyclopedia of shapes appears to be too narrow and puts emphasis on aesthetical mlatters, “it offers a closed system which dismisses innovation and creation and allows only transformational recombinations”(Shane , 1979 ; 187).
[illustration from Krier , 1979 , 30-31)

### 4.3- Traffic supervision schemes

#### 4.3.1- Introduction

The development of the motor-car and its penetration into the confined streets and spaces of our cities marked an era of drastic change. A mechanistic approach was developed in an attempt to find the best technical management to deal with the problem of traffic congestion, and the pedestrianisation movement stemmed from this in order to create a safe and comfortable street-space for the pedestrian. These two approaches were based on the segregation of cars and pedestrians.

#### 4.3.2- Safety and the design of the street

The authors of the Radburn principle, Stein and Wright (32), recognize that their aims were not only to follow Howard's theme of towns of limited size surrounded by green belts , but mostly to produce a town in which people could live peacefully with the automobile. They began a radical revision of the relationship of houses, roads, paths, gardens, parks, blocks, and local neighborhoods. In addition the gridiron street pattern such as they found in the garden city Sunnyside, built in 1324 was rejected because of its limitations "as a setting for safe mot or -age living" (33). They recommended:

1. the superblock;
2. specialised roads planned and built for only one use. A strong differentiation between pedestrian and vehicular movements as well as servicing$_5$ parking, and visiting;

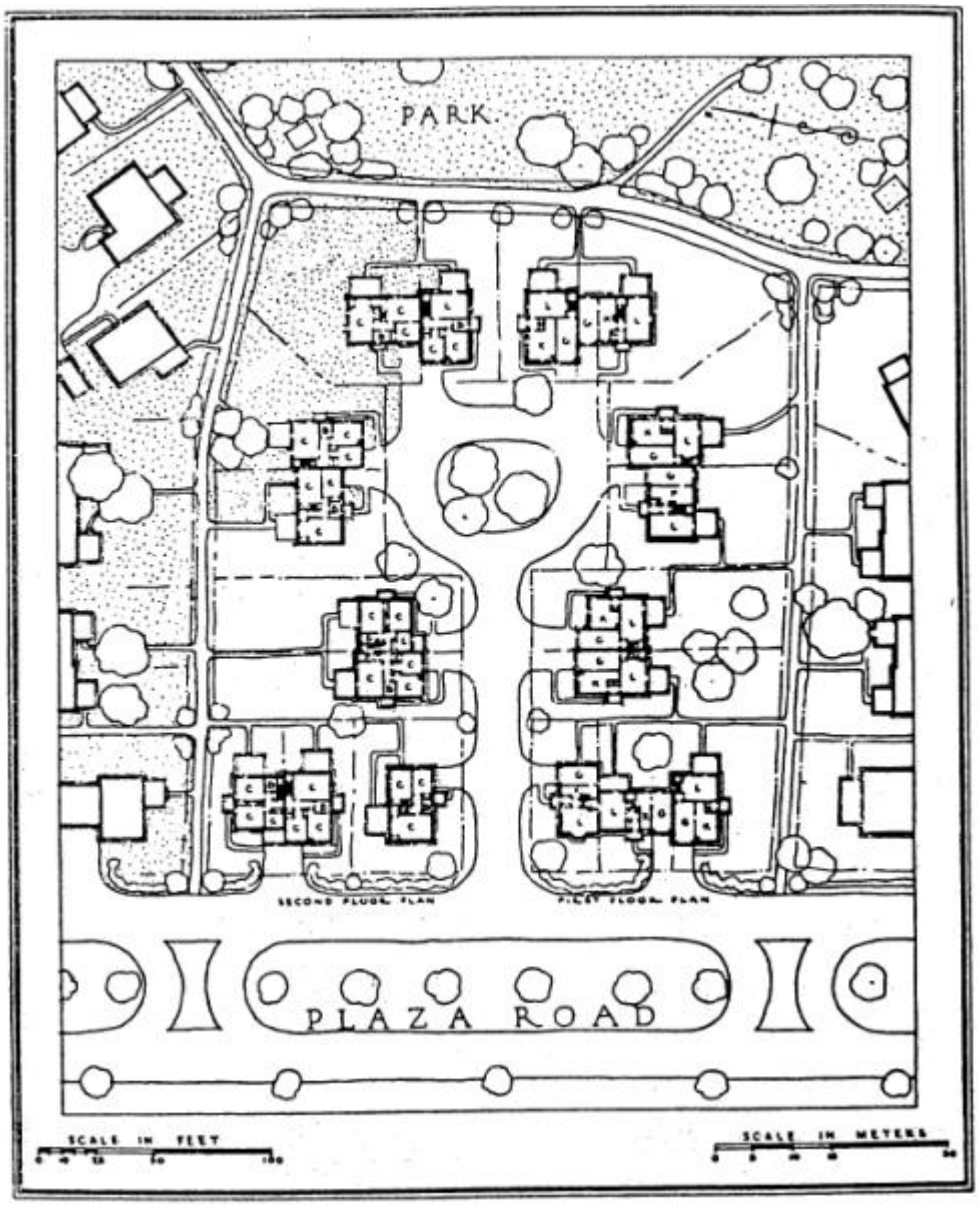



**Figure 25**: System of traffic in Radburn.
The superblock was penetrated round the periphery by cul-de-sacs and had a central core of parkland crossed by footpaths which connected system of underpasses and overpasses when the footpaths crossed roads. ( from Stein, 1966. 56).

a. service lanes for direct access to buildings;
b. secondary collector roads around superblocks;
c. main through roads linking the traffic of various
sections, neighborhoods and districts;
d .express highways or parkways for connection with outside communities;

3. Complete separation of pedestrian and automobile, or as complete separation as possible; walks and paths segregated from roads and at different levels when they cross. For this purpose overpasses and underpasses were used. This was achieved by replacing the normal rectangular street block with a superblock of 30-50 acres which was penetrated round the periphery by cul-de-sacs and had a central core of parkland crossed by footpaths only, and containing schools, play-grounds, and swimming pools;

4. Houses were turned around. Living and sleeping rooms faced towards gardens and parks; service rooms towards access roads;

5. Park as backbone of the neighborhood. Large open areas in the centre of superblocks, joined together as a continuous park.

Some studies have been carried out in Britain of subsequent developments of the idea behind the planning of Radburn. It appears that there is no definitive example of it; each scheme omitted one or other of the original elements and possibly improved on some others (34).

A "Report of a User Study" (35 ) has examined a number of low - rise estates of the Radburn type to find out how the Radburn principles have worked out in practice . the following assessments have been presented:

a. The length of the distance (to walk) from one place to another was more deterministic in people's choice of route than the problem of safety.

b. Front access to the road appear to be more convenient than a rear access to a service court.

c. The occupants of houses facing internal foot paths appreciated this situation which offers a relief from the noises of vehicles, but on the other hand this advantage appeared to be offset to some extent by the noise from children playing. Residents whose homes front on to the peripheral road were likely to suffer greater disturbance than those living in conventional estates.

d. The pattern of children's play did not appear to be influenced by the characteristic of Radburn features.

e. While safety was total in the superblocks (to the point of being excessive), pedestrians were at risk when they crossed a peripheral road to reach amenities. Radburn principles, although they had positive goals referring to safety, do not appear to take into consideration the three-dimensional quality of open spaces. People's needs are 1imited to safety only.

### 4.3.3- The split up of the street to ring built urban areas

The street has undergone a major stage of manipulations by engineers and transport planners in the sixties. In Britain the Crowther Report comprised the foreward of the Buchanan Report which addressed the issue of integrating transport and development planning. This idea was first examined by Alker Tripp before the outbreak of the Second World War ( Bayliss, 1984).

The intellectual strength and the relationship between buildings and traffic was considered in Buchanan's idea of road hierarchy (1963).

The environmental problem (pollution, noise) and the decline of city life caused by the traffic volume were formally realised for the first time in Buchanan's Traffic in Town published in 1963 (36). However, this report which had a striking impact on official government and planning policy has been interpreted in many different and often controversial ways. This followed the rapid increase of car-ownership in Britain and the traffic problems that it generated. Working and living conditions were affected by traffic jams, noise, pollution and the visual intrusion of the car.

The team of engineers concluded that the problem could only be resolved with large – scale rebuilding using a new architecture that was evolved to accommodate urban traffic. His approach was called “traffic architecture”. The golden rule was that urban areas should be reconstructed to accommodate existing and future traffic. It also stressed a vigorous programme of urban roads and suggested a pattern of cities conceived as a patchwork of "environmental areas", areas from which traffic (other than that which has business in the area) would be excluded, with the environmental areas both separated and connected by a network of "distributor roads" used for traffic.

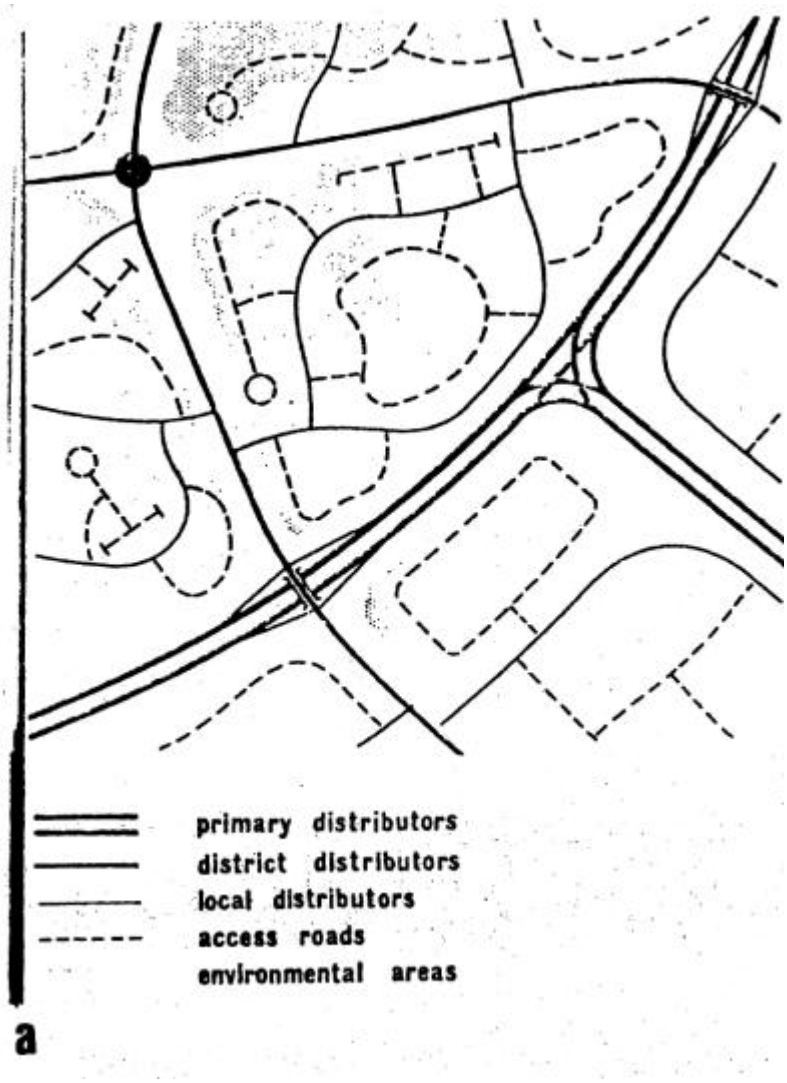



**Figure 26**: The traffic system in Traffic in Town.
Inspired by the so-called Radburn principle, this system has been criticised for its Lack of social content such as freedom of movement and for allowing supremacy of vehicular traffic. (from Buchanan Report, 1963.).

Although traffic networks had previously been introduced in the Radburn layout, the Buchanan Report's effect was striking because it established and popularized an intellectual foundation for the development of a policy to cope with the problem of urban traffic. It was proclaimed that the conflict between towns and traffic stemmed from the physical structure of towns:

The layout of the streets has not been suitable for motor-vehicles.... the design problem, essentially, is a matter of rationalizing the arrangement of buildings and access ways and that in order to provide a door-to-door service.... (37).

To overcome this situation, Buchanan and his team developed the principle of road hierarchy, a principle which originally had been conceived by Henry Wright and Clarence Stein in the late 1920s. It consisted of a network of four main types of urban road (Fig. 21):

(i ) Primary distributors

These roads form the primary network for the town as whole. Ail Longer-distance traffic movements to, from and within the town should be canalized on to these primary distributors.

(i.i) District distributors

These roads distribute traffic within the residential, industrial and principal business districts of the town . They form the link between the primary network and the roads within environmental areas (i.e. areas free from extraneous traffic in which considerations of " environment " predominate over the use of
vehieles ) .

( i.i.i ) Local distributors

These roads distribute traffic within environmenta1 areas. They form the link between district. distributors and access roads.

( iv ) Access roads

These roads give direct access to buildings and land within environmental areas .

An environmental area is conceptualized as a safe area able to carry a maximum level of traffic in relation to the business held in it . Here appears the so called "Buchanan law" which claims to relate accessibility, environmenta1 qua1ity and cost :

It is that, within any urban area as it stands, the establishment of environmental standards automatically determines the accessibility, but the latter can be increased according to the amount of money that can be spent on physical alterations.

### 4.3.4- Evaluation

The environmental areas are still a major public issue and their author a major public figure not only in Britain but in different parts of the word. It created an irresistible pressure for major urban reconstruction to cope with the extra traffic. In fact this report fixed environmental standardsand offered a transaction between traffic and cost. Catering for more cars was the main goal. The critical approaches to traffic in towns have been undertaken in the

light of the subsequent decades of experience. The author himself took part in the debate. Bruton (38) take into account its positive achievements, associated main1y with the practice of the relation 1and-use to transport provision. An outcome of an integrated land-use/transport relationship has been taking shape in the location of new activities on transport nodes such as in the office developments, in Cardiff, which have been concentrated on the Central Station and Queen Station. The exploitation of the public transport System shows the relevance of the planning advice of the Report.

An overestimation of likely future level of car ownership and a lack of any view about the long term for the city have been highlighted in the report. Its objectives, mainly through an evaluation of the experiences in two characteristic cities, London, a metropolitan city, and Leeds, a medium sized provincial city. These analyses, which benefit from a perspective of twenty years, are relevant because they ca1l attention to the urban design interests which appear to be threatened by the concepts and the application of the programme set out in this Report (39).

The sociol content of the concept of environmental areas is is often questionned. Based on the principle of a circulation diagram for a hospital, it proposed that towns and cities should be organised with environmental "rooms", surrounded by a hierarchy of roads for local and through traffic. This argument in favour of roads and the lack of restriction on vehicular traffic taken in conjunction with high density worsened the quality of British cities:"This has placed increasing pressure upon every development that has taken place since the war. The commercial pressures which have legitimately pushed up densities and plot ratios over the years, so that building high has become the accepted norm, have also increased traffic densities without there being any possible compensating improvement to the road networks "(40).

The intricate system of the upper- level walkways above busy roads, the undergrounds at busy junctions and what psychological effects these structures might have on their users. Walking was categorized as an aspect of the environment rather than a major mode of transport which may account for half or a third of journeys. The pedestrian was referred to mainly in the residential area, which is set out according to the Radburn system. A number of footpaths linked the main places, with no special system of tracks for cyclists because it was

assumed that this mode of travel would have declined dramatically by the year 2000 Judge(41) point out to complexity in the movement for the users particularly the childrens and the visitors. He also points to the substantial size of these developments and their social consequences of the destruction. The problems of the communities involved were left out of consideration.The focussing on traffic and the dissociation of pedestrian and vehicular movements have been strongly criticized and considered as a key element which led to the impoverishment of the user's experiences.

But while it may be the case that roads can only be justified in our present circumstances by sternly pragmatic transportation needs, this should not be -and in many cases is not- the only justification for walkways (42).

In the East Island Schema, the gadgetry of circulation and of precinct separation has become an end in itself. Not only the pedestrian, but all of 1ife is subordinated to it. The bit of earth under the sky which the pedestrian inherits as his purest precinct is a cold and dreary platform, little different from the monotonous promenades without promenades that all have become all too familiar in existing housing projects (43).

### 4.4-The segregation stage in existing areas

#### 4.4.1-Introduction

We are at the present stage of economic development , the stage of mass consumption which many regions of the world have reached. It is why many people stand by the analysis and the research which brings the spring of the pedestrianisation process to economical ground. It was pioneered by developers and local authorities who recognized the economic potential of a safe retail street-space (43). In addition, the importance of walking as a "mode" of transport, started to be considered worthy of statistical analysis in the 1970s in some countries. Finally, street redesign was considered as fundamental in order to restore urban life by bringing back people to the city. Admittedly, the effects of motor traffic on towns and the efforts which have been made to improve traffic conditions through management schemes based on the segregation of pedestrians and vehicular traffic, have led to a deterioration of

city life in general and the commercial decline of the city core in particular in most American and European cities (44).

New forms of urban streets have emerged, including traffic-managed streets. Street "livability" is a more recent movement pioneered by environmental design researchers who recognize the importance of the street human dimension (45).

### 4.4.2- The exclusion of the car from commercial areas

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The spread of pedestrian streets is subject to limitations . In general the larger the town, the earlier the exclusion of the car from commercial areas. Pedestrianisation consists mainly of the closing of existing trafficed streets to motor vehicles for the major part of the day, and in using surfacing material and pattern in order to create safe and comfortable conditions for shoppers and to inform the driver and the walker as to the location of major roads parking. Safety of pedestrians may be cited as the main reason , with additional reasons such as civic pride (conservation and protection of historic buildings), and counteracting the outflow of trade activities to peripheral shopping centers (46). However it remains a commercialisation effort devoted to maximising retail sales by creating a more comfortable relationship between moving vehicles, shoppers and shops .

The first street conversion took place in Essen, Germany, in 1929. It went on slowly in several countries until 1945 where a dramatic increase in their introduction is recorded in some European cities- notably in Britain. War damage rebuilding or New Towns construction encouraged purpose-built pedestrianisation (Thomas and Potter, quoted in Roberts, 1981; 16) con In Britain the closure of these streets to traffic did not exclude buses which have been considered indispensable to maintain trade-activities. Surfacing techniques are indicative of an awareness by the traffic engineer of the power of this technique to inform the moving viewer of the hazard of circulation. The security of the users led to the orientation towards this traditional informative surfacing . It has been recognized that signs ar often confusing and their design displays are difficult to get through to the moving driver while paving is considered as a traditional effective technique for the moving viewer (47)..

Research in Britain by the National Consumer Council (1987) of Britain bas been carried out on the advantages and inconveniences of pedestrianisation efforts and the following findings emerged from this study:

In many cases pedestrianisation has been associated with overall conservation policies: wherever traffic has been cleared away buildings of architectural merit become more noticeable and possibly more appreciated. An overall increase in the number of pedestrians using the city centre since pedestrianisation.. Better servicing for shops appeared after pedestrianisation( although all shops had enjoyed unlimited front access for servicing prior to the scheme, in practice it could only take place in the few areas wide enough to allow vehicles to pass). In Addition a better physical environment emerged: the amount of lead in the air decreased from a level approaching maximum to negligible. Noise levels, previously eight times the acceptable level, had fell well within an acceptable level of 68db . The number of accidents involving pedestrians fell. (But accidents involving vehicles damage remain fairly high). Satisfaction with the convenience of bus stops among users was observed. No significant change in the pattern of use emerged, but an increased awareness of the historic environment of the city which may be related to the better opportunity given to observe the surroundings.

The pedestrianisation process was questionned because of the negative effect on other shopping streets which are not pedestrianized. The latter indicates a dramatic decrease in the number of buyers when the commercial rents rise dramatica1ly in the former. This situation added to the increase in the volume of traffic in surrounding residential areas from both through traffic and parked cars led in many cases to the dismissal of the process .

### 4.4.3- The search of a sense of sociability in the street space

A second, smaller, emerging movement in street design and management which has been given incentive by the success as well as the dissatisfaction experienced in pedestrian areas. This movement goes a step further towards the street environment for the social life on street space (fig 23) . The complexities of the street-space must be developped to meet social needs in their complex and intricate dimensions. People may have the resources to modify their environment as a defense against traffic but only to a certain extent. He stressed on the

need to design a structure rich enough to accomodate different needs (mobility, activities, parking) of different actors and highlights the street-frontage delicate position as the foil between private and public realms.

In residential streets priority is given to "living requirements". While car drivers should have access to all destinations, they must show consideration for pedestrians, cyclists and children playing. For that. Reason driving" is only permitted at a walking pace. A good illustration to this approach is the Dutch Woonerf, or "living yard".

A pilot study has been undertaken by Appleyard (48) on three types of streets to examine the impact of traffic on street life and to relate in some structured way all the variables that might take part in the complicated interaction between traffic and residents :

- street with light traffic (2000 vehicles per day, 200vehicles per peak hour, 15-20 mph, two-way ),
- a street with moderate traffic (8000 vehicles per day, 550 vehicles per peak hour, 25 mph, two -way)
- and a street with heavy traffic (16000 vehicles per day, 1900 vehicles per peak hour, 35-40 mph, one- way).

The answers to the questions about the traffic hazard were positive on light street, negative on medium street and strongly negative on heavy street. Residents on heavy street petitionned for a sign prohibiting trucks and buses. Measurements of noise levels were made on all three streets at four periods during a weekday : early morning, late morning, late afternoon and early evening. In each measurement period, 50 consecutive measurements were made at 15 second intervals at corner and mid-block locations on each street.

On heavy street, noise levels were above 65 decibels for 45 percent of the time and did not fall below 55 decibels more than 10 percent of the time except in the early morning. These noise levels were so high that the traffic noise index (Griffiths and Langdon, 1968) , read right of scale.

On medium street , sound levels were above 65 decibels for 25 percent of the time.

On the three streets concerns for trash, dust , soot and litter were increasing and there was no clear demarcation between public territory that was the responsability of the city and the local territory that might have been the responsability of the residents.

A series of questions asked inhabitants about the friendliness of the street ( the number of friends and acquaintances they possessed) . On light street , inhabitants were found to have three times as many local friends and twice as many acquaintances as these on heavy street. On heavy street there was little social interaction.
A number of questions were asked to gauge whether inhabitants felt they hed sufficient privacy and whether they hed any feeling of stewardship over their streets. General reactions to light and medium street were very favorable. On heavy street ther was little peace and seclusion.

Appleyard points out that this study confirmed some expectations. Heavy traffic did indeed create a whole rang of problems for residents. But on the light street residents were much more engaged in their street. Children played on the sidewalk. The contrast between the two streets was striking. The residents with their own characteristics come to the street environments with various needs and values, expectations, desired lifestyles and activities. Architects , urban planners, urban designers and engineers must work together in order to find a form of street space within which inhabitants find echo to their expectations.

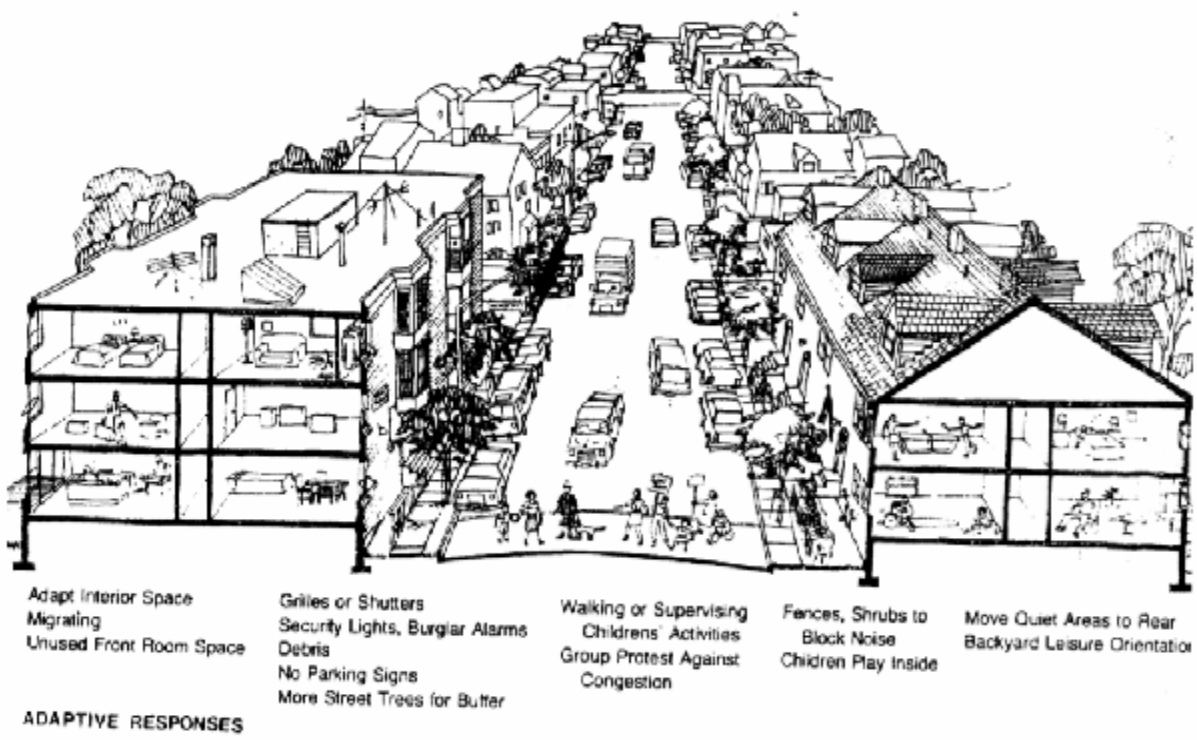


**Figure 27**: The ecology of the liveable street.
The street, in Appleyard's analysis is an environment for social existence.
(from Appleyard. p 56).

### 4.4.4- A new design of the street within the residential

In 1975 the Netherlands Association of local AuthoritiesVNG set up a woonerf (living yard) work group to report on the following questions:

1. What infrastructural and / or traffic engineering minimum requirements must be present in public residential areas for it to qualify a living yard?
2. What traffic regulations, not then applicable, are desirable for traffic and parking in these residential areas?

In 1976 the Woonerf obtained legal status after the work group completed its report. But it is a part of a whole pckage of measures, including the designof urban traffic environment, legislation and law enforcement, tuition information and training to influence driver's behavior. It differs from a normally structured residential street, because the paved area can be partly used for traffic as well as for walking and parking. The woonerf has first and formost, the functions of a residence, meeting place, playground and walking area. This public area has the additional function of carrying traffic but it has no function of through traffic.

The living yard is characterised as follows (49):

- It is an area open to public traffic , to which the traffic regulations apply.
- It is mainly paved.
- It is an area mainly meant for residence.
- Sometimes it is a single street or a single square, or a connected area of streets and squares.
- Walking and playing are allowed avery-where (that is to say not prohibited).
- The area is also accessible to motorists and cyclists .
- It is not however the intention that motorised through traffic should yse the area.
- There is an intermingling of traffic categories.
- To protect pedestrians and playing children physical and visual facilities ( narrow passages, trees, bollards, varied pavings) are used which induce motorized traffic, especially car drivers, to enter the area at a low speed and continue to drive slowly.

Kraay observes that there is a firm link between:

- The function of area and street.
- The function of speet restrictions.
- Special driver behaviour.
- Special rules for driver behavior.

The traffic hazards is at the basis of this widely known experience of traffic restraint and environmental improvement in the Netherlands. The search for an integrated way of designing for traffic within the residential living environment has been undertaken, mainly as a result of the realisation that the monofunctional solutions -such as the new high rise quarters built in Delft in the 1950s and the 1960s- had failed in many ways, specifically because :

> **The residential road is designed in the same way as a main road. Vehicle access and parking took most of the available space and road was dangerous and difficult for pedestrians to use** ( 50).

The conflict between traffic and the needs of the areas through which the traffic flowed hes been observed in many developed countries. Furthermore the concept of traffic restraint became viable with the 1973 oil crisis; the use of the inter-urban and the urban network road was questioned (what would be their use without cars?) (Eugen, Quoted in

Smith, 1987; 54). Finally the increase in cost of fuel for commuting fostered a desire to make the city a better place in which to 1ive (Smith, 1987; 54).

Woonerf's basic aim is the reduction of speed, to a low maximum speed limit, compatible with pedestrians and cyclists. it must be imposed by means of street-channel layout and design; a discontinuous axis, a varied road width, use of obstructions such as humps, sills. Street furniture, such as lighting, was to be selected to increase the character of the residential environment (51) .

The case studies, reports, and research in Holland and West-Germany reveal (Kraay, 1983; Monheim, 1986) that safety is dramatically improved by such development s. But the impact of the Woonerf structure in encouraging residents activities in the public space (which is one of the Woonerf ' s purposes) has appeared ineffectual according to some studies (52).
Behavioural studies showed that the pattern of activities in a woonerf-type neighboourhood was more varied than in the traditional neighbourhoods. An overall evaluation by the users (children, elderly, people and mothers whose children often play out of doors) is more positive than for traditional residential areas.
We may conclude that a “soft” segregation between the users and traffic is likely to meet the needs of people because although its hazards , noise and smells the car is still a useful almost indispensable feature in our daily life. However we may observe once again the action is only on one dimension of the street, its channel.

### 4.4.5- The shopping arcade

The social, economic and architectural reasons which led the developers to think about the shopping arcade are numerous and diverse. Taking the pedestrian out of the mud that littered the highway, in the middle of the nineteenth century, was the main claim. The shopping arcade made its appearance in Paris, and came through a desire for luxury goods and a taste for personnal ostentations in the late eighteenth century . According to Mc Keith (53), from the eleventh century to the end of the eighteenth century the design of the shop remained remarkably constant particularly in its pretentious form. The author of The history of shopping arcades (Mc Keith) reports that early forms of shopping arcades may be found in the Middle East and may have been developed in response to the hot climate ( souks, bazaars are their appelation). The idea of shopping under cover was established and the indoor street

appeared. The enclosed private street, in which part-private, part-public spaces surrounded by boutiques and restaurants constitute the model, is largely taking shape in shopping malls in American, in European cities and towns and in the Middle East . This recent evolution of the arcade development of the mid-nineteenth century in which enclosed pedestrian space on a large scale was initiated is seen having implications on the quality of the whole town..

Analyzed on a social base the creation of "privileged urban enclaves" (54*)* can be seen as increasing the disparity within the urban community because of the high level of traffic shopping centers bring mainly in their immediate surroundings. Moreover these enclosed constructions appear to work against the ideal of a democratize city because they limitate access and opportunities for discovery and encounter, define people's needs, and do not encourage user manipulation, appropriation, and transformation and then dismissing the notion of "publicness" (55) .

"The privatization of the urban landscape remains largely a commercial venture where retail sales determine the social design of public space Private developers have now moved indoors, where they can better control use and uses" (56).The indoor street should be considered as a minor development of the urban street and a reduced form of its three-dimensional quality ,its richness, and multiples choices it offers.

**4.6- The limits of a reductionist approach**

The spread of pedestrian areas connot be seen as a fashionable phenomenon since a serious matter, safety, is the goal in this approach. But It appears that this asset has been given the ultimate importance by traffic planners and employees of traffic departments. The evaluation of urban and residential pedestrianized street-spaces in the 1980s (a decade of experience), has brought to light some substantia1 dissatisfactions (57 ) - It appears that people's wishes have been arbitrarily limited to safe surroundings.

Social and aesthetic needs are too often absent from both the commercial and the residential pedestrianized area:no one could claim that yellow lines, box junctions and the like, enhance our urban surroundings (58).

Leisure activities such as strolling, sitting, gathering are not encouraged in these spaces .These approaches are based on the principle of division: the user is either seen as a pedestrian or a a user of motor-vehicles when he is both of them and at the same time. In addition once again the street interrelations between built and open space and the broad range of uses which should be considered are overlooked.

**4.7- Conclusion**

The range of issues addressed by planners and architects while considering the design of streets was confined to the street channel and to find a solution to the problem of traffic.
We must recognize that there is a recurrent debate of the theories and their social consequencesof the preceding era. The Smithsons , by contrast to Haussmann, Le Corbusier and many others who discarded the old form of the street and its potential social attributes, while searching for a new form of street, focussed on the street as an intrinsic part of the living space, an extension of the house, as a social arena . However , studies have suggested that the failure of the " streets- in-the-air " may be related to a lack of definition of the street channel on both sides and to the alteration of the relation street/ ground level. However , the critics of that aspect are limited to the assumption, that it does not offer the ground 's psychological (emotional) security.
c. the l and scape design of a street in the air is limited;
d. the nature is absent;
e. the feeling of being part of the city is diminished.

The study of historical models whose the CIAM members and many scholars recognize the strength and the insights it may bring (see sections 2.1 and 2.3.4) have beneficiated of some investigations in the late decades. Their findings will be gathered in the following chapter and related to the topic of this research.

The utopian one stage city projects appeared to attest to thé likelihood that when architecture is mainly concerned with forms and functions, and when the conception of dwellings is separated From this of public space it is likely to produce projects which are hardly realizable or appropriated by society.

The theories, experiences and the integration of traffic in planning showed that the pedestrian appears to have been put at a disadvantage compared with vehicular traffic, deprived of freedom of movement and the opportunities for discovery. The new form discouraged user manipulation and appropriation of the public space. Most of the time the pedestrian is relegated to the cold platforms of under and over-passes. The enjoyment of the experience of traffic-free streets appear to be still waiting for a fundamental design approach. The approach to the street as a three-dimensional urban space is lacking.

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## CHAPTER 5: THE SEARCH OF URBAN HISTORY FOR THE HUMAN DIMENSIONS OF THE STREET

### 5.1- Introduction

"Any discussion about the design of our urban environment should start with the consideration of how the existing townscape has been created and with an understanding of urban concepts of the past" (1). The CIAM's members, and many leading architects and planners have overlooked the historical process and developed deterministic views in term of urban planning and architecture. The search of urban history is undertaken in order to establish correlations between architecture, urban planning and the human dimension. This section is a search of the potential of street-space in term of spatial configurations and richness of uses, in some historical mode1s of the pre-industrial era, when traffic and technical management were not considered major issues in the concept of street-space in order to reveal the street's spatial ranges and to which extent it supported social life through many decades.

We recognize that the street has its richness and its dimension in any environment even "the track" which implies the most basic course along which movement may take place. But the many exchanges and influences between countries in Western Europe and Countries in North Africa stipulate a morphological study of the street within the historical developments of:

- (i) the use of outdoor Greek space,
-(i.i) streets of the Roman Empire,
-(iii) the medieval Arab street network, and finally
-(iv) streets of the Renaissance.

In addition reference will be made to past behavioural attitudes and values from the evidence of morphological patterns of public spaces and streets, and explorations of their meanings in everyday life.

The very first step to start, in a wise way, to deal with the subject is to undertake a comprehensive study of the words we use to describe the street. It often unveils its function, its importance, its uses, and how its existence has been established.

The most common terms, such as street, *la rue* (in French), *strada* (in italian), *shari* (in Arabic), are used for the same conceptual pattern -an area whose surface is distinguished from its surroundings in some physical way and set apart for public use, for passage. The word 'street' is derived from the Latin *sternere,* to pave , and so relates to all Latin-derived words with the *str* root that are connected with buildings, with a construction which underlines their urban setting (2). From the study of the city plan and the analysis of street layout a double role which characterizes, to a different extent, each street, can be seen. It leads whilst it distributes (3).

A first sub-category includes road, *route* (in French), *via* (in Italian), *tareak* (in Arabic) which suggest movement to a destination and incidentally the transporting of people and commodities on foot , by pack animal, or vehicle. *Via* refers to the Latin, *ire,* derives from the Indo-European word for bring or lead and is analogous to road and *rue* . There is, if not an opposition, a perceptible difference between the concepts of street and that of road to which the Longman Dictionary of Contemporary English refers by stressing their different settings: "a street is in the middle of a village or a town", here we should see, not only, an interrelation with the built and open space but also the presence of people to make a street , while a road is usually in the country, between one town and another". A more precise definition bas been given by Panerai who focussed his study on the street system and on the purposes of the street since Roman times of both leading and organizing the urban pattern. He states that : "the street is a passage-way, a road assimilated and adopted by the city, supporting commercial and social activities, and providing an interface between public and private realms" .

On the other hand Françoise Choay (4) traces the emergence of *route* (road) to the 12th Cent, as a technical management tool for movement, for traffic. Until the 11th Century the street was considered as a "place" for the city dwel1er in which he could identify himself as a part of the urban community mainly through associated social and trade activities. Although there is a difference between the two statements a common concept is established: the street is not only a traffic channel but is an intrinsic part of the who le concept of urban space.

A second sub-category consists of boulevard, avenue, and High Street. They represent a category of streets incorporated into the urban centre which nevertheless

have as a main function swift passage through that centre. They are edged by important buildings such as post offices, banks, or public spaces. *Boulevard,* originally, was applied to a promenade laid out on the horizontal portion of a rampart in a demolished fortification. Nowadays the term may be applied to broad tree-lined walks (rather like a *promenade* which bears a leisure connotation) such as Boulevard des Champs-Elysees in Paris. *Avenue* suggests a quite similar broad street usually lined by trees. The current meaning is often "large access way". Avenue is largely used in the figurative sense in the French 1iterature. The appellation High -Street' in English towns is applied to the main street and suggests that a long distance route passes through a settlement, a built- up area. With the creation of by-passes, in many cities , the traffic bas been alleviated but the High -Street sti11 remains an important, commercial street situated at the core of the city .

A category of street terms such as 'highway', 'artery', ‘thoroughfare ' , and 'motorway' point to technical managements and to development motor- traffic and engineering matters. On the other hand some words such as 'path' , 'lane' , and 'track' represent the most basic course a long which movement may take place and are often connected with ways of proceeding on foot .

In rapidly expanding cities the street became the scene of intense and sometimes tragic events. In France it sheltered the Revolution which transformed it to "a theatre of barricades". In London it acted as a "harbour"for the deprived [Figs. 42-43]. 'Les Misérables ' discredited the street when the author gave free rein to its horror in response to the spectacle of revolt, misery and anger in the streets of the district of les Halles . Hugo concentrated attention on all the details:no light, no movement, danger, fear, stupor in the houses and in the streets "sacred horror"; ground, façades, details of windows, profiles of construction, are thrown into darkness. The streets were transformed into "monstrous caverns" (5).This lack of distinction between social and physical conditions was common among eminent Personalities who made a stronger criticism:

The restless and noisy activity of the crowded streets is highly distasteful, and it is surely abhorrent to human nature itself. The more that Londoners are packed into a tiny space, the more repulsive and disgraceful becomes the indifference with which they ignore their neighbours and concentrate upon their private affairs (6).

This is a representative description of social conditions in the 1.840s, and was considered as a reliable account for that period, but it bas recently been called into question. 1t is stated that the sociological generalizations he made were based on random personal observations and that the street fell under his attacks as he was denouncing the misery of the working class which found refuge there (7).

Clarifications and precise judgments about the success of the trade activities in the traditional streets of old Paris may be met in the preface to the 1980 edition of '*Au Bonheur des Dames'* by Zola . The author of the preface calls into question the opposition, on which is based the oeuvre, between the old Paris with its small shop (*boutique)* on one hand and the modem Paris and the large shop *(magasin).* Zola's description of the old street gives an impression of lack of cheerfulness and innovation. Gailiard's research (in the preface to the 1980 edition of Zola *Au Bonheur des Pages)* suggests a different reality. These streets were narrow but they allowed passage and indeed have attracted luxury trade activities until the piercing boulevards of the Second Empire which aimed to make of Paris the capital of fashion as London was the capital of finance and warehouses. The narrow streets and their shops became inadequate for the new role of visual display and ostentation. Commercial considerations appeared in the condemnation of the medieval street.

A lyric poet of that era, Beaudelaire, who used to stroll ( *flâneur)* in the streets of old Paris has expressed his nostalgia by writing :

**Old Paris is no more, the form of a city changes more quickly, alas , than the heart of a mortal** (8).

It must be admitted that the traditional street may have been inadequate as a major transport facility. But this lack was exaggerated to the point at which little consideration was given to the potential of the street as an living outdoor space and to understanding the design principles of this major element of urban space.

**5.2. The street social sense**

Starting point and end are not precise attributes of the street. However a feature, which is often omitted in the official discourse but is present in poetry, is its opening up of space, of which the architects of the first shopping arcades appear to have been aware.The examination of the Greek outdoor space below shows on the use of the street space as a major living space. In addition the extensive use of street in proverbs in Eastern and Western cultures, its cognitive importance witnessed in even preliterate societies suggest that it is deeply embedded in human experience.The expressions "a person in the street" bears important social connotations; "a man in the street" , the ordinary man is distinguished from the expert or the man who has special opportunities of knowledge because learning used to occur along streets. But a women of the street: bears a. very negative connotation. In French *"courir les rues"* is to be known by everybody.

However the expressions to live "in the street" such as in Italian and "on the street" such as in American suggest different conceptions. The former implies the use of the street-space as a unitary entity such as in the expression "all the street is thrilled" (translated from the French "*toute la rue est en émoi")* in which the street designates, by extension, the dwellers of the houses situated on it ( Encyclopedie du bon Français ), when in the latter the street seems to only be to identify where a person lives, to permit access to the houses. Besides the first expression highlights its acceptance by the community (the proverb demonstrate that it is embedded in people's cultural and social life > arid so gives support to the definition of the street as a social institution. Finally, the following poetic citation pinpoints to the complexity of people's spiritual needs of a street-space:

> **The normal unconscious knows how to make itself at home every where, and psychoanalysis comes to the assistance of the outset unconscious, of the unconscious that has been roughly or insidiously dislodged. But psychoanalysis sets the human being in motion, rather than at rest. It cal1s on him to live outside the abodes of his unconscious, to enter into life's adventures, to come out of himself. And naturally, its action is a salutary one. Because we must also give an exterior destiny to the interior being. To accompany psychoanalysis in this salutary action, we should have to undertake a topoanalysis of all the space that have invited us to come out of ourselves.Emmenez-moi, chemins!...**

**wrote Marceline Desbordes-Valmore, recalling her native Flanders. And what a dynamic, handsome object is a path! How precise the familiar hill paths remain for our single line:**
**0, mes chemins et leur cadence**
**Jean Caubere, Deserts**
**(Oh, my Roads and their cadence.)**
**When I relive dynamically the road that "climbed" the hill, I am quite sure that the road itself had muscles. In my room in Paris, it is good exercise for me to think of the road in that way. As 1 write this page, I feel freed of my duty to take a walk: I am sure of having gone out of my house. (9).**

A review of the street's dimensions will be undertaken in different historical models.

### 5.3. The street's dimension in the Greek urban space

Architects and planners attempted to understand the significance of the process of creating and using an outdoor environment in harmony with the inhabitants's social and cultural values. Some major public spaces have sustained the same level of importance when the change in living conditions has been significant (Thakurdesai, 1974; Tyrwhitt, 1968). The Greek city, with its clearly defined limits, its compact. form, is recognized as sustaining an integrated social life (10).

Consequently this part of the study is to help built the argument that streets were not constructed in the physical way , but more profoundly that they are places of social meaning. Its outdoor space reflected the way of living and the attitude to life of its inhabitants. However these observations cannot be applied to the contemporary Greek city which did not keep the basic elements of the initial city plan.). Everyday life in Greece throughout the year- has always been under the influence of the warm climate. This "good" condition seem to have played an important role in shaping an outdoor oriented behavioral pattern represented in a communally oriented attitude to life which in turn is claimed to have assisted the development of Greek democracy (11).

Systematic city planning both applied the gridiron, and encouraged! organic growth. These two characteristics of the Greek urban settlements are exemplified in the cities of the 6th to 3rd centuries B.C. The cities of Miltus and Priene illustrate the former type, whilst Athens is an illustration of the latter. Minimal concern was given to the designing of private

spaces and little interest is noticed in the arrangement and the appropriation of indoor spaces (Thakurdesai, 1974; 94).On the other hand a range of facts such as the availability of high quality marble and the importance given to public gatherings led the Greeks to fashion what is considered the splendour of civic design( 12).

The basic Greek urban components are the acropolis, the enclosing wail, the agora.residential districts, one or more leisure and cultural. areas, a religious precinct, the harbour or port, and possibly an industrial district.

The acropolis is the nucleus situated on the top of the hill and was used for defensive purposes . The primary role has gradually been altered , and it either evolved into the religious sanctuary of the city , as with the most famous example at Athens, or became deserted and left outside the city as at Miletus . Starting in sixth and the fifth Century the spread of the city outside the acropolis was considered valuable enough to require protection. The acropolis is also considered as a symbol of Democratic Greek society and of community life advocated at that time .

The agora stands for something peculiarly Hellenic; it is a central space in the city or as near the middle as possible, a public gathering place, the daily scène of social life, business and politics. It has to be noted that the Greek cities show a contrast between the modesty of the housing areas and the outstanding character of the civic areas.

Socrates is pointed out as an extreme type of the Greek man: he conducted his arguments and discussions by talking in the street to people. Communication which implies social contact was vital to the Greeks (13). The scale of thé built public spaces illustrâtes their interest in that domain. The Greek consciousness of space was related to their religious as well as metaphysical thought. The concept of an overall vision of thé surroundings is very important in thé Greek attitude to outdoor space. Public assemblies were meant to take place outside, "under the sky" , so that ail people could be united. The "Greek image of space is based on social place, or sociability of place" notes Thakurdesai (14). The viability of this conception and the association of outdoor space to human activities can be observed not only on the *agora* (or *plateia* in villages) but also in the street space. In effect thé social structure imposed a ségrégation of men and women. Facing the impossibility of meeting together in the *plateia,* women have found in the street the outdoor space which gives an

answer to their need to sit outside, talk, see others, be seen and to undertake some domestic activities without appearing to involve themselves in a public space. They whitewash the outsides of their houses marking their "territory".

The street in the Greek city may be seen as an everyday theatre where each spectator is also an actor : chairs are bunched in the right angles of the narrow street so that the parade of the pedestrians can be watched.

Firstly, it appears that the concept of space may differ from one cultural, social, and climatic setting to another. This questions the universal nature of the functionalist concept of space which arose from the industrial era.

Secondly, people seem to have a preference for spaces along a 1ine of activities. This may be given credence not only because of what has been observed in the appropriation of street space by women, but also because this may be reinforced by an additional observation, in the main town of Skyros men leave a large street (15 to 20 feet) and sit on the very narrow foot path, next to the vehicular traffic.

Thirdly, people observed in the Greek settings sit in a line or in a number of rows, ail facing action. This behavioural pattern may be remarked in many cities in North Africa and in the streets of the cosmopolitan city of Paris. The street-space seems appropriate to answer people s need to see and to be seen: "On se montre et on regarde autour de soi tout en marchant" (15) (Goodey, 1983; *220).*

These observations are particularly relevant for the understanding of peoples ideology of a living public place and points to possible cultural (and climatic) preferences, and to the possibility of a harmonious integration of the street-space into the dwellings.

### 5.3- The street's dimension in the Roman urban space

Roman architectural and urban design have often been compared adversely to the Greek. However more balanced assessments lead to understanding the achievements of the Roman Empire which lasted more than 1000 years (73b BC- 330 AD) which extended its

settlements to many parts of the world, and whose cities "absorb" many problems "without breaking" ( Rykwert, 1988; in the preface).

The Romans imposed and maintained their authority throughout their vast empire which included thousands of fortified military camps called *castra.* Some of these were developed into permanent urban settlements which were on equally standardized plans . On the other hand, Rome, the capital city which represents the most complex urban agglomeration because of intrinsic difficulties of the site , has been only partially been modified to fit the pattern. However general principles and practice of Roman town planning may be seen.

Roman urbanization invariably implied gridiron structures for new and rebuilt towns alike. The details of the layout of the individual towns were determined by the local topographical features. Roman camps were more offensive than defensive, but the construction of fortifications lasted until the last period of the empire (AD 300). The perimeter of the *castra* was either square or rectangular. Within, its two main cross -streets (*decussis* and *decumanus:* the former is oriented north south whilst the latter is oriented west east) formed the basis of the street structure.

Secondary streets completed the grid layout and form the building blocks. The forum area- the Roman equivalent of the Greek agora- was usually located on one of the angle formed by the intersection of the main streets. it consisted of a colonnaded courtyard which included a meeting hall built across one end. The main temple, the theatre, and the public baths were also located near the forum in the centre of the town. The amphitheatre, a large spatial unit surrounded by sloping ground for sitting, was normally located outside the town (Morris, 1979; 66).

The functional zones were linked together by a route System of streets, the *itinera* were tracks only for person on foot, the *actus* permitted the passage of only one cart at the time, and the *visa* permitted two cart s to pass each other . The width varied from 4m. 50 to 6m. 30. The minor streets were narrow and tortuous, street- fronts were of regulated dimensions and alignment, and the height of the bordering houses was limited [Fig. 48 "].

These characteristics are still visible in present cities of Roman origin al though some transformations such as the opening of shops have taken place. Moreover the potential of the gridiron street pattern as a living space is brought to light -on the occasional festivals and public ceremonies- in the street of Heiankyo (Kyoto, Japan).

In effect the gridiron plan bas been carried through consistently in Japan which has taken it over from China (15*)* . in this Japanese city there is no public place such as the square or the agora. Life was confined to working places and houses because of the political pattern and the highly stratified social structure of ancient Japan. The street was not only circulatory and linked the temples to each other but also and due to its peculiar spatial configuration it performed the setting of community life. The Japanese street possessed a wood-constructed architecture which offered a complete transformation of the texture, the character and the spatial dimension of the street space. On festive occasions the facades were transformed: the wooden lattice at the front of the houses 1ining the street were taken down completely, allowing exposure into these usually private spaces. Festive paper, lanterns are hung at every entryway; colours, textures, proportion, scale and volume are altered. Private space become separated front the public space only by a kind of semi-transparent facade: "architectural space opens out to the street"..."1ife flows, the street literally erodes, revealing a *"Hiroba".* A community space unveils itself." (16). The author of this analysis defines the term "Hiroba" as follows:

A street-space or Hiroba in Japan is a continuous well defined street characterised by an interpenetration of public /private space which constitute a setting for a dynamic community life.The width of the channel and the height of the building are almost equal.

The word ‘hiroba', nevertheless, carries the connotations meaningful in describing the nature of place of community life, of the occasion of people's 1if e in pub1ic. The usage, of the term, especially in today's Japanese society, bears direct relation to urban design and community expression -not so much because it embodies identifiable socializing processes within the life of the city. "Hiroba" is defined by human activity-in viable urban space and time. (17).

The Roman street was characterized by three features which appear to have constituted a support of a public space which allowed use, encouraged user creativity, transformation, and social interaction . These features were:

a. The definition of the street-space by continuous and well defined building walls.

b. The proportion of the street width and height of the bordering buildings: the width did not exceed 10m whilst the height appear to be twice the width of the channel.

c. The interpenetration of the architectural space and the street -space: the façades allowed a kind of semi- transparency between internal and external space.

**5.4. The street's dimension in the medieval European cities**

This study is limited to a summary of the main characteristics of urban form in the medieval period, because a more detailed analysis of medieval street - space appears throughout this research. Morris offers a chronological classification of medieval European towns into five categories , from the e1eventh to fifteenth centuries, as follows: three categories are of "organic growth towns", and the two remaining are of "new towns" (18) .

(1 ) Towns of Roman origin.
It is suggested that Roman towns became organic-growth towns and this assumption is explained by the fact that, with but a few exceptions, the original gridiron structure was lost during the decades when the town was deserted or occupied only partly [Fig. 50].

*(2)* Burgs.
Burgs were built as fortified military bases and acquired military and administrative functions later. Commercial activities were not significant, and urban status was hardly accorded to them. They were considered as "pre-urban" nuclei around which many towns developed. The surroundings of burgs were frequently called faubourgs (Latin foris burgum -"outside the burg") or suburbs (Latin "close to the urbs").

(3) Village settlement.

The forms of these towns developed from village origins and so have been strongly determined by the original route structures and property boundaries. The plan of these villages has mainly been formed to me et the requirements of its location, three broad headings have been pointed out:

a. enclosed villages (also known as nucleated or squared ).

b. linear villages (also known as street or roadside villages ) .

c. dispersed or disintegrated villages (19).

**4)** Planted towns.

These were founded throughout Europe generally. According to Morris "planted towns" is accepted as a term for all other medieval new towns, either with or without, a predetermined plan (20). Morris assumes that that medieval urban status was viable if the trading activity was established.

**(5)** Bastides.

Three main principles followed in the planning of bastides in France, England arid Wales are:

a. pre-determined plan forms;

b. the basis of their layout is the gridiron System of

rectilinear plot subdivision;

e. settling in a bastide was permitted if it was possibilities to acquire a house plot within its confines together with farming land in the surrounding's of the "town".

Nevertheless, there are several significant differences in form and function which establish distinct national characteristics Morris 1979;93).

a . The wall.

In England, the significance of the town wall appears to have been greatly reduced after the fifteenth century because of the state of peace within the is1and. It served mainly as customs barrier, protecting the trading interests of the in habitants. On the continent , the wall did retain its primary military function and it was also used as a customs barrier (28 ).

Different layouts of irregular narrow lines in organic towns may be identified in which the only common feature is the organization of the city a round a somewhat square

market- p lace . Trade and craft activities took place in many if not ail parts of the city ( 22). The relationship of the enclosing vertical walls and façades of buildings and the horizontal dimensions varied within the following general proportions:

- Or the The width of the channel was equal to the height of the buildings .
    a. width was two or three times the height.
    **b.** or the height does not exceed three or four times the width of the street.

The main characteristic of the creation of the medieval urban environment on the whole was its evolutionary process over time and the need to meet the condition of the site. In addition it appears that there was a balance between planning and architecture: the built form took reference of the plan which was not strongly established . It is an illustration of the close interrelation between plan and design. The builders of that era mastered the third-dimension. This led to a variety of street patterns of defined proportions. The integration of trade activities into different part of the city enhanced street life.

**Figure28**: Malines, Belgium.
The street pattern is indicative of intercommunication , defense and rythm. ( Saarinen. p 47).

The medieval street has often been considered as " the finest street" when referring to its curves(23). Le Corbusier although his traffic considerations recognised the townscape quality of curving streets (24).

### 5.5- The street's dimension in the medieval Arab city

The currently approach to the description of the physical characteristics of the traditional Arab city is mainly negative, focusing upon the apparent shapelessness of its interior urban space and the maze of its narrow streets. Some scholars, however, see a precise pattern sustaining a social organization which follows the precepts of Islam (25). Some districts were primarily residential and emphasize the dwellings privacy; others were

commercial and devoted to public life. The street system as viewed within the overall context of the city-*medina*- consists of [Fig. 25]:

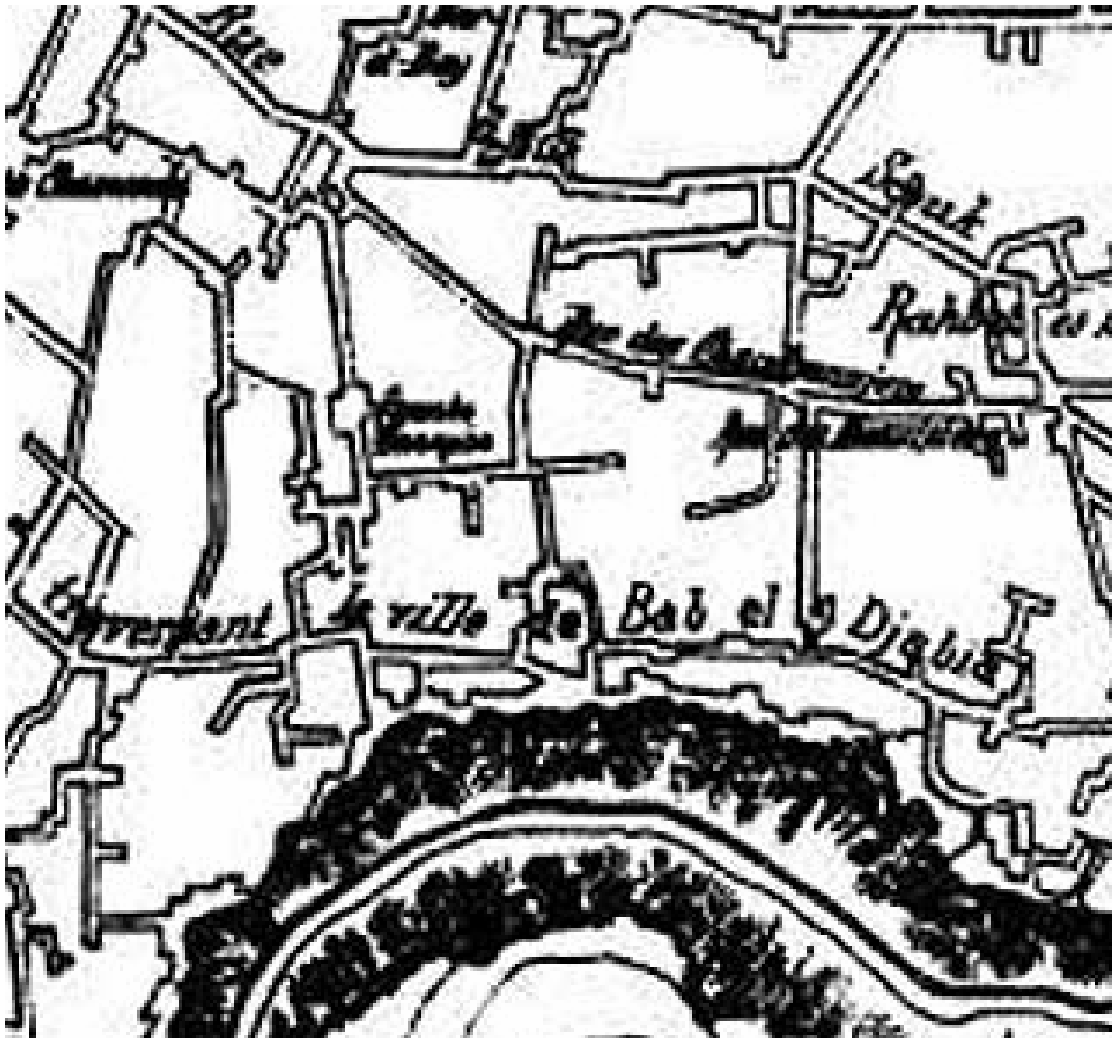

**Figure 29** : The street network in a medieval arab city; Constantine.
(source: Mercier).

(1) A network of public thoroughfares composed of first order streets which make up the backbone of the system and connect all major city gates with the core of the medina. Their width ranges from 3m30 to 3m50.

(2) A less important order of streets as major order streets. They connect the primary streets and are the main access routes within and between adjacent areas. They tend to form shortcuts across the first order streets.

(3) A third order identified as minor quarter streets. These provide linkages to areas within quarters which are serviced by the second - order streets.

**Figure 30 a,b, c**: Streets in Constantine- Medina
Play of sun and shadow. (source, ).
One of the quality of Arab streets and their intimate scale.

(4) Finally a system of private c*uls~de-sac* which belong in
co-ownership to adjacent or bordering residents. The width of these .last. ranges from a minimum of 0.9 m with an average length of 40m.
Hassan Fathy gives an assessment of the traditional Arab street and penetrates the underlying reasons and subtleties of its pattern:

The narrow and winding streets with closed vistas have the same function as the courtyard in a house, namely, they act as a temperature regulator. Were the streets wide and straight, the cool night, air would not tae retained, and they would heat up more readily during the day. From the aesthetic point of view, this layout creates more interest. Irregularity in the street alignment serves as a stimulus to the creativity, ingenuity, and sense of discrimination of the architect and master builder,, as shown in the accompanying example in Constantine the medina [Figs. 30a, 30b, 30c].

The core of the Arab city is the location for studying the coverage System utilized. An integral part of the coverage system is the flying buttress arch. It is usually located on narrow streets to provide lateral strength to the opposite walls. Their repetitiveness in some streets creates a play of sure and shadow which enhances the whole ambiance of the street. The

commercial streets are conceived as positive exterior space of richly varied uses in which functional and social activities are gathered [ see Figs.30].

These streets are punctuated by sequences of specialization in the products : the fish-street leads to the jewellery-street , the fabric-street then to different craftsmen's streets. The displays overflow on both sides of the street which is geared mainly to pedestrian use. The small dimensions of these streets gives the opportunity to see what is on display without having to stop: the perception of things remains vivacious because it is kept in the present time. A bazaar like atmosphere made of intermingling colors and noises. More varied street uses takes place in the traditional street than in these developed recently; it appears that the integration of multiple social services along the street enhances the urban character of the city.

**5. 6- The street's dimension in the Renaissance**

Before the introduction of Renaissance planning and the development of the street-space some remarks concerning the medieval concept of extern al space are presented in order to make explicit the transition and the differences between these two periods.

The medieval city is based on a growth through centuries and the adding of architectural values, often without the intent of conscious planning. Private houses and public buildings alike represented independent architectural units. Al though contrasting in height, width and material they were erected in one uninterrupted building line forming a continuous three-dimensional frame noticeable particularly in the square. The building line in the street was characterized by its irregularity, with buildings forming recesses and projections .The spatial effect was a sequence of successive individual impressions: walking in these streets has been assessed as an agreeable experience (26).

The term 'renaissance' means, literally, rebirth, renewal. The Renaissance period is defined by Morris (27) and Benevolo (28) as the revival of interest in the classical art forms of ancient Greece and Rome, and their use as the inspiration of European painting, sculpture, architecture and urbanism. This movement stemmed from the growth of literary and scientific

humanism which extended the knowledge of the physical world arid established an intellectual context favorable to a revolt against medieval mysticism (29).

Theoreticians arid artists believed that human life could be entirely rationalized and this belief was supported in time by the Leading. wealthy, merchants. Gradually this rationalizing tendency and the growing feeling for spatial relationship crystallized in specific patterns of town layouts. Attempts to apply rules of proportion to structure the plan of the city, three-dimensional massing and detailed elevational design of buildings were carried on in the organisation of urban space (30).The Renaissance architecture and urbanism coincided with a sharp increase in the growth of population. It began in italy, spread to France and England where it overlapped the beginning of the industrial era. Four main phases have been distinguished in the architectural history of the Renaissance period:

- early Renaissance (1420-1500)
- late Renaissance (1500-1600)
- Baroque (1600-1750)
- Rococo and Neo-Classical (1750- 1900).

Renaissance urbanism may be encapsulated by five general features:

(1) The fortification Systems;

(2) Regeneration of parts of cities by the construction of new public spaces and related streets;

(3) Restructuring of existing cities by the construction of new main-street Systems;

(4) Addition of extensive new districts often for residential purposes;

(5) Layout of a limited number of new towns (as in Fig 50).

The main urban design components which characterized these operations are:

(1) The primary straight street

(2) The gridiron-based districts.

(3) enclosed spaces.Renaissance architecture rejected the asymmetrical informality, the punctuated skyline and the intricate detailing of the Gothic period. Urban design was dominated by the following design principles. Firstly, there was a preoccupation with symmetry; secondly, a search for a classical sense of balance and regularity; thirdly, emphasis was placed on the horizontal instead of the vertical; and finally, theories were advocated for the conception of a limited space "to be in". The last concept is made more exp1icit through the comparison of the contrasting urbanism of the early Renaissance and

the Baroque periods. The former aim was to have a limited space which would have a lasting and subtle effect, the latter endeavoured to realize infinite, powerful, space (31).

Some design considerations emerged as the result of the principles cited above and were adopted in the majority of countries:

(1) Placing of identical buildings on either side of the street;
(2) Closing vistas by the erecting of monumental buildings or by fixing other imposing elements at the ends of long, straight streets;
(3) Unification of individual buildings through repetition of a basic elevational design in the square space;

(4) The application of perspective theory which was considered as a major constituent in the design process Giedion, 1982; 19).Perspective theory has been defined by Giedion as follows :

In linear "perspective" -etymologically 'clear-seeing'- objects are depicted upon a plane surface in conformity with the way they are seen, without reference to their absolute shapes or relations. The whole picture or design is calculated to be valid for one station or observation point only .... Every element in a perspective representation is related to thé unique point of view of the individual spectator (32).

The main elements of urban design during the Renaissance:

a - The Primary straight street:

The primary straight street is a Renaissance artefact. It is defined as a main traffic channel to facilitate movement between parts of the city. The aspect of 'street -building' was considered secondary. Some examples of primary straight street which resulted from the comprehensive restructuring are the exceptional Champs Elysees in Paris and the avenue Unter den Linden: both appear remarkably imposing and produce an infinite perspective effect . An attempt to progress towards spatial unity by the use of unifying arcades may be found in the square.

b . The Gridiron :

The use of the gridiron during the Renaissance period in Europe may be retraced at different scales of" urban intervention ( with the exception of redeveloped parts ):

(1) As the basis of residential districts added to existing urban areas;
(2) For the entire layout of a limited number of new towns;
(3) In combination with a primary street System, for the layout of other new urban areas.

Assumptions have been made that the gridiron was adopted because it conformed to the Renaissance ideal of aesthetic uniformity. There was an intention , during the Renaissance , of creating an enclosed unified open space.(33)

Traffic may be considered as the determinant in the Renaissance grouping of urban public spaces under three broad headings:

(1)Traffic space constituted by the main urban route system and used by both pedestrians and horsedrawn vehicles;
(2) local access traffic space, mainly in the residential areas, intended for local access traffic with predominantly pedestrian and recreational purposes; the first of Landon's squares - Govent Garden (1630) - is considered as the most famous example of this kind of space. This type of urban residential developments was for the benefit of the wealthy inhabitants in the city;
(3) Pedestrian space from which wheeled traffic was excluded. The majority of these spaces served as forecourts or public assembly areas.The enclosing building may have had civic, commercial and religions functions.

Two contrasting approaches may be distinguished in Renaissance urban planning. The square was perceived as a place in which the notion of enclosed space was embedded. Therefore the individual volumes of the surrounding buildings were subordinated to its spatial unity by continuous arcades or other connecting elements. The street, on the contrary, was affected by perspective representation, Within it, the individual buildings were independent and isolated. The street channel and the buildings were independently considered. This appears clearly through the plans of the ideal cities which were presented as a system of channels with no indication on the arrangement of the built form. The origin of the reduction

of the street to a road -that is to say its reduction to a channel with little connection with the surroundings- is related to the limitations of designers of the Renaissance city: "its characteristic is that not a single plan of an ideal city contains even the slightest indication of the arrangement of the houses. Only streets, squares and walks are shown.... the designers had the doubtful privilege of being the unintentional originators of the cult of the street, which finally led to the empty plans of drawing-boards architects." (34) (the term street appears improper, what perhaps is meant is road). Scheme of ideal cities during the renaissance.They are characterized by a concentric layout, radiating streets in combination with a gridiron.

## 5.7-CONCLUSION

From this study emerges significant conclusions which firstly question the universalization of the concept of the street as a channel for traffic. It appears that the street-space, before vehicular traffic became overwhelming constituted a setting for different activities which took place according to people's cultural values and sometimes to climatic conditions. Some intrinsic features of the street in the pre-industrial era, which appear to be connected to its quality as a support for everyday life are:

a. The built space constituted a major defining and structuring element of open spaces.

b. The interconnection of built and open spaces may be perceived in different ways. Both the activities housed in the buildings and those taking place on the streets appear to be at the scale of a person: one can see from the inside the outside and vice versa. The articulation of the inside and the outside spaces appear to be of major importance .

c. Without being identical, some shared characteristics may be pointed out:
   - There appear to be established proportions of the street width in relation to the height of bordering buildings (sects 5.3; 5.6).
   -

- The notion of enclosure appear.
- The richness of details as we get closer to the buildings.
   - The street offers different perspectives.
   - These assumptions will be examined in detail in chapter 4.

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## Chapter 6: CORRELATIONS BETWEEN PLANNING, ARCHITECTURE AND THE USERS'S NEEDS

### 6.1-Introduction

The report from the Environmental Design Research Association/National Endowment for the Arts defines the field –Urban Design- as " the study of the mutual relations between human beings and the physical environment at all scales, and applications of the knowledge thus gained to improving the quality of life through better informed environmental policy, planning, design, and education. Environmental design research focuses on the interdependence of physical environmental systems over a limited physical area and human systems, and includes studies of the political, social, and economic context of research" (1). Two basic questions- what is the relationship between the sociophysical environment and human behavior, and how can we use the answers to that question to create environments better adapted to human beings and to improve the quality of life for all_ are at the core of the concerns of the scholars in this field.

Teaching urban design in the universities and colleges in the united states and in England has been a long and arduous enterprise. Many papers have been presented at national conferences on urban design. The education in urban design rely on joint programs between the department of architecture and city and regional planning, landscape architecture, landscape planning.

Kevin Lynch (2), for the West Coast Urban Design Conference held at the college of Environmental Design , University of California, Berkeley treated urban design as a planning activity rather than as one of large- scale architecture. He insisted upon the meaning of "design" which is connected to many misconceptions. Environmental planning and design, City planning, City management, civic design were the numerous appelations he thouhgt of and finally has chosen City Design not without some "desesperation". He recognized that the field has been an ambiguous one lying between city planning and architecture or landscape architecture. The "typical " urban design school in the USA is one or two year graduate course for architects and gives the students some experiences in dealing with large, complex projects such as new towns, down town rehabilitation. He was not enthousiastic about this

training because he thought that it should not be restricted to architects. The centre should welcome students and faculty in other departments who have connecting interests, those engaged in graphic design, public works engineering, geography, literature, business administration. At M.I.T city planning began with interested people in city planning department “took fire” in architecture and led to an informel interdepartmental group which has its own locale and group feeling.

There are various theories that underlie the research in this field. Examples will be introduced and assessed in the multidisciplinary field of environment, behavior, and design through which existing environments have been evaluated. It begins with three theoretical scientific orientations which study the nature of human thought and perception and which constitute the basis for prominent attempts to conceptualize the physical environment in relation to human behavior. Secondly, it identifies the major themes in ( urban ) environment - behavior research, and, thirdly , reviews some design strategies which appear to be useful for the empirical analysis of the street use.

**6.2- The theoretical ground: the concepts**

The architectural theories are, generally, built on a theoretical ground in order to shorten the gap between materialistic representations and man’s visual and non-visual needs in term of aesthetics and of feelings such as safety, enjoyment and the feeling of belonging to an urban environment.

The environment can be defined as any condition, influence or feature outside the organism. Rapoport quotes Ittelson's (3) conceptualization which has many elements in common with other mode is and which distinguishes the environment as an ecological system with seven components :

(l) Conceptual the ways in which individuals experience the world, which is the principal mechanism linking people and environment.

( 2 ) Expressive- which concerns the effect on people of shapes, colours, textures, smells, sounds and symbolic meanings.

(. o ) The domain of aesthetic values of culture.

(4 ) Adaptive- the extent to which the environment helps or hinders activities.

( b ) Integrative- the kinds of social groupings which are facilitated or inhibited by the surroundings.

(6) Instrumental- which refers to the tools and facilities provided by the environment.

(7) The general ecological interrelationship of all the components .

This definition focuses on the importance of the urban environment for human experiences. The design of cities should not be considered as an addition of architectural physical elements but rather in the light of psychological, social and cultural values of the dwellers.

### 6.2.1. The concept of space

Architecture is more an art than a science. The understanding of the concept of space is to help strengthen the "inner logic" of the designer. The idea of space has been essential in general philosophy and the natural sciences since antiquity. Its appearance in architectural theory, as an artistic concept and as the essence of architecture and planning, is traced to the second half of the nineteenth century. The German historians, Hildebrand and Schmarsow, in 1890, gave prominence to the idea of space as essential for the plastic arts. There was a large adhesion among the leading figures in architecture. Berlage declared in 1908 :"The aim of our creations is the art of space, the essence of architecture". Until then it was exclusively considered as a metaphysical concept (4).

According to Plato (350 BC) who is considered as the most influential sources of western thought, only the visible and the tangible, the existing , is considered to be real. Plato understood space as one of the four elements that made up the world: earth, air, fire and water. Thus space, seen as air, became tangible, being distinct in character of all the other elements. In fact the philosopher Lao Tsu was the first who in his writings portrays and led the foundations of the two opposing elements the tangible and the intangible pointing out that the non-existent is the essential, made tangible in material form (Lao Tzu, 550 BC):

Thirty spokes converge upon a single hub;
It is on the hole in the center that the purpose on the axle depends

We make a vessel from a lamp of clay;
It is the empty space within the vessel that makes it useful
We make doors and windows for a room;
But it is these empty spaces that make the room habitable
Thus while the tangible has advantages;
It is the intangible that makes it useful.

Lao Tzu places his emphasis on the boundary between internal and external space: the separating wall translate internal space into external space. Space exists on both sides of the wall. Architectural theorists such as Sitte at the end of the19th century and contemporary architects theorists such as Louis Khan, Robert Venturi or Charles Moore were preoccupied by separation and linkage of the wall working simultaneously. Space as a result of tectonic assembly and of stereometric form was established. A group of German theorists, at the end of the 19th century linked architect's and philosopher's modes of thought encouraged in that by different conditions. These included the decline of religion, the changing social status of the profession , the search for moral attitudes to protect the profession of architect against the bourgeois, and the introduction into architecture of not only aesthetic but social concern as well . Finally, the idea of "space within" was used to reduce the importance of historical styles (5 ) .

According to some studies the term ' space ' is of German origin. It stemmed from the classical term *spatium,* which became e*space* in French, *spacio* in Italian, and *espacio* in Spanish. The German *Raum*> developed from the Teutonic *ruun,* led to room in English, *pièce* in French, and *ruimte* in dutch. He stresses the semantic importance of the word *Rau*m ,meaning space :

**Semantically the word ' Raum , used for room ' , inplies expansion, or availability of space in a more positive manner. 'Zimmer' or Kammer reflects a tighter sense of enclosure, and they are etymologically connected with medieval timber frame construction, in other words, by using "Raum' the German language offers the opportunity to identify the internal contained space with a representation of the more abstract intellectual idea. 1t was here that a sensory perception of reality and an intellectual idea were fused together. Therefore, in the nineteenth century German architectural theories, one can never be sure, whether the author meant an ordinary 'room' or the more transcendental term 'space' (5).**

In the 1950s , which mark the second phase of existential philosophy in France and Germany and with the acceptance of Aristotle 's theory of place (limited ) , new concepts of integration and ecological complexity , it 1ed to an existential theory of place, substituting for the former materialist concepts of space. The architectural determinism of many modern architects in the design of large urban developments was considered alienating by social scientists. The understanding of the context in which people experience their living space and the processes involved in the transactions between people and the environment were considered essential (6).

Some authors have pointed out that there are different kinds of space. We may distinguish between at least four different kinds in term of the perception of the user:

- The visual space.
- Conceptual space: The room we are in as we think of it when we close our eyes or when we go to another room. The space which an architect can “see” mentally from a plan and a section is also a conceptual space.
- Behavioural space: Space in which we can move around. Behavioural space is more restricted than a visual or a conceptual one.
- Physical space: The continium to which the laws of physics apply. If we open a window we connect the body of air in the room with the atmosphere outside. It may become cold.

### 6.2.2 . The concept of physical environments

The specialisation of disciplines tend to lead towards the exageration of the significance of one’s field. The architects’s determinism in the field has given sicial scientists the opportunity to dismiss the physical environment as having an effect on people’s conditions (7). However his concept of “unconforming use” implies that Gans suggests that the physical environment may permit a number of actions outside any system of social constraints. An ecological approach has established herself in the late decades whose challenging concern is not architectural determinism. It is a genuine inquiry to understands mecanisms and the functioning of people and the physical environments.

The objective is to identify patterns which help create or enhance variables to better the living conditions.

The concept of urban space embodies an intricate and complex set of ideas. However its consideration through two distinct areas- the physical and the perceptual - help in seizing its different meanings.

The physical refers to all types of space between buildings *in* towns and other localities, identified mainly as the street and the square (8).

The perceptual refers to "the norma1 behavior patterns of our sensory receptors" (9). Kinesthesia, sight, and touch have been recognized as the main sensory organs and experiences which enable human beings to have their strong feeling for space and for spatial qualities (10).

An ecological approach to people and the physical environment- in this research the street space- is to point out patterns of uses and the spatial configurations they are observed within in order to draw design principles and recommendations.
The Chicago School of Robert Ezra Park and R.D. Mac Kenzie has published an academic work in which they define human ecology as “a study of the spatial and temporal relations of human beings as affected by the selective, distributive and accommodative forces of the environment”. It seems that economic variables are dominating in that study. But we must recognize that the concept of human ecology was introduced (11).

Studies not using the term ecology are common in Europe. For example in Italy Carlo Aymonino, Maurice Cerasi and Manfredo Tafuri, , in France Nicole Haumont, Henri Raymond and Marion Segaud ,are the leading figures in the interdependance of people and concrete (physical) environments. In the eighties numerous formulations establish people’s relations to the physical environment even if some social scientists intend to attack physical planners and to assert people ‘s economical preferences such as a good salary. They overlook the fact that social choices are subordinated to the development of physical alternatives “ Social and physical environments yield influential and latent environments”(12). The study of the physical form to activity and significance is to constitute and to establish the elaments, the patterns and the models which enhance the quality of the street space as an operative entity and give people the opportunity to liberating choices.

### 6.2.3. The concept of Genius Loci

The first formulations of the theory of place are traced in Aristotle's Book IV of Physics. He constructed the concept of place (topos) as a where, or place of belonging which was the appropriate location each physical element tends towards. He formulated place as having neither form nor materiel (13). The concern with the design of human environment in different publication has led to a large audience and a growing interest in the study of "place" by geographers, planners und architects. The concept of place synthesizes physical (spatial) and symbolic environmental qualities inter alia natural versus built, individual versus group, private versus public , insideness versus outsideness ( 14) . The notion of "definition" of space emerges: "A boundary 1s not that at which something stops but, as the Greeks recognised, the boundary is that from which something begins its presencin*g*. That is why the concept is that of horismos, that is, the horizon, the boundary" (15) . Contemporary architects such as Louis Khan for instance rejected the idea of movable partitions entirely when Kenzo Tange recognised the importance of the eternal and durable aspects of the architectural boundary. The movable boundary does not answer man 's need for a place where he belongs and where he feels at ease. The notion of enclosure appears is established.

The notion of sense of place or genius loci (16 ) refers to the symbolic- qualities, meanings and intangible associations such as regional. and cultural content , and identity "spirit of place". The concepts of space and time develop the need for historic continuity "every place :-should be made to be seen as developing , charged with prediction and intentions " (17*)*. Place and space are often interrelated because they require each other to be defined: "From the security and stability of place we are aware of the openness, freedom and threat of space, and vice versa. Place is a type of object. Places and objects define space, giving it its geometric personality "(18).

Recent research stresses the existential dialectic of action and place. It is argued that there is a dynamic interplay between action and place:

It will be argued that in our design activities and in our research we should be looking for dialectal processes which continuously create changes in the patterns and meaning of actions in relation to places.

Central to these processes are conscious intentions shaped by a person's awareness of self and role in a given context. Intentions and actions are themselves structured by place related rules, negotiated with others, their outcomes reflected in expressed satisfaction with or pleasure in a given place (19).

Canter stresses on the fact that places are aspects of experience and our task is to understand the special qualities which particular places require for particular activities and goals .

### 6.3. The theoretical ground: B- Behavioural studies

#### 6.3.1- Introduction

The foundations of the multidisciplinary field of urban environments, behaviour, and design can be traced to the early decades of the twentieth century when a number of researchers developed global exploratory analyses of the design problem posed by the quality of the public open space (20). These studies criticize the layout of cities as becoming merely a technical rather than an artistic concern, and illustrate a major preoccupation with the living quality of outdoor space.

The second period was characterised by the development of a new field of studies, most commonly called man-environment studies' (lately person-environment studies). Scholars, environmental designers and geographers, through systematic differentiation, focussed on various areas of the environment, behaviour, and design (21) .

Finally, the third period was characterized by collective interests across disciplinary and professional boundaries, hence the interdisciplinary field of urban design, Based on an inquiry at the boundaries of architecture and town Planning, and emerging in the early 1960's, urban design re-examines the three dimensional design of urban space, often dealing with aspects such as visual quality, users's experiences such as feelings of danger or safety. Although differing greatly in their judgement and theories as to what would constitute a "better" setting for public life, urban designers and architects advocate theories based on a search for an inner physical structure and building principles: which allows and sustains an

urban life in harmony with the community needs (security, meeting people, strolling, resting,...)(22).

There are at least three different orientations at the basis of the environment, behaviour, and design field: environmental psychology, Gestalt psychology., and phenomenology. The phenomenological approach accounts for the use and the meanings of the open spaces in general, highlights different aspects of environment -behaviour and design relationships , and appears to be at the core of some urban design studies, Information about environmental psychology and Gestalt Psychology alternative research approaches is also presented as a source material for a better strategy that would combine the strengths from each to achieve a more effective too1.

A clarification is necessary concerning the designation of terms. "Theories" have been called by different names explanatory theories, conceptual frameworks, models, worldviews, theoretical orientations- and even metaphysical blueprints (23). Because the field of environment, behaviour, and design is not well integrated, the idea of a theory is reserved for a system of substantive propositions and relationships. 'Research strategy', or ‘approach’ appear to be more appropriate in this context.

### 6.3.2. Information theory and the visual language of the built environment

It is assumed that certain aspects of visual perception are universal, i. e.shared by everybody who can see. Psychologists admit their difficulty to isolate the influences due to learning. Gibson (24) insist on bringing the debate on some reactions which are more innate than learned and since the nature-nurture controversy has lost a great deal of its significance in the fifties. The development of "environmental psychology" bas been the product of the intellectual currents of the 1960s aiming, in a systematic way, to uncover the empirical nature of the interaction between psychological aspects of man and his physical environment. In effect its roots are found in experimental psychology, which failed to consider cognitive variables and which was concerned with sets of problems that are encountered in the laboratory isolating people from their real environment and extrapolating some theoretical result from animals to human beings. An important feature of the environmental approach is its multidisciplinary character. 1t is based not only on psychology but on sociology and

anthropology. The work of architects, urban designers, planners, ecologists and many other specialists in other disciplines is essential and substantial in order to define and to consolidate the knowledge of environmental psychology. Research gives attention to behavioural processes in real and particular settings. Environmental psychology need not include a theory of determinism, rather it sees a person as a goal -directed being who may be influenced by his or her environment and who constitutes its measure. it contrasts sharply with operant psychology whose essence is that behaviour is under the control of the environment. Ittelson et al (25) have given i1lustration to the ro1e of environmental psychology through the assessment of the numerous studies made of school achievements among children living in slums. The authors recognize that it is very difficult to separate the social and physical effects of the setting. However they put the assumption that growing up amid decaying buildings and garbage-strewn streets communicates a message of failure to the child, which may explain his limited achievements at school.

The key intervening variables in the interaction between man and environment are perception and cognition, which have traditiona1y been considered elementary basic processes by which individuals sense, perceive, interpret and make decisions about their environment (26).

Perception is the use of memory to make sense of phenomena and if necessary, calculate the requisite motor responses needed to negotiate the objects in space. Motivation, memory and learning are the three functions that contribute to the totality of perception (27). Making sense of his environment is a compelling need for the human being. But we must admit that perception is a learned ability: without motivation there would be no perception. First come needs which in turns produce motives which lead to drives. Smith quotes E.J. Murray's distinction between motives and drives: "A motive is an internal factor that arouses, directs and integrates a person's behavior. A drive refers to internal process that goads a person into action"(28) . The exploratory drive are defined "psychogenic". In one person they may be utilized to achieve a work of art, a research. The evidence may be distorted if the need becomes extreme.

Perception is based on memory, because it is impossible to perceive phenomena which are not partially related to past experiences and knowledge. The brain consists of some10.000 million cells and each cell is capable of establishing some 5000 connections. The storage

potential of the system is immense. Consequently the brain perceives in fragments to be linked together. Perception is about the basic category (shema) which are the internal representation of the external reality. Environment is physically negotiated by reference to what is already known, and it is the same for higher intellectual level. Based on the precedent assumption that certain aspects of visual perception are universal, shared by everybody who can see experiments lead to assume that there is a need for variety in term of the perception of forms and spaces but is not demonstrated directly.

Perception is viewed as a crucial element in the man/environment interchange. This term is defined as the psychological function that enables the individual to convert sensory stimulation into organized and coherent experience. Cognition is regarded as a wide term which includes perception. It relates to psycho1ogica1 processes whereby human beings obtain, store, use and operate upon information. Cognition includes sensing, perceiving, remembering, imagining, judging, deciding, and virtually every other mental process to satisfy some specific need in relation to the environment.

The work of the Gestalt psychologists in the early part of this century was one of the first developments to face up to the complexity of human psychology and to present a more rational basis for the discussion of perception than this postulated in experimental approach. The term Gestalt is defined as a whole which is different from the sum of its parts (29).They put emphasis on human consciousness and experiences with a direct attempt, by means of systematic introspection, to establish the fundamental units of human cognitive responses.Gestalt psychology is especia1ly concerned with patterns of experience as wholes, It attempts to understand how patterns were organised in perception: were these always seen as simple additions of their elements, or were they combined in some way? . A series of conditions or "tendencies" of perceptual organization was established and some of these so calledd Gestalt Laws of perception appear to be applicable to the built environment because they were identified as playing an important role in organizing the pattern of visual form stimuli. The relation between the concepts of information and redundancy on the one hand and the Gestalt-laws on the other attempts to quantify visual stimuli in information-theoretical units (29).

The Gestalt tendencies and laws of visual perception are the results of experiments. The scenes we perceive in daily life are made up of a mixture of new and familiar parts and knowledge proceeds from the known to the unknown. Psychologists point out that

information theory is indispensible to familiarity and novelty. Prak (29) explains that during our hearing or reading of a massage we can try to predict what comes after on the basis of what we heard or read before. What cannot be predicted in the latter part of the message is called information; the predictible part is called redundancy. As the message proceeds the information decreases and redundancy increases. These concepts can be applied to our environments and particularly to the street space. Information , in our context, refers to the object (facades, windows, decorations) perceived and the knowledge of the perceiver.
One of the advantages of redundancy in a perception is that it allows us to concentrate on the information. However too much redundancy leads to a lack of interest. But a certain amount of redundancy is prerequisite to the information processing-organism of the human being. The Gestalt Laws of form-perception have been established by a group of German Psychologists who started in the twenties (1920) to investigate how we perceive forms and how complex patterns were organised in perception.

The Law of Pragnanz: According to this law "psychologica1 organization of visual stimuli will always be as "good" as the prevailing conditions the outside world allows. The term "good" remains undefined and embraces such qualities as "regular, "symmetrical", "simple", etc" (30). This law indicates a visual bias in favour of simple regular form and indicates that perception organises the visual stimuli in forms as large as possible.

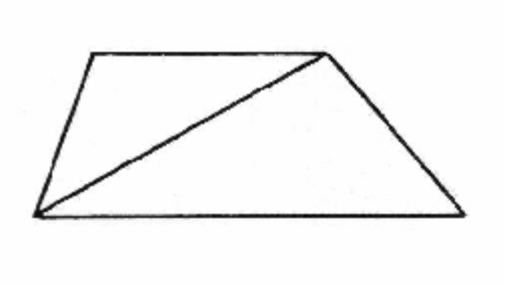


**Figure 31**: according to this law most people will see this figure as trapezoid with a diagonal, Rather than two superimposed triangles. However the other interpretation remains Possible too.
(From Prak, 1989, p19).

The law of proximity :This law states that forms which are close to one another tend to be perceived as a coherent group. The law of proximity is considered as a direct consequence

of the law of Pragnanz: groups in a configuration reduce the number of elements and are therefore a "better" organization than when all elements perceived are separate.

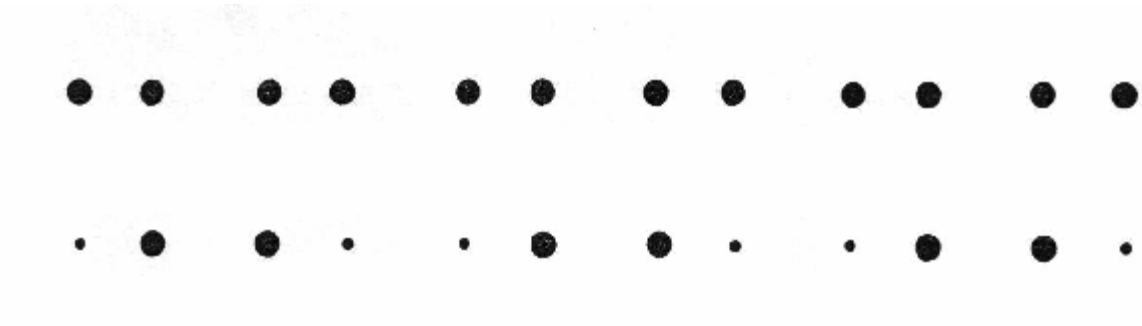


**Figure 32**: The law of proximity. The top row is perceived as consisting of points in pairs. If the points are inequal in size, grouping takes place, not according to the law of proximity but to the law of aquality, in pairs of equal points.
(From Prak, 1977)

The law of equality: Equal or similar elements are immediately recognized as such. Equalities or similarities are redundancies in perception. The recognition of equality or similarity depends on the adjacent element in the figure. As the difference between similar and dissimilar elements decreases, it becomes harder to recognize the similarity because it is less discernible (fig 28).

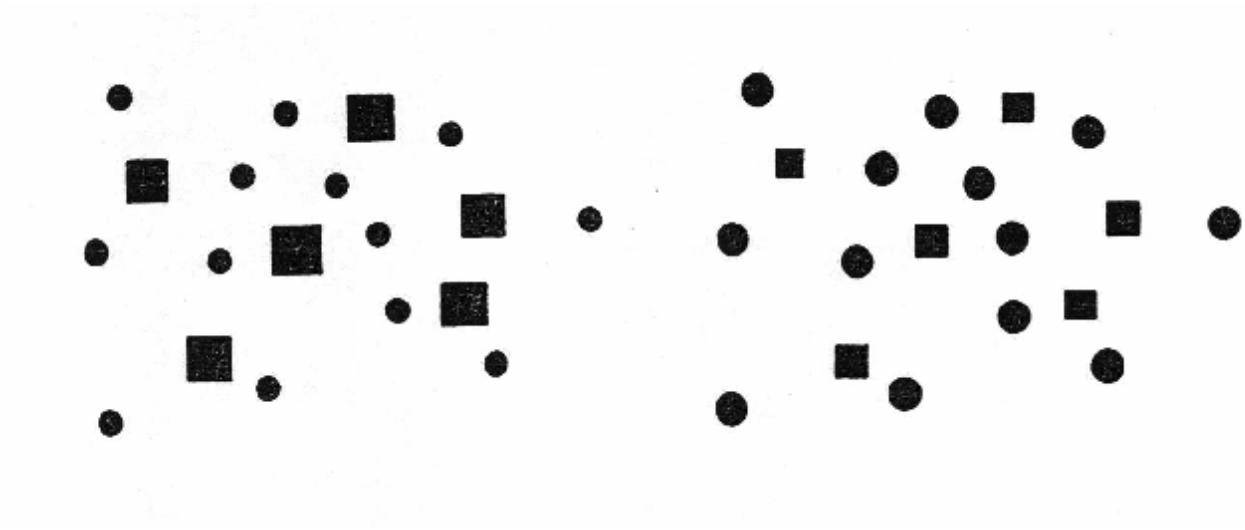


**Figure 33**: The law of equality. The squares on the left are easily recognized as being equal because they differ in size. On the right , the squares and circles are equal in size and therefore harder to distinguish. On the left the difference in form is enhanced by a difference

in size. The recognition of similarities or equalities becomes more difficult if variation in form and size do not coincide (for example with large and small squares and large and small circles.(From Prak, 1977).

The law of continuity: This highlights a tendency of perceptual organization to continue a figure as a figure, a curve as a curve and a plane as a plane etc. The law of closed forms, claiming that 1ines enclosing a surface, a figure, tend to be seen as a unit. Because the information is "concentrated" at the points of change of direction, viz the angles, a complete figure is perceived even if only the angles are given; the continuity of form is implied across interruptions.

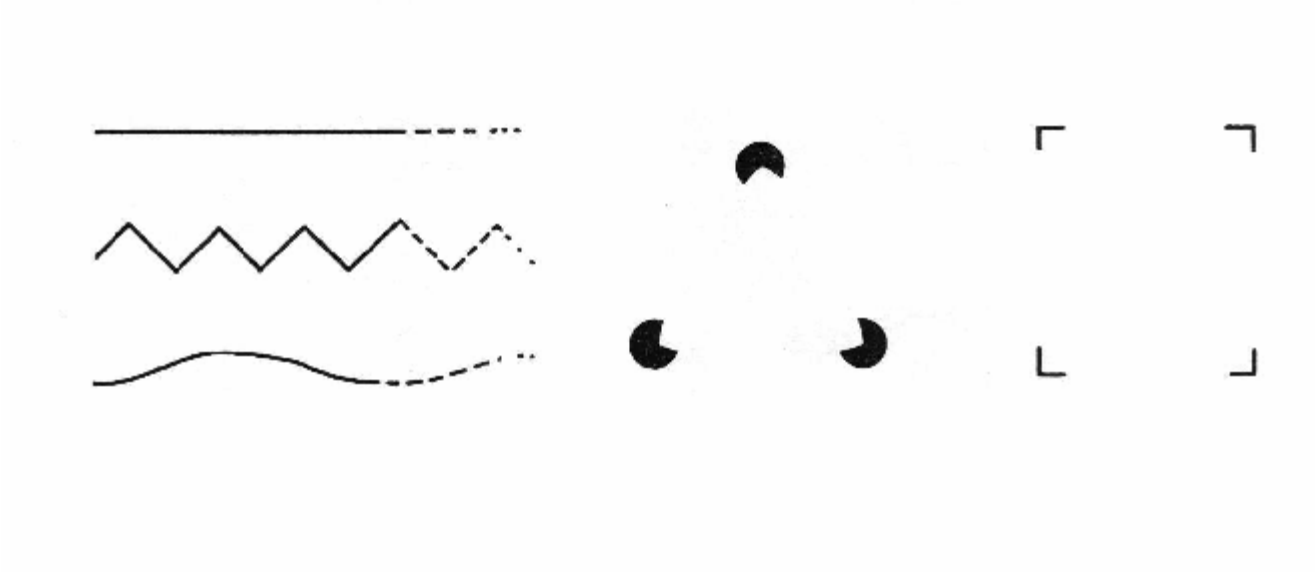


**Figure 34**: Continuity and closure. Perception has a tendency to continue lines as they started: a straight line as a straight line, a zigzag as a zigzag, a wavy line as a wavy line. On the right closure is illustrated through the four angles which are suffucient to perceive a rectangle. Information is concentrated at the corners.
(From Prak, 1977).

The law of common movement: This describes the ability of the eye to group e1ements which move simultaneously, and in a similar manner. Rhythms in architecture are the repetitive series of equal forms: regular, increasing and irregular ones(fig 30).The repetition of a single element at regular intervals, or a group of elements. The criterion for regularity is the instant recognition of the element or the group repeated. A large number of repetition is necessary for thr recognition of the redundancy of repetitive groups (fig 31). The Gestalt psychology appears to be highly relevant to urban design methods of analysis because it provides a theoretical basis which helps create a coherent visual image of the urban environment.

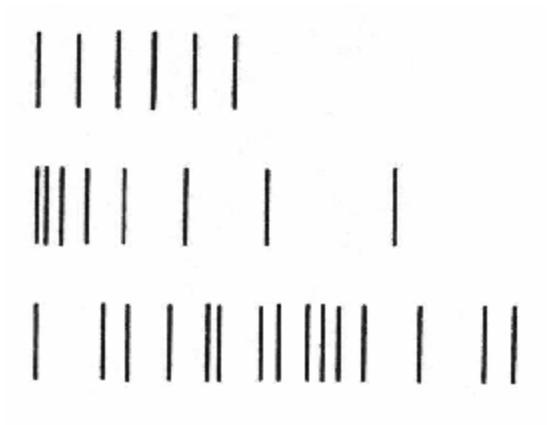


**Figure 35**: Rhythms :regular, increasing and irregular.

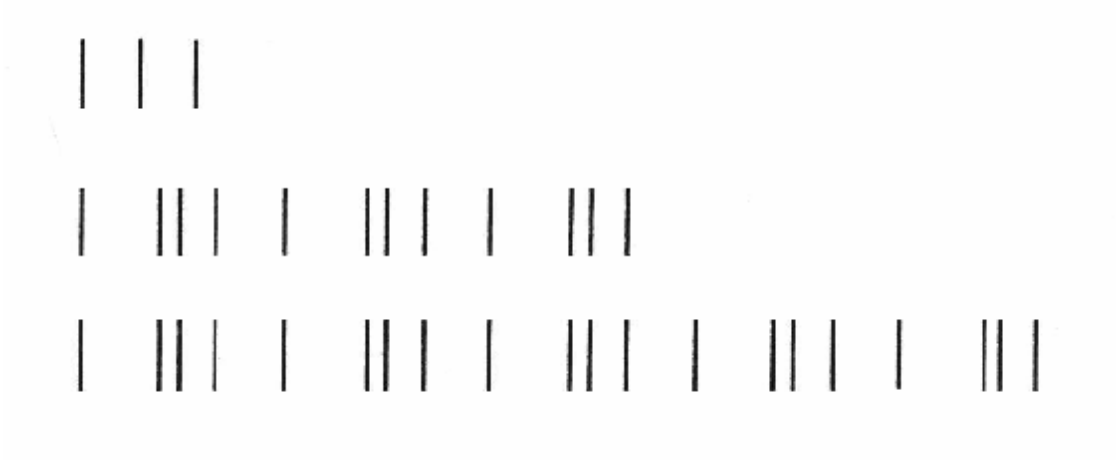


**Figure 36**: Three repetitions are sufficient if the repetitive element consists of a single line Only. Repetitions of groups (middle) contain more information; to make decoding Still relatively easy , additional redundancy is desirable, which is obtained by Repeting the group more then three times.

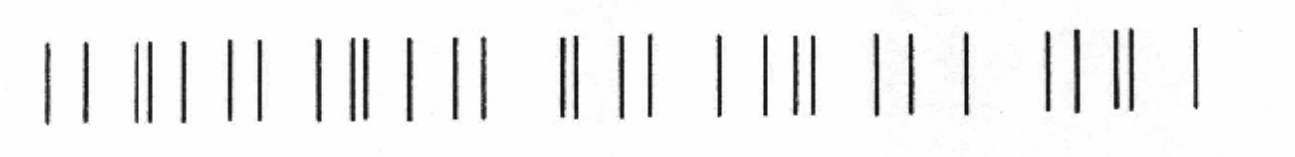


**Figure 37**: The tendency to increase redundancy is so much a part of the visual system That even entirely irregular rhythms look as if they had some irregularity.

It appears that configurations which “escape” the Gestalt-law create ambiguous perceptions (Prak, 1989, 23).” Ambiguous forms are difficult to decode, because perception vecillates between two “readings” “ He explains that in Figure 32.

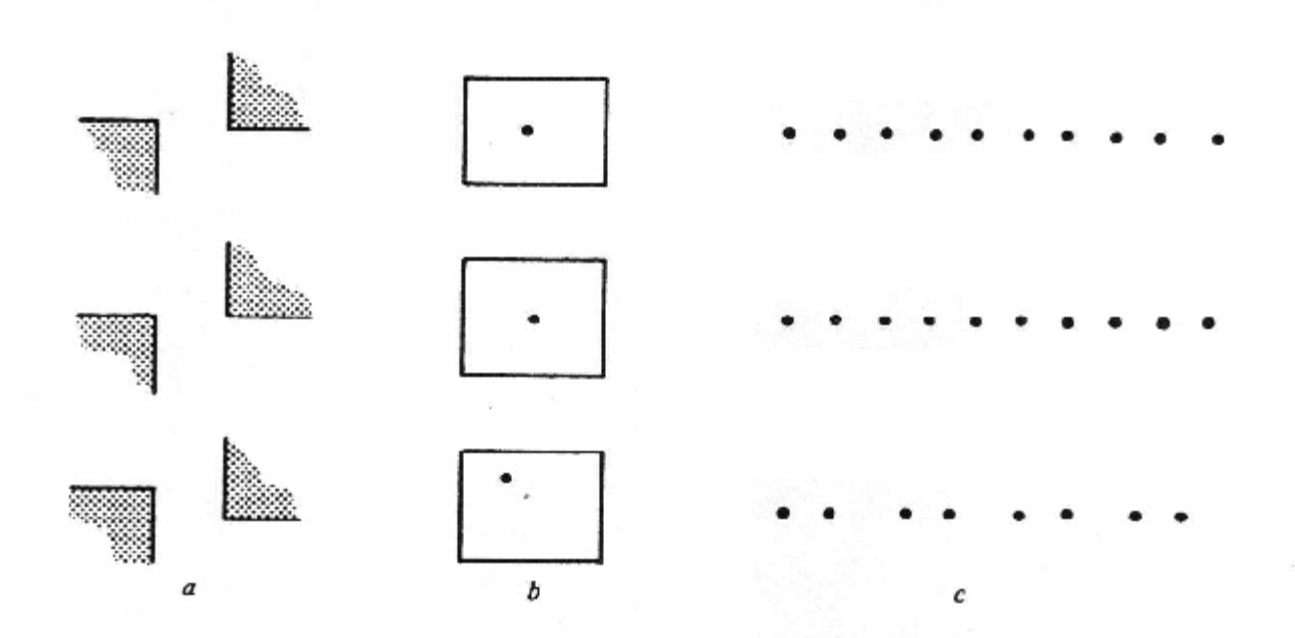



**Figure 38**: Ambiguous figures. Each figure of the top row lies between the two below it.

a) Top: the two sides do not line up, however seem to do so, because of the of the law of continuity. Middle : lining up ; bottom : unambiguously not lining up.
b) The dot seems to be nearly in the center.
c) The series of dots consists of pairs so spaced that it could be a continuous series with equal intervals. In each of these three ambiguous figures the ambiguity arises from being very close to a simpler form, which is preferred in perception because of its greater redundancy.(From Prak, 1989, p24).

The Gestalt-laws are conditional: they are not laws such as the laws of physics or of biological heredity; often we find them the term tendencies. There is no fixed hierarchy amongst them, in which one law always prevails over another. On the contrary , in some cases the second prevails, in others the third or the forth.

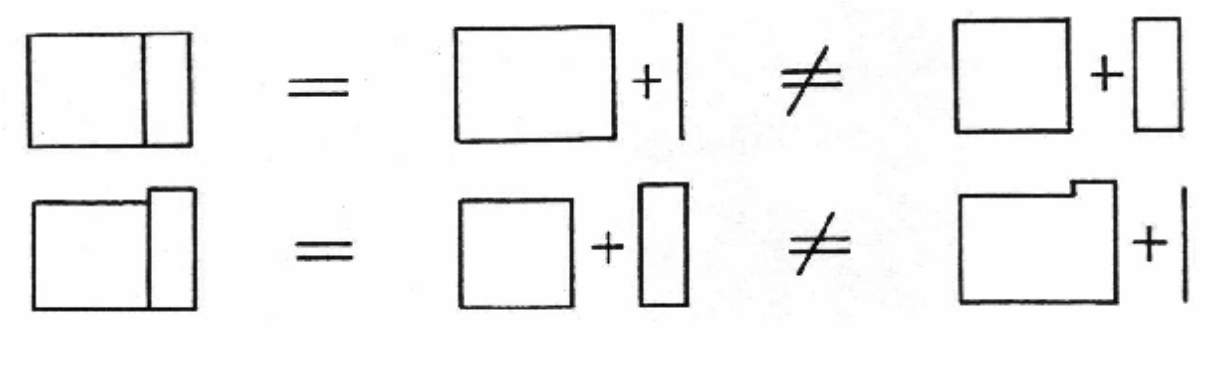


**Figure 39**: Continuity or discontinuity of the edge determines whether or not two rectangles are perceived. Simplicity of form prevails.

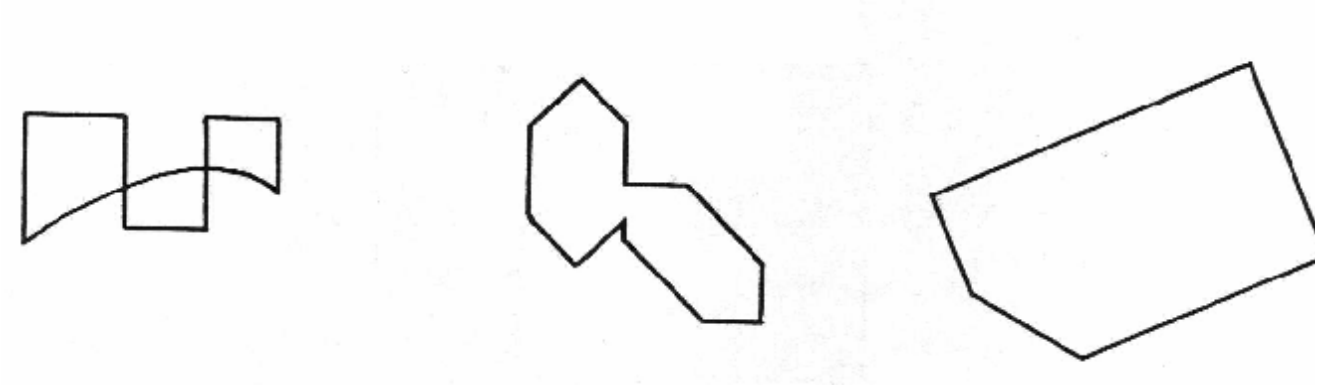


**Figure 40**: On the left, a curved line and a rectangular line going up and down are perceived Rather than a st of irregular trapezoids because the first interpretation is simpler Than the second.
In the middle, even if the dividing line is missing, a single outline can be perceived Two hexagons.
On the right, a pentagon? Because of the simplicity of form , a rectangle with a cut-Off corner.

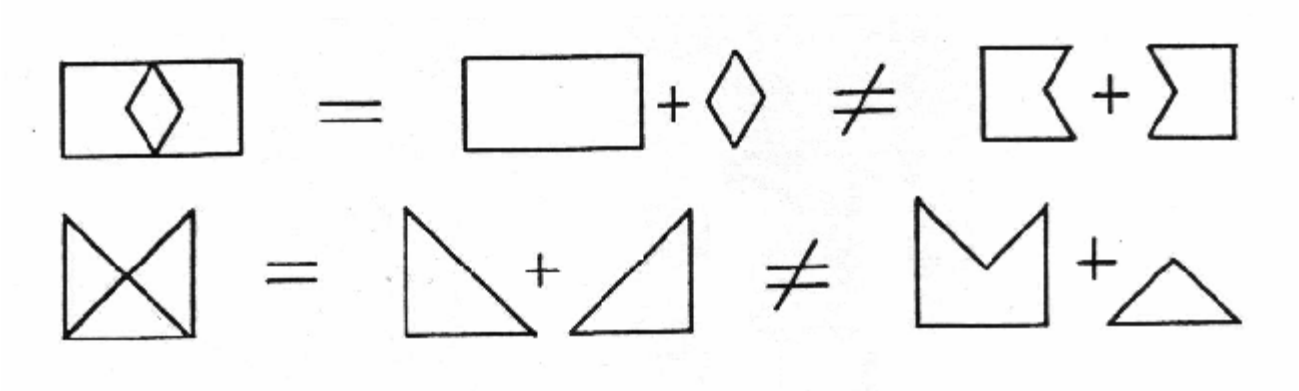


**Figure 41**: Simplicity of forms prevails over closed outlines.

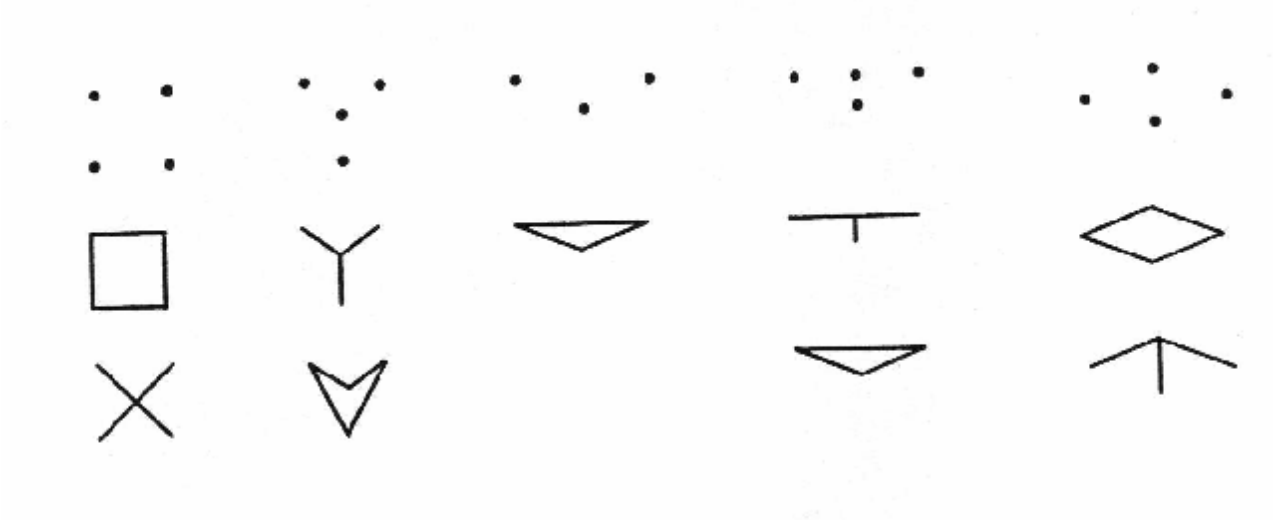
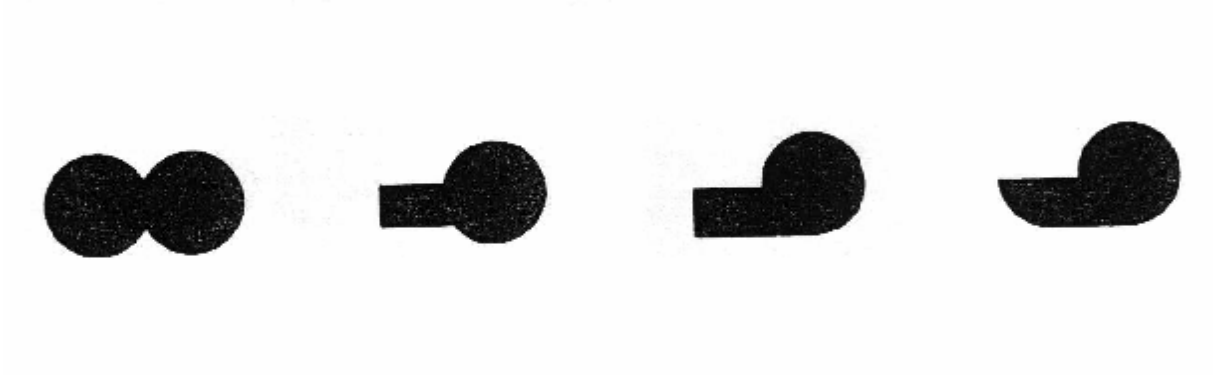


**Figure 42**: The point configuration of the top row are perceived at first glance as the outline figures of the middle row and not as those of the bottom row. It turns out that simplicity of form and closure win out in the first , the third and the fifth figure (from left to right), but not in the second and the fourth figure. In the fourth and the second the law of proximity prevails over simplicity of form. (From Prak, 1989, p 21).

Psychologists observe that human and animal visual perception is well adapted to the perception of differencies and changes in the environment and tends to focus on the different rather than on the similar (Prak, 1977) and too much redundancy (predictible parts) leads to a lagging of interest. However they stress that coherence in design is obtained by similarity (of types of forms, directions, dimensions and surface treatment), continuity (lignes, forms, directions ) and proximity (figs; 32,33,34,35; 39).

Moreover the evaluations of the "image" of the urban environments as a whole (see section 4.6) tend to establish that variety and contrast are not only of practical use to find one's way (see Lynch , 1960, and Goodey, 1971) but are the key variables in offering the maximum choices in term of use, opportunities, appropriateness, sensory experiences and personnalisation. However the need for variety (unknown figures received more attention in some experiences) and information is not unlimited (Prak, 1977, 64). The experiences of Kalsbeek in 1967 who set his subjects two separate tasks, thereby increasing the amount of information they had to handle. Their hartbeat started to show a rythm similar to that under a condition of physical effort, some subjects became slightly agressive. He reached the conclusion that man's perception seems to balance between his need for variety and his organism limited capacity of handling information. Finally Bouma and Andriessen (1980) set

up experiences on the perception of direction and concluded that the visual system is more sensitive to horizontal and vertical direction than to others.The laws and tendencies above can help some visual design problems to be tackled. A facade in the street can be designed to appear taller or shorter according to the principles above. The contrast can be enhanced by differences in fenestration, color and textures of materials. Details can help different facades to be unified. But some shapes have so much internal coherence that it is very hard to subordinate them to a large configuration. They tend to remain separate forms. Such forms are called “hard Gestaltd”. A circle is in that sense “harder” than an equilateral triangle and a square is harder than the average rectangle. Often the only way to subordinate them is to use the law of continuity by continuing one of their contours ( fig 37).



a b c d

**Figure 43**: Hard Gestalt.
a .Two circles remain two circles and do not chang into some other
More complex unified form.
b& c. A rectangle loosely attached to a circle becomes a part of it when its side is tangent to the circumference (law of continuity).
c.A rounded end at a rectangle enhances the relation between the two parts; it uses The law of equality for increasing visual redundancy.(From Prak, 1989, p 23).

The Gestalt- laws can help the designer to master the following aspects of the built environment particularly the aesthetic of the street wall (group of buildings):

- types of forms,
- directions,
- dimensions,
- surface treatment (textures and details),
- Rhythm of windows, ornamentation.

### 6.3.3- Phenomenology

There is a growing body of qualitative, descriptive research fucussing on urban environments and the street space in particular. A return to the actual nature of everyday anvironmental experiences and behaviors is becoming a major base to explore and describe the streetlife and the eventual dimensions of human experiences. Phenomenology is a descriptive science which explores person-environment relationship through qualitative description and interpretation. Seamon (31) defines phenomenology as a descriptive science, a part of philosophical tradition of meanings which has been considered "humanist". Its most important concern is a description of human experience and meanings as they are lived on the base of careful looking, seeing, and understanding. Phenomenology has become significant in design because of the fai1ure of architectural functionalism and formalism to create humane and coherent spaces, A major aim of phenomenology is thoroughly to explore and describe the everyday setting and the life it contains. with the eventual goal of identifying its non-variable. Structures -i.e., networks of re1ationships marking particu1ar dimensions of human awareness, experience, and action.

Referring to research in environment and behavior, this approach has been considered effective in pointing out underlying experiential dynamics and qualities which transform environment in to places(32).

Phenomenological methods include:

(1) Transcript and analysis of discussion (undertaken by the researcher) with the person who has experienced the

Phenomenon being studied.

*(2)* careful study of second-hand texts.

(3) Interviews.

(4) Direct involvement, in daily city life.

Context and method are interrelated in phenomenology .

Environmental experience and sense of place are major phenomenological themes in environment - behavior research. the former theme asks what are the various ways-bodily, emotionally,cognitively and so forth- in which people experience space, nature, landscape, and the built- environment? The answers may explain the nature of human environmental experience. in the latter, individua1 environmental qualities such as built versus natural,

enclosed versus exposed, private versus public, insides. Dwelling/journey are gathered into a whole concept.

Phenemonology offers a practicle approach to the multidimensional relationship between people and environment and helps to respect the pragmatic and the poetic in life.It opens large perspectives for better urban livable spaces.

Since the 1980s the everyday urban life constitutes the base for the studies and the interpretations in order to identify some invariant structures (particular qualities, networks of relationships). The main vehicle is intuitive insight and perspicacite for that pragmatism, sincerity and perseverence are needed to grasp its factors and its elements. Different individuals must take part in the exercice and confrontations of the descriptions must be made. This process towards clarity and objectivity is called “intersubjective corroboration” (corroborer: to supporte or strengthen an idea or a belief by fresh information) – that is, the verification of one person’s experiential accounts with others (33).

De Rivera (34)and Jager identifie seven types of phenomenological methods :

-reflective empirical phenomenology (to speak with a person who have experienced the phenomenon being experienced ).

- conceptual encounter.
- naturalistic phenomenology,
- construction of text,

-observation of parallel processes

-thoughtful reflexion on phenomena,

-careful study of second-hand texts.

The choice of the method is in relation to the particular qualities of the phenomenon.

We may identify some general weaknesses which phenomenology must strengthen to be recognised and assessed as an established approach in environment behavior research (35):

- subjective and intersubjective,
- unique and general,
- the thing in itself and language,
- individual and society.

The issue of validity lies in the corroboration, criticism and clarification between different parties. To resolve the tension between the uniqueness and the generalisation we have to admit that phenomenology is an art that sustains intuition and sensitive seeing, underlines structures and goes to the essence of experience and behavior. Seamon stressed on the third

point of tension which must be resolved if phenomenology is to be successful: the relation between experience and language. How the words choosen by the scholars are the one which are the most accurate?. Heidegger (36) points out that an attitude of care and concern for the thing will lead to a faithful verbal description. The last weakness in phenomenology is the tension between individual and society. The Marxist- structuralists, in their materialist interpretations of human action and history, emphasize various large-scale socioeconomic structures which are said to mold and condition individuals, groups and historical events. The existentialists (Heidegger, Sartre) emphasise a concern for experience, freedom, understanding and self-growth, and consequently individual and personal development provide the major means for making a difference in the larger world.

Phenomenology offers a practical tool to learn from the multidimensional relationship between people and environment with no preconceived idea of environment determinism. It is recommended to be undertaken with care, intuition and no preconceived attitudes.

In order to get a general view on the environmental research and the transactions between people and their physical context we must present an appraisal of some perspectives. The essence of the empiricist-positivist perspective is that behavior is under the control of the enviroment, that is environment determinism. Operant psychology and ecological psychology are the main branches. The applicability of operant principles to problems such as littering, water conservation have been undertaken. In the ecological psychology, the major focus is on the influence of behavior's settings on the behavior of large numbers of people (stadiums, schools). It attempts to describe the influence of key community settings on collective behaviors. Sometimes the outcomes of the positivist-empiricist research can be specified in advance and consequently are persuasive. In addition the gathering of quantitative data and the opportunity to apply statistical techniques help to present arguments that are easily accessible to an audience. The phenomenological strategy is different in many regards. The difficulty is to untangle to which extent the environment influence the behavior and to identify cognitive processes with no determinism.

Territoriality, the concept of "sense of place" and the image of the city are the major issues in that context. The street is implicitly recognized as an integral component of the urban structure and as the most important element by which the city is experienced (37).

Instinctive appreciation of "ownership" and occupation of territory in the city has been considered immensely relevant for creating a "sense of place". Studies of the territorial behaviour of cities mainly on observation came out with design principles related mainly to the creation of successfu1 neighborhoods.

Alexander (38) elaborated "patterns" similar to Jacobs s (39) "prototypes"- "mixed uses", "the need for small bloks", "the need for concentration" , to constitute a neighborhood in which the street is not only for traffic but for social interactions. Sidewalks in a so defined are a of the city are seen by Jacobs (40) as the arena in which people could enlarge their private lives and have contact with neighbours. Newman (41} postulated a strong connection between crime and poor design because of a lack of supervision of territory. In addition a notion of priority in design principles has been referred to : when one condition is satisfied at the expense of another, dissatisfaction and failure may occur.

Place theory is a form of evaluation of the urban environment. as cultural and historical setting arid how it gives "echo" to human needs. The emergence of place theory may be traced in the first half of this century bearing the name of "Townscape". This theory is mainly constructed on the basis of anthropology (which develops the notion of territoriality), psychology (which gives priorities to how the city dweller actually perceives, uses and enjoys hers or his environment), and semiology (which is devoted to the study of "meaning" in the built environment).

Place theory may be considered as a pro-urbanism movement which recognized the fact that cities are the forum of everyday life. it shifts from the aesthetics of perception to more social issues, investigating the design of public spaces on the basis of people’s urban experiences.

The perception of the urban environment which is one area of particular concern in urban design is extensively used to support the place theory. The exploration of cities,

studying and observing how they are perceived and used by people, are the approaches considered to improve the design of public spaces (42).

The concept of place or of "sense of place" in the urban environment is sustained by an interrelated system which includes human needs, human values and daily activities or everyday life (see section 4.1.3). In the last two decades this system has been reinforced by the investigation into regional expression which is becoming an important issue not only in single buildings but at a larger scale, Regionalism is a movement against modern architectural which stresses the necessity of giving a sense of " identity"," belonging" ,"continuity" ,"evolution" , and that to enhance the "spirit of place" within the building, the street-space, the whole city. its roots may be traced. earlier, in environmental preservation. In Western Europe, the idea of preservation is related to the 15th century, in the form of an esoteric attraction to relies of buildings -to the point of construction of sham ruins. By the eighteenth century attention was given to the structures of the past, a widespread upper-class fashion. By the nineteenth century it became part of the intellectual baggage of all middle-class travelers. At the same time, first in the United States and slightly later in Europe, organised movements emerged to preserve historic landmarks for the public (43). Regiona1ism as defined above emerged in Europe in the 1930s. In the Middle East, with specific reference to Saudia Arabia, since the energy crisis of the early seventies, the development of immense opportunities , the work construction industry in the area, and the import of Western technology, led to alienating urban environments (44). The search for a contemporary Islamic architecture was undertaken from 1978 as a response to the Westernization of the Arab World.

A common ground is shared by the leading figures in regional ism who share the following principles. Strict preservation is totally rejected (45) . Regionalism is intended to relate to a process of evolution as opposed to that of revolution, which characterized to a large extent the modern movement . The use of a living contemporary regionalist technology is celebrated by the ail the members of regionalist architects (46), However Regionalism is far from a totally successful enterprise, because of the danger of indulging in nostalgic revivals of vernacular elements without a thorough understanding of their principles .

In addition this movement attempts to le ad an inquiry into the historical context which has been left aside in the Modem Movement : "if in abs tract , physical terms, apace is a

bounded or purposeful void with the potential of physically linking things , it only becomes place when it is given a contextual meaning derived from cultural or regional content" (47).

Place theory culminated in the early 1960s through Kevin Lynch "a The Image of the City and Jane Jacobs's Death and_ .Life_of Great American Cities. The most significant aspect of these two studies lies in the seminal influence upon later research of urban design, on the study of visual quality of the city, and of territorial behavior (48).

Sense of place- genuis loci involves the idea that there is something intangible in certain places, a kind of quality that makes them special and worth to go there as much as one person can (49). The quality may be :

-geographical,

-regional character,

-the atmosphere,

-the character,

- feeling of safety.

In “The concept of dwelling”, 1985, Norberg-Shulz (50) explored the sense of place in the urban space (collective dwellings). He suggested that each level of physical place will be most successful when one is aware of the sphere of dwelling that each place supports and reflects. Relph (51) relates the sense of place to the degree to which one feels inside- that is secure rather than exposed. Sitting outside the “cafes” in some mediterranean’s towns, being seen and looking, having the security of the building behind may constitute the secret of the sense of place. We must recognise that the physical environment cannot establish the whole atmosphere. However designers may contribute to its support by identifying built qualities which sustain a sense of place. Christopher Alexander’s “Pattern Language” developps a way of building which in premodern times was known instinctively. He identified 253 elements or “patterns” which may contribute to create a sense of place. Consequently it appears that phenomenology may be the tool to create a link between theory and practice, architecture and planning, form and function, action and place.

Based on an analysis of urban spatial cognition allowing" for the dominance of vision in spatial perception, the central concept was the "legibility" of the cityscape, the ease with which individuals can organize the various elements of" urban for m into coherent mental, visual and functional representations.

The most significant aspect of The image of the City by Lynch (I960) lay in its stimulating effect on the reexamination of the urban context, by pointing out what the urban designer should be concerned with and the method to adopt in order to achieve his ends (52). Firstly Lynch hypothesized that cities varied in the extent to which they evoked a strong image, a quality termed "imageability", secondly that the cities that were "imageable" were places that could be apprehended as patterns of high continuity with interconnected parts.

These assumptions were assessed on the basis of a fivefold typology of elements: paths or channels along which people moved through the city, edges or boundaries, districts, landmarks and nodes. (However, there is some dispute as to whether these categories were derived beforehand and then applied or whether they were inductively generated; (53). The analysis was carried out by a team in three American cities: Boston, Los Angeles,and Jersey city, and samples of predominantly middle-class people were interviewed. The techniques applied were sketch maps, verbal lists of distinctive features, directions for making specific trips in the city, and informal questions about. orientations . In addition the findings of individual respondents were compared with visual surveys which had been carried out by trained observers.

The Image of the City has been the object. of significant criticisms. On one hand it is recognized as a viable research paradigm in that it offered a method of codifying a large and more abstract aspect of urban experience. on the other hand the emphasis upon vision as the mere form of sensory information and perception was to serve "legibility" and accordingly other elements were dismissed. It is argued that more attention should have been given to functional aspects of the city and that the recognition of symbols involves a more active relationship between the perceiver and his environment (54). Finally, the validity of the freehand sketch has been questioned: maps drawn from memory might indicate map-drawing abilities rather than true cognitive representations of the city (55).

The validity of Lynch's typology has been questioned in several subsequent studies . The category of function has been added in some typologies (56) and more radical changes have been noted in the City-Scene project (57), ending in a condensed typology including paths, nodes/ Landmarks and edges, or point -features, linear-features and areas or buildings ,

paths and areas.Moreover it has be en pointed out that. the size of a building does not make a landmark,

Further research has been devoted to the experiential perceptions of motorist and pedestrian. A study of travel experiences of motorists was provided by The View from the Road in which it was concluded that vision is the major sense which helps the driver (58). By means of tapes , fi1ms, photographs ,and field-note books , an explanatory study showed that the main cues necessary to achieve a successful trip are mundane details of signs, lamp-posts, street furniture, skyline, and changing impressions of land and water .From the view of the behavioural geography field, and of representative samples of the literature that was in the 1980s, it has been observed that:

Overall, research on the environmental experiences of people when traveling through the city, whether by car or on foot, has not yet reached the stage where broadly applicable findings have emerged, but it is Possible to suggest that the path system can p1ay two different roles in urban spatial cognition. First, paths serve to expand and integrate spatial knowledge. paths, as we have already seen, are channels; along which people move and experience the city....Second, roads and associated land uses can also act, as a barrier which effectively serves to fragment urban schemata.

This section reviewed approaches that are most applied to environment - behavior research which establish that the physical environment does not operate alone as a reinforcing stimulus. Rather, psycho-social and cultural processes are important factors to explain action and people's appreciation of a space. The under standing of the interaction person - environment relies on various techniques of data-gathering and interpretation such as observation, interviews, sketches, but there is no established method .

### 6.4- Approaches to study the urban structure

The sources of the following design strategies in urban design are persisting historical models, complete new and utopian formulations of the city , and of the ways in which it is experienced by people. The understanding of spatial design is to highlight the principles and the relationship between different type of spaces and to which extent public life is enhanced.

The solid-void approach, the structure of the overall plan are two major approaches to help build a strategy to better the public urban space as a whole.

### 7.4.1- The solid-void approach

The foundation of the solid –void theory may related to Giambattista Nolli, in 1748 and later Camillo Sitte's version of figure –ground representation which is a distinction of public fabric and dwellings as solids and open space as voids. They were shaded in two ways.

The solid-void theory aims to develop an adequate spatial language with which a meaningful environment can be organized. This theory may be encountered under different appellations such as built/unbuilt theory or solids/voids t*h*eory but the common reference is he relation between buildings *(* figure, built , solids ) and open spaces (ground, unbuilt space, voids ) This framework is used " to clarify the structure of urban spaces in a city or district by establishing a hierarchy o f spaces of different sizes that are individually enclosed but order directionally in relation to each other "(59*)*(fig 26 ). The study of relationships between mass and open space is considered as the starting point in the understanding of urban form in order to identify the features which help design better coherent urban spaces. This approach help understand that when the urban form is predominantly vertical (towers, slabs) it is more difficult to shape open space and consequently to meet man's need for a tangible "receptacle" ( see section ).

The first important type of solid in the traditional model can be characterized as public monuments or institutions (tribunal, theatre, town hall etc). They are established proeminently , independently or welded to less important buildings. The second type of solid is the block which houses residential, offices, retail or industrial use. However the whole fabric is interconnected and the void seem to have been considered at each step sometimes put aside, sometimes interpenetrating the important buildings . The network of streets and squares constitutes the main type of open spaces when the second type includes the inner block which is devoted to leisure or utility activities. Sometimes a linear opening space system (such as river, canyons) make up the the third type. The overall plan (see figure 44) shows a contrast between the street network and the places as well as a reinforcement of one another. The density of the mass constitutes the support of these lessons of urban design (60).

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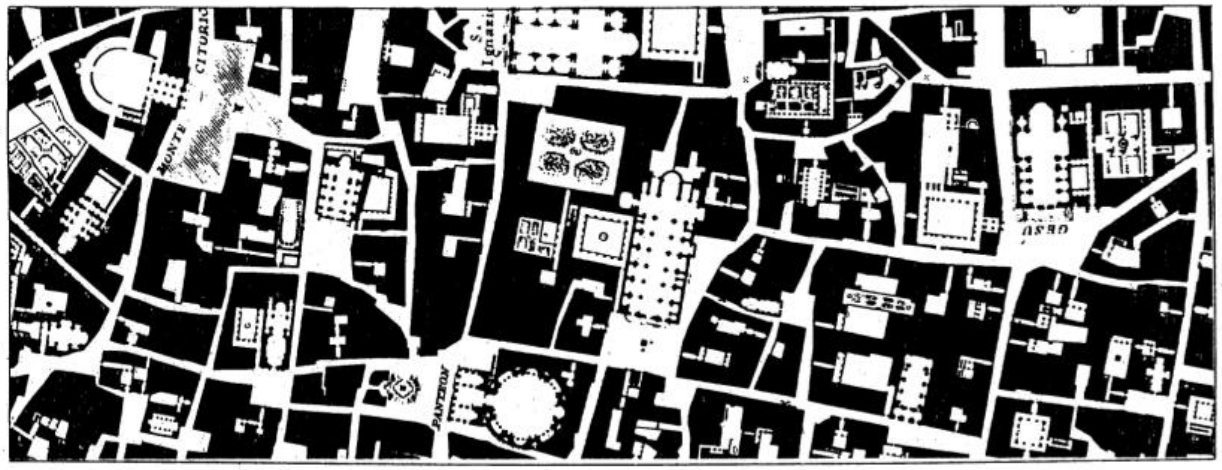


**Figure 44** : Giambattista Nolli. Map of Rome. 1748.
This map illustrates the figure-ground relationship of the traditional City. The built space fabric is dense allowing gathering spaces, places, Transitional spaces and streets to be defined as positive voids. (from Trancik, p 99).

The search is for harmonious effects , "artistic merit" and relates to the component of perception .This evaluation of cities attempts to understand the principles of steady settlements which seem to have grown organization in comparison to the highly planned geometrical town. This specific examination of a facet of the urban fabric in general and of the street-space in particular is, first to isolate some formal properties and second to eva1uate their performance in creating or adding cohesion and signification to our everyday space. This approach, whose earlier versions are related to Giambattista Nolli and Camillo Sittle , is based on the comparison between two concepts or the layout of the city and incorporates the component of" perception.

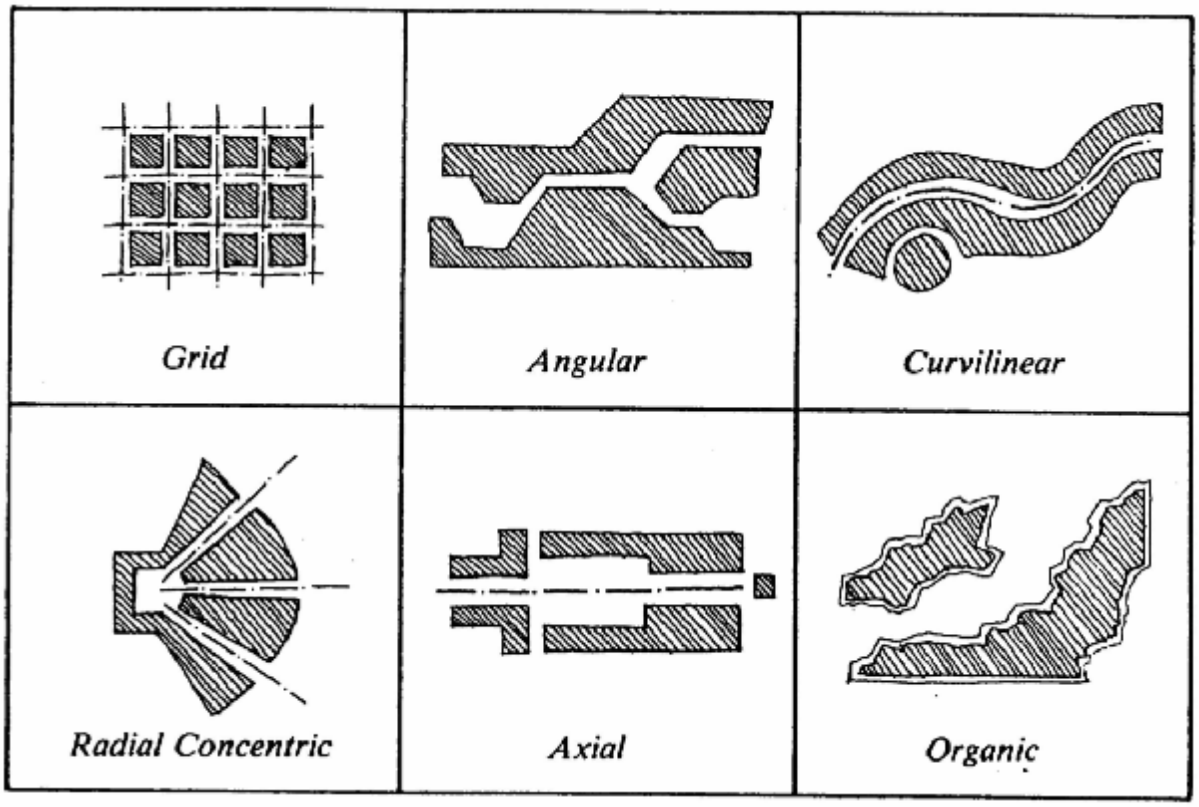
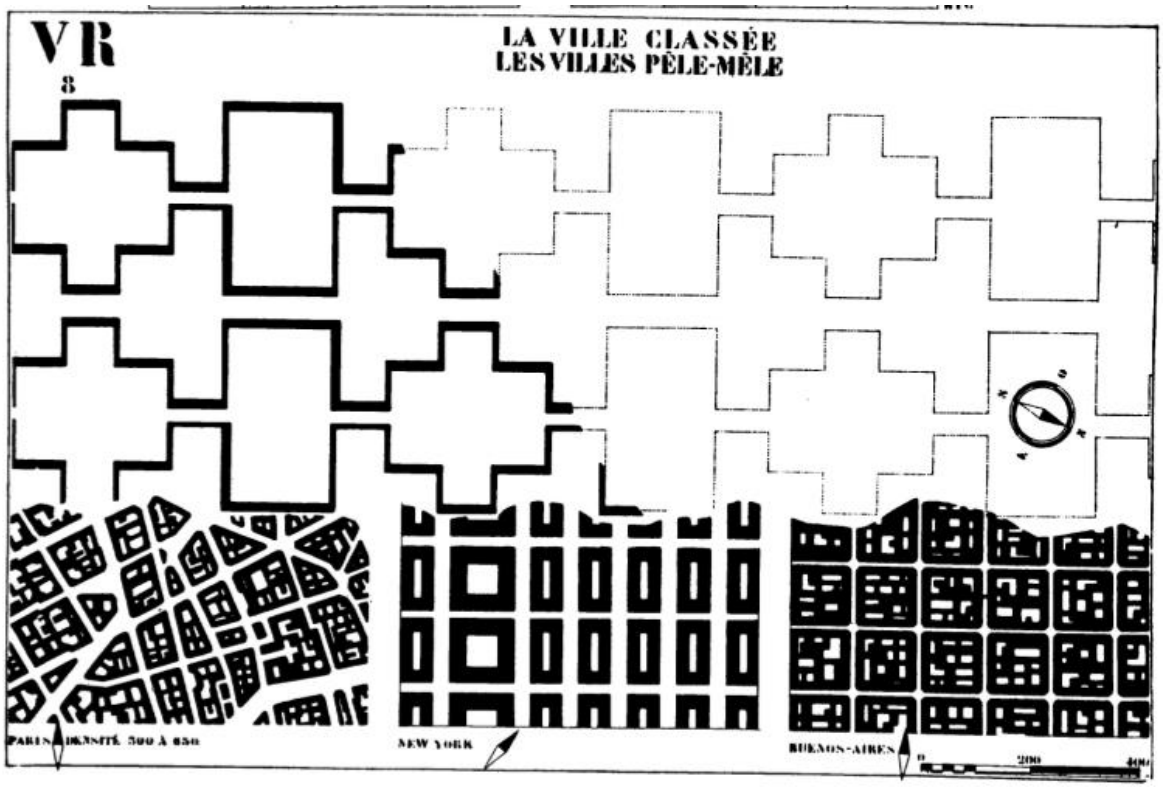



**Figure 45** : Different types of solids and voids.
(from Gosling, p 101).

The traditional city offers a model where the building coverage is denser ( horizontally ) than the exterior space giving shape to the open public space, namely the square and the street. The pervasive model of independent blocks laid on a large open space presents another system where although there is high density (vertically) the built space relates vaguely to the open space [Figs. 27- 28]. This concept has been extensively developed the Algerian's towns and precisely in Constantine. Moreover the layout ant the configuration of the external spaces , such as the loggia or the balcony do not house the activities for which they were designed. On the one hand these evolved as extension of internal spaces and activities which should be screened are, the least we can say,exhibited leading to a confusing image of the public urban spaces and to the image of the city as a whole (see section 7.4). The internal private activities housed in the arab houses's courtyards, have been dramatically moved to the external space. The modern approach in architecture did not take into account the cultural differences and the significance of transitional spaces. The whashing and the dusting of carpets, blankeks etc are activities at the core of the majority of the algerian house-keeper. This popular tradition, embedded in our daily life, has been given a unique choice, the facade, the public space to undertake these activities. A set of values have

been neglected and specific ways of doing things have not been the concern of many of us. Architects seem to have failed to establish built environments which sustain encoding, ordering systems (61). Differentiation of the physical environments according to people's needs must be the concern of the design professions.




Paris New York Buenos- Aires

**Figure 46**: Le Corbusier. Figure-ground diagram on the Ville Radieuse. The contrast between the traditionnal density and the modern spatial structure is evident. (from Le Corbusier, 1929, p. 30).

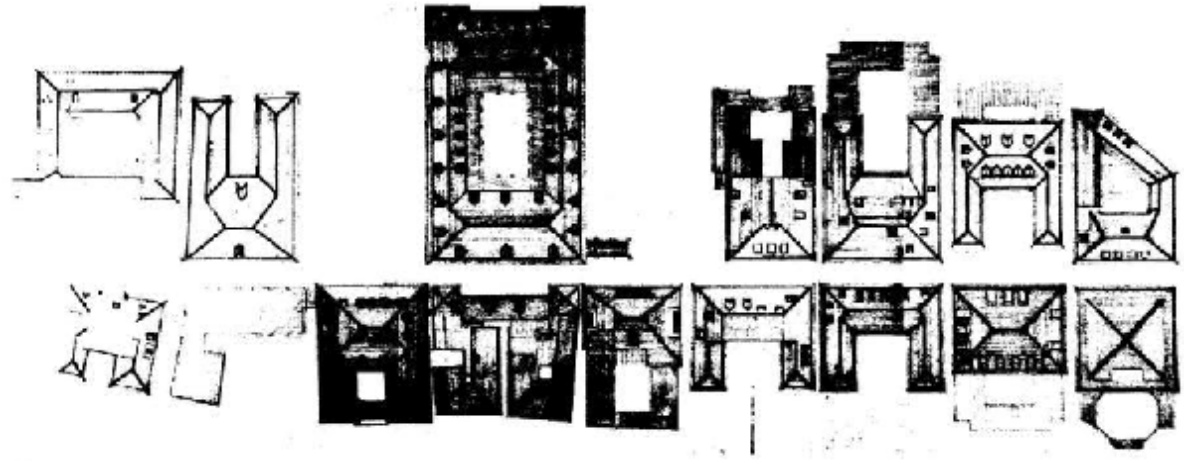
Many academics deplore the lack of coherent structure of historically evolved streets and squares. In figure 46 "Berlage's perimeter blocks form figural street space and squares that establish a continuity of urban fabric, setting up a vocabulary governing building volume,facade styles, and landscape treatment" (62). The enthousiasm expressed for celebrating the modem conception of space and the free-standing building by some researchers (63 ) is considered by many others as the break down point between architecture and public space. the negation of urban architecture, traduced by the loss of the "street" (64).

**Figure 47**: H.P. Berlage. Amsterdam South**.** "A masterly use of the edge-defining directional solid". (from Trancik, p 104).

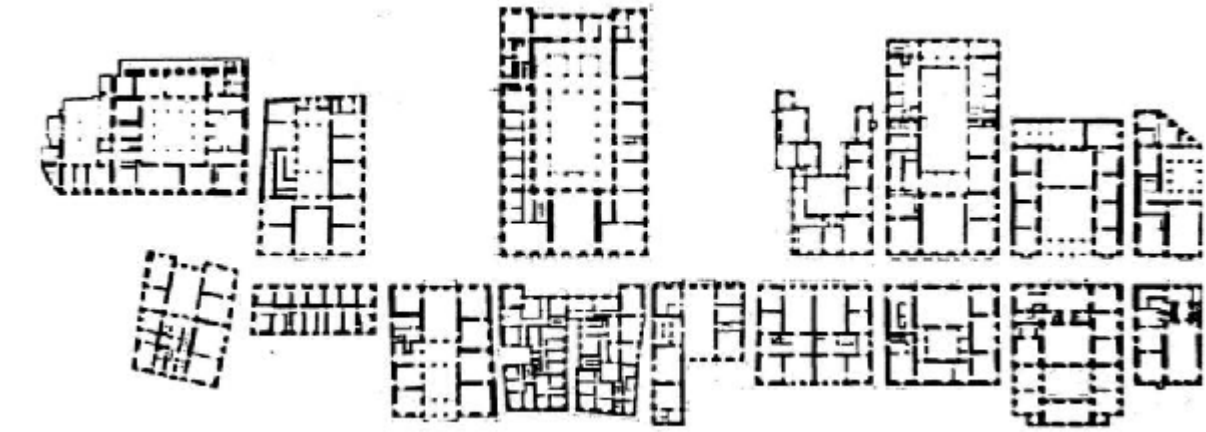
**Figure 48**: Vastra Frolunda. Sweden. Modern development : Buildings are isolated objects Spaces between them are vast and formless". (Trancik, p 1).

In the traditional city, the structure of space, the typical block structure, is made up of buildings that have a basically different condition of back and front. The block offers a public external front while the interior may be broken up into rear lots. Communal , semi – private , or private spaces. The solid-void condition in the block articulates a hierarchy of spaces of different condition ( the front is public while the back is hidden , private). The dweller is taken into consideration as an individual and as a part of the collectivity.

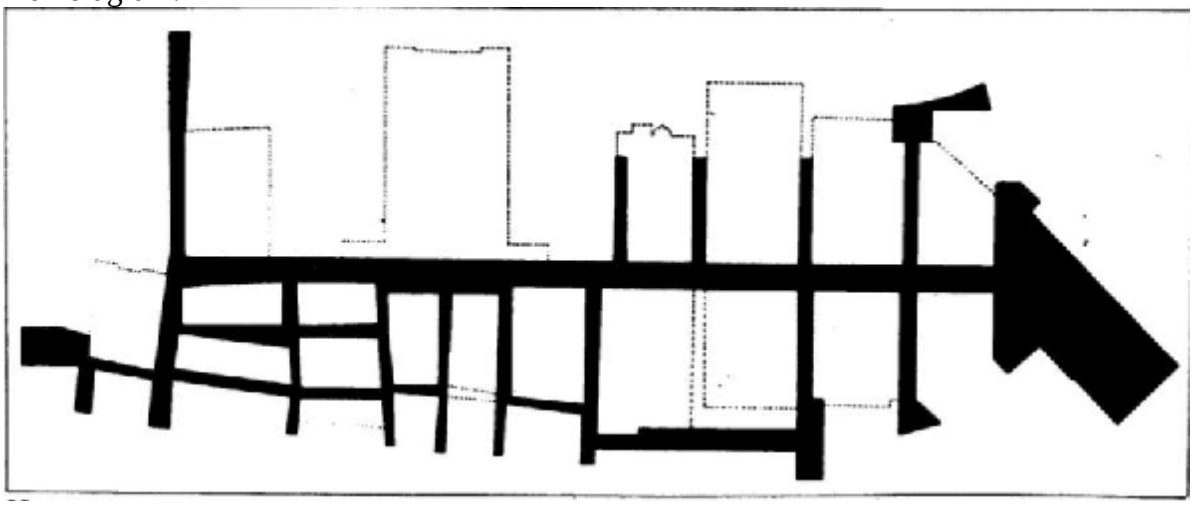
The void in the traditional city is contained and its basic characteristic is sensed volume. The interdependence between built and unbuilt is also distinguished in the continuons building mass from which the open space, the street, seem to have been "carved out". The traditional void (street) have been formed gradually, resulting from a growth by infill (65).



Roof plan.



Plan diagram.



Air view.

**Figure 49** : The Strada Nuova, Genoa, Italy.
The street is defined by individual buildings that establish a consistent wall and enclose the street space. (from Ghianda, p 87).

The first stage towards the negation of the street space is related to the decline of the "block" *{l'ilot)* which characterizes the classical European city (66). The decline of the block as a spatial organization started with a strong geometrisation, the exclusion of large plots and a less private internal space. The plot's depth has been reduced to the point where the building became a serie of sections which form recesses in an attempt to enclose a more private internal space (67).

In the city laid out on a grid-plan the street is conceived as a straightforward application of the concept and the definition of the street is of a channel that proceeds along, restricted on one or both sides by buildings. The repetitiveness of the crosstown streets at regular intervals is such that it undermines the continuity of the channels (68). Trancik estimates that grid-pattern streets operate mainly and merely for traffic. Moreover it appears that when the built form is predominantly vertical, such as with vertical slabs,or high towers, laid on a large ground place , this does not help to identify the resulting space (see the concept of space definition).
The figure-ground theory may help us to understand the principles on which a strong three-dimensional street-space is bui1t. These may be summarised as follows:

(i) A continuous street-wall.

(ii) Human scale: this may be related to a strong sense of enclosure of this outdoor room. The relationship of the vertical and horizontal dimensions is less than four-to-one. In other words the "walls" of the outdoor "room" must be at least one-quarter the width of the channel, and no more than twice the width in height. The vertical wall should not exceed four leve1s and is often situated between five and ten meters high .

(iii)There is a transition between public and private space which depends on the back to back and front to front principles of the urban tradition as block.

This approach, which diffused throughout the architectural and design professions (68), and although ending by combining physical and social information --such as size, preferred relationships such as back to back streets- is considered unsatisfactory because it does not lead to under standing of the precise nature of the relation between spatial organization and social information (70). The social logic of settlement (71) attempts to build

a conceptual model within which the relationship can be investigated on the basis of the social content of spatial patterning and the spatial content of social patterning (see sect 4.5.1).

The figure- ground approach is however a useful device at a certain stage of analysis; it gives a rendering of the physical structure and helps in the first stage of the design problem. It stresses the necessity to consider the design of the object in conjuction with structuring the void so that building and space can effectively coexist (72) .

### 6.4.2- The structure of the overall plan

This theory is based on an investigation into the comprehensive form of cities and its main concern is the structure of the overall plan (73). The aim is to build a coherent theory which goes beyond that of single buildings or the one of road hierarchy , This theory , while focussing on the articulation of exterior urban space , the site line, the organizational axis, makes direct reference to the street not only as a channel but as a three-dimensional space situated at the core of urban design : 'Urban design is ever concerned with the question of making comprehensible links between discrete things . As a corollary, it is concerned with making an extremely large entity comprehensible by articulating its parts Ultimately linking is assembling patterns of experience in cities" (74).

The common characteristic of the ideal megastructural mode is the way in which they express the city as a singly conceived, complete design solution. The System of "connections" (streets) based on unconstrained and rapid accessibility, oversimplified the street to a two dimensional "channel" or corridor.

The traditional mode 1s which have survived the passage of time and those utopians mode1s constitute the main sources and the background for this theory. The former includes two types of cities: those, such as medieval towns of Europe and Arab cities which seem to have grown organically, and the earlier group such as the Roman colonial cities.

Although grid-plans have ancient origins, modem town planning based on orthogonal geometries has met strong critics. One of the most influential of such critics was Camillo Sitte at the end of the 19th century who advocated a return to ancient forms and to smaller scale in the design of cities (75).

Larger streets meeting at right angles designed for mot or traffic, the abandonment and the retreat of architectural elements which were of great value in enhancing the street space were considered the first steps towards the alienation of the urban dweller from the city.The structural principles involved in making the "collective form" of traditional cities have been Established in the following approach in which the urban space is defined as group- form. The features of these spatial organizations are:

(i) consistent use of local and indigenous materials and construction methods as well as spontaneous, but minor, variations in physical expression.

(ii) use of geography and topography without transforming it to
preserve the natural character of the settlement.

(iii) the small scale strongly present: the constructions do not exceed two stories and the streets are linear and at an intimate scale (see section 4.3.1).

(iv) sequential development of simple elements of different size which predominantly are dwelling houses. . The street becomes as a semi-public space, socially livable, an articulated spine of growth. It becomes a unifying force functionally, socially and spatially (76).

The second type of collective urban form which has been developed is the compositional form in which the elements are preconceived and predetermined separately. In this purely architectural approach the visual and plastic relationship has been established on a two- dimensional plane. Although some efforts of landscaping the urban space.
results in an environment which is incoherent (such as in Milton Keynes which is difficult to experience on foot, and in which architectural elements are scattered within the System of roads) .

The third type of collective form identified by Maki is the megastructure developed mainly as a utopian model. This contrasts sharply with the two other forms in term of spatial configuration. In effect this approach stresses the relationship between the form of a city

expressed as a singly conceived complete design solution and the society which in habits it. The linkage of different spaces bas been reduced to a merely technical problem: circulation. The "outdoor" space was reduced to a network of pathways and lifts and some other technical innovations:

> **We must invent and rebuild ex novo our Modem City like an immense and tumultuous shipyard, active, mobile and everywhere dynamic, and the modem building like a gigantic machine. ...the lifts must swarm up the façades like serpents of glass and iron. ... ; the street , which, itself, will no longer lie like a doormat at the level of the thresholds, but plunge storeys deep into the earth, gathering up the traffic of the metropolis connected for necessary transfers to metal cat-walks and high-speed conveyor belts..." ( 75).**

The principle involved in making the collective form is that the element in the mega-form does not exist without a skeleton. The skeleton guides growth and the element depends on it (Maki, 1964; 33). This new conception of three dimensional linkage "into the air" is considered as notably unsuccessful to make meaningful complexes of form and activity and has been criticized by many scholars such as Banham (77), Frampton (78) and Rykwert (79). The planning content has been regarded as the expression of a lost of familiar public realm such as the street , the square and the *quartier* (neighbourhood ) (80).

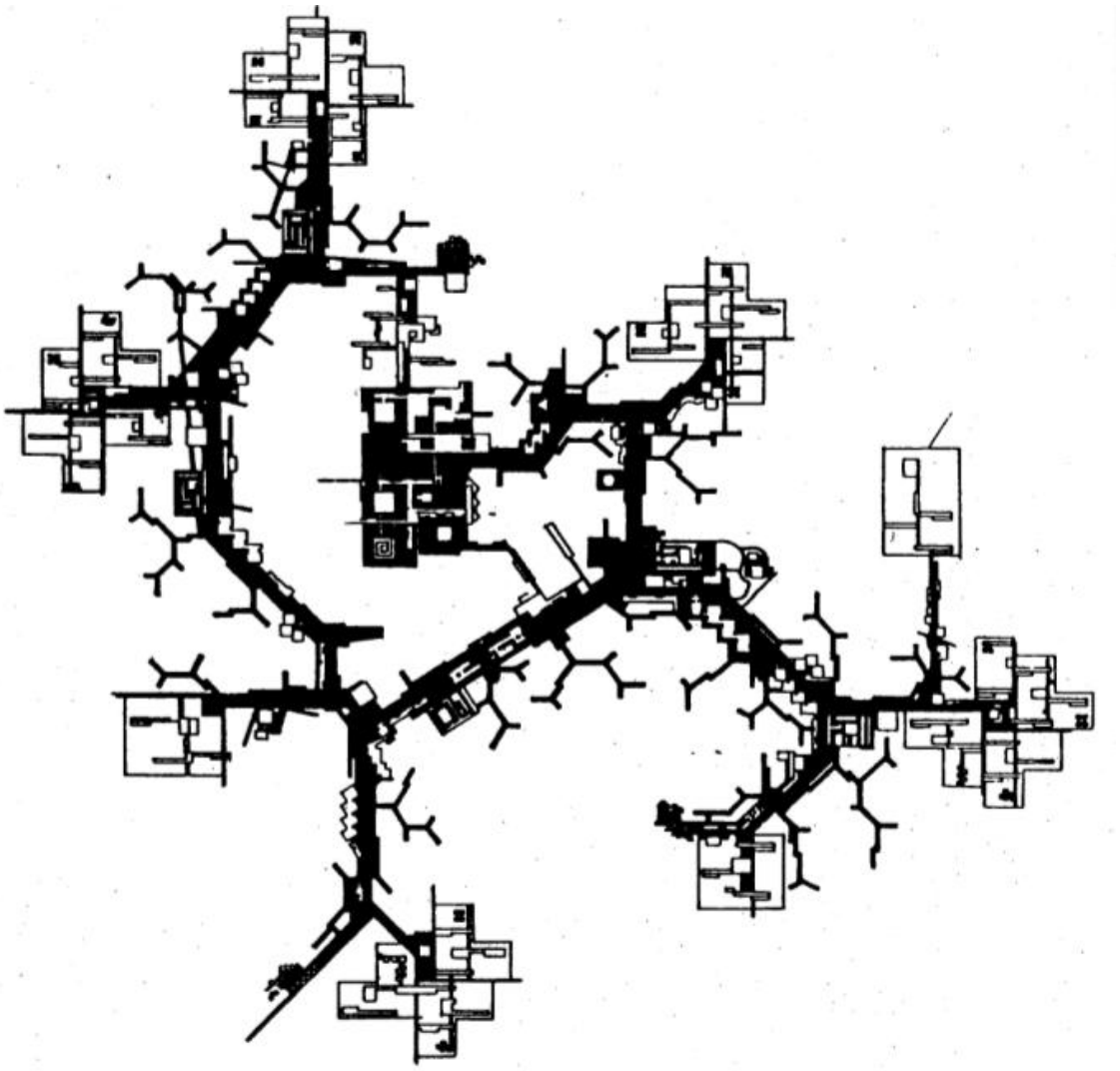


**Figure 50**: Toulouse-Le-Mirail. France.

Toulouse –Le-Mirail was considered as a major contribution to the theory of linkage
But considers exterior space only as a generator of form. (from Trancik, 1996, 92).

### 6.5- Spatial organisation and social consequences

The social logic of space (81) presents a theory and methods of analysis and Responsive Environments (82*)* is a manual for urban designers and both are academically established . The former research is carried out by the SERC and a group or researchers (Hillier et al) of the Unit of Architectural Studies at the Bartlett School in London, The latter is carried out by a team of researchers (Bentley et al) at the Joint Centre for Urban Design at Oxford Polytechnic . "The Social Logic of Space " is based on a comparative historical morphological analysis of the physical components of urban form, on the basis of empirical studies , not only studying the properties of plots, blocks and spaces , but also encompassing

correlation between spatial and social interaction. Specific attention has been given to the concept "enclosure". "Responsive Environments" is a definition of design principles and approaches for an analysis and evaluation of the conditions within existing urban environments, starting from an additional premise in which the dynamics of architectural and spatial elements are studied. The authors (Bentley et al) emphasize the needs of many different kind of people and stresses on the role of the urban designer to provide opportunities for discovery, appropriation and transformation.

The dynamic interconnection of space and people constitutes the basis of Hillier's and Hanson's approach, in The Social Logic of Space, which seeks to understand the social consequences of built form by studying spatial organizations.
The influence of spatial considerations on social structures has been a concern for geographers, anthropologists, theoretical sociologists, and archeologists. This approach, or approach to theory, called by the authors "space syntax", is based on analysis and evaluation of existing patterns of architectural space both at the building and urban level. It consists of a descriptive account of the morphological features of "man-made" space that could be explained by social processes and structures. Secondly, it includes a systematic observation of use and movement, and thirdly of computer simulation to find out the effect of different kinds of spatial pattern.

Hillier’s and Hanson’s method of urban analysis was based on representation, mathematical calculations and interpretation. "Alpha-analysis" constitutes the syntactic
Analysis of" settlements of the continuous open space, when "gamma analysis" is used in the analysis of building interiors.
A research study using "space syntax" method involved the analysis and simulation of more than 1000 towns, urban areas and design proposals, and the systematic observation of 15 examples. it led to the conclusion that the spatial organization of towns and urban areas affect pattern s of movement and use according to three principles:

a. intelligibility of space -that is, how easily inhabitants can distinguish between the larger pattern of space and the local parts;
b. the continuity of occupation -that is, whether there are "pockets" of unused or underused space in an area;

c. the predictability of space -how well the potential pattern of encounter is affected by spatial organization (83).

Hillier assessed the prominent typology of spatial concepts, in housing', allegedly drawn from the urban past-enclosure, court, cluster- and which stemmed from a preoccupation with associating dwellings with identifiable and distinct spaces in the hope that the localized "enclosures" or "clusters" so created would for m the basis of group identities and interactions. Hillier used the
following method of analysis [see Fig.62]. For each point an area ha H been draw comprising all the space of the square, to which the space that can be seen from any point in the square has been added. He observed two features which mark the dissimilarity between the two models:

a. the shapes almost join up to form a continuous structure,
b. there is a clear relation between the size of the square and the size of the overall shape visible from the square.

He compared a type of traditional urban pattern to a selection of recent housing schemes [Fig. 63-64]. He stated that enclosure becomes the basis for a methodology of layout design in which local enclosures are neither repeated nor subjected to simple geometrical treatment. Hillier's argument is that:

> **the indiscriminate use of enclosure has been responsible for the creation of fragmentary unintelligible and largely under-used spaces which constitute a significant proportion of our urban environment.**

He observed that the enclosure of these latter is open to objection. He observed that in the former model (the old town plan) all parts of open space were defined by their relation to building entrances ; but, equally, all parts were related by lines of sight and access to the larger scale space relationship. Even the "squares" which are the most obviously "enclosed" spaces, have this important additional property: they are strategic spaces from which a good deal of larger scale space structure of the town can be seen.

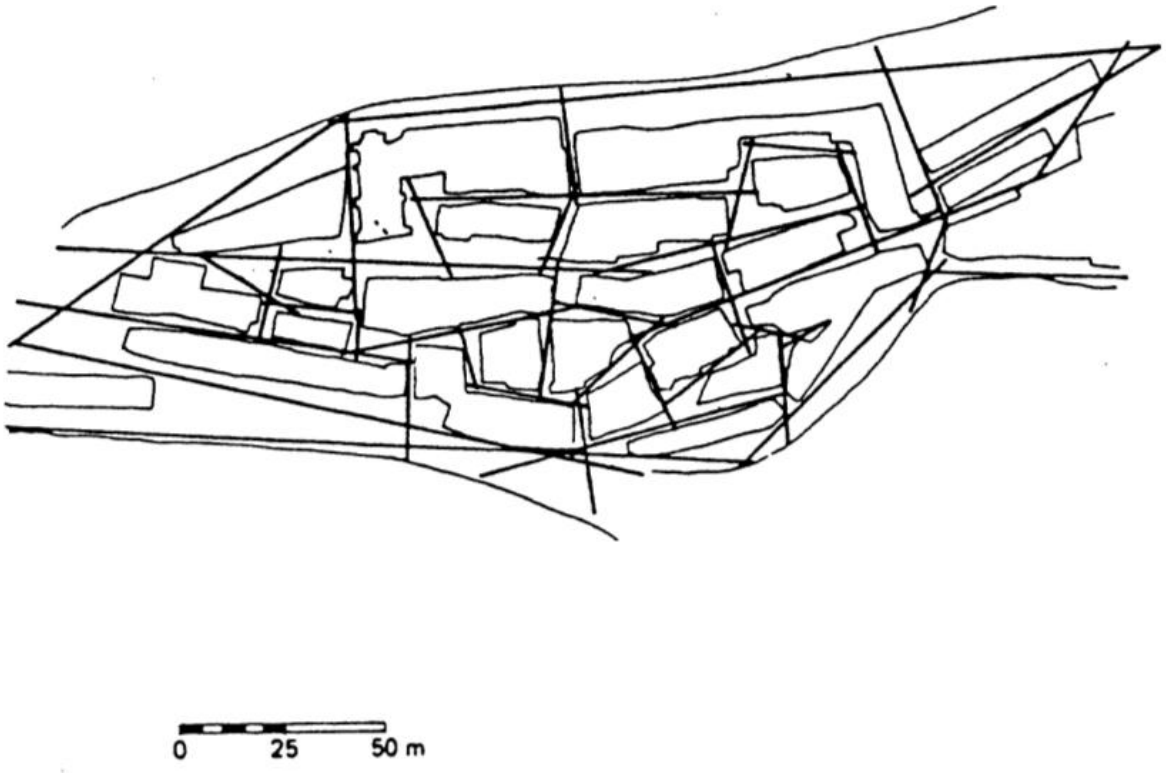



**Figure 51** :An axial map , by Hillier.
It consists of the fewest and longest straight lines that cover the entire surface of a town , taking into account how far you can see and how far you can walk
[from Hillier , 1987 ; 56]

Furthermore, it appears that in the recent schemes there is a morphological repetition. In the earlier model, the contrary, each part seemed unlike the others . Moreover in spite of: this characteristic, the urban pattern appeared to be coherent. A fundamental difference between the old and the new plans is:

> **The new plans are intelligible from the air, as plans, but if we try to move around them we quickly lose all sense of where we are. The similarity of the parts, and their predominantly localised reference points, guarantee that on the ground they lack intelligibility. The old town plan has the opposite properties. From the air it appears disordered, in that it lacks the kinds of regularity we have come to identify as urban order. But on the ground , it has a degree of natural intelligibility which means that we do not need signs to tell us where to go, warnings to tell us when we are straying from the beaten track. We know how to read the town, and we know how to use it (82 ).**

Most of the responses to hillier's "Space Syntax" method of architectural analysis express balanced associations of positive views and reservations (84). On the one hand, the

important role which this fundamental research plays in addition to architectural knowledge and architectural practice has been highlighted. The notions of intelligibility, permeability, depth, and predictability , are considered as valuable and objective tools which help structure how we "conceptualise architectural and urban space" and make their meaning understandable in terms of social relationships. The choice of circulation and chance of encounter are considered relevant . On the other hand, it has been noted that the statements in this conclusion lack established proof and therefore the relation ship between analytical description and social consequences needs further investigation. Some critics appear to counter the use of mathematics and computing in the analysis of urban environment (85). However Hillier answered back on the last point :

The aim of space syntax as a method of analysis is not to understand the whole of architecture or the whole of society, but to pin down exactly the effects of spatial design on social life. The ways different societies have used spatial design to express themselves are many and various, but the ways spatial design works back on social life are fewer and simpler. Space always creates, controls, modulates and inhibits the degree to which people encounter each other without trying. It sounds obvious, but most of the theorists and designers have got it wrong -and those who have tried to read it from the past have on the whole misread the evidence.

He added that: Space syntax is not computer-aided design. it brings the computer to the service of the imagination. It does not tell you what to do. It tells you what you are doing. (86).

Hillier's space-syntax appears to go a step further than figure-ground theory by providing a more effective theory and methodology to help understand "the society-space relation" . In addition a re- evaluation of precedent design principles appears to he necessary because Hillier's findings tend to suggest that modem practice did not succeed in reproducing integrated mode1s because of a lack of understanding.

### 6.5.1- Public space network and buildings shapes.

The form of public space network is generally the result of the built space and to be more precise is shaped by the blocks. Their size is determinant : the mesh of the public space is coarse when the blocks are large and consequently the grid of the public space leave less alternatives in term of people's choices of routes. Some studies correlate this with a the inability of these structures to support a variety of uses in the long term. However we must observe that a large block can house within its premises a variety of uses and even incompatibles uses can be placed further apart. Bentley (87) highlights the need to find the best compromise between the small blocks dimensions which generate the most supportive public space network and the larger blocks ( 40 by 50 meters for example) which allow to support a variety of uses within an individual block.This issue has been explored and investigated by a researcher who calculated the number of differen uses which could coexist in blocks of various sizes (88),(see figures 51-52).

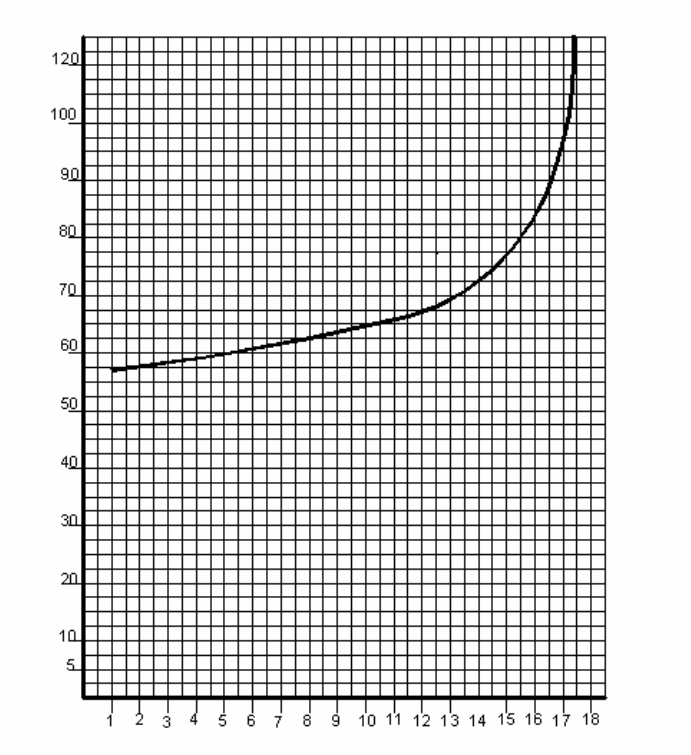



**Figure 52**: Relationship between minimum block dimensions
And number of uses. After Bhaduri, 1984.

This graph suggests that the minimum single-use block size should have an average overall dimensions of some 55-60 meters. A rapid growth in the number of uses is distinguished as the dimensions increases. The graph flattens they reach ninety meters.

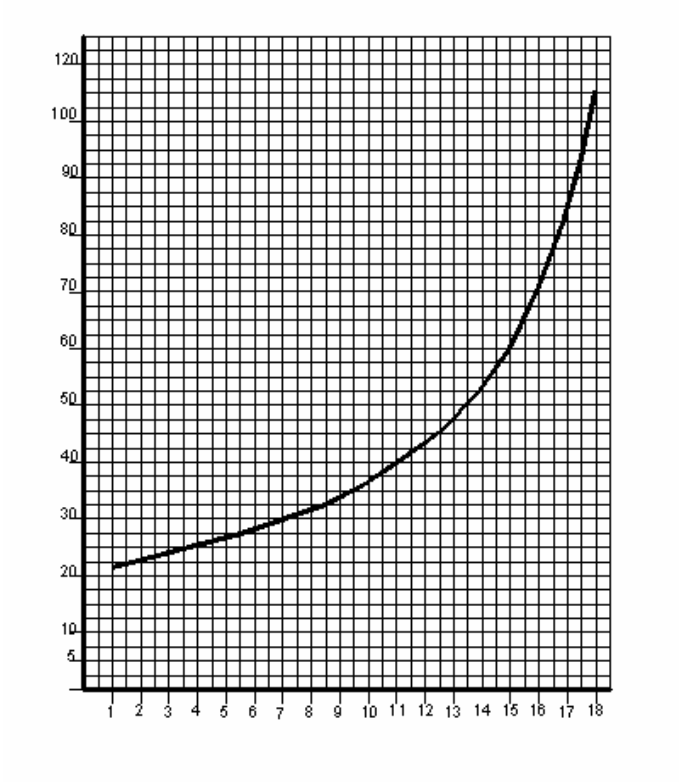



**Figure 53**: Relationship between robust sizes and number of uses.
After Bhaduri, 1894.

The plot dimensions of about 24 by 28 metres is the minimum to support a long term variety of uses. What preceeds may constitute rules of thumb and consequently avoid plots smaller whenever it is possible.

### 6.5.2- Design and the degree of choices

Responsive Environments as a manual for designers covers the many levels at which the design of a place can affect the choices people can make and develops a practical method of achieving a form of public outdoor spaces set up on the basis of social and political ideals. This manual defines some key issues which "provide the users (of the built environment) with an essentially democratic setting, enriching their opportunities by maximising the degree of choice available to them" (89). The seven choices/qualities defined are:

(1) The degree of accessibility of a place for people (refers to the over ail layout of routes and development of blocks) is based on its permeability.
(2) The choice of experiences is based on the variety (of uses).
(3) The degree of people's choice for a place depends partly on how legible(how understandable , how much one can identify where one is and how to get where one s to go) it is " legibi1ity" .
(4) Places which can be used for many different purposes offer their users more than places whose design limits them to a single fixed use, the quality is "robustness".
(5) A place has visual appropriateness when its meanings help to make people aware of the choices offered by the qualities already cited.
( 6 ) The choice of sense-experiences depends on the most detailed level of design and this calls for richness (of appearance and other sensory experiences such as sound and smell).
(7) People are given choices to personalize their places (personalization).

The urban design staff team (Bentley et al) developed the following steps in the methods of analysis of urban environments in order to understand better the dialectic "place-action" which in turn would help to enhance the seven qualities cited above.
(1) Permeability.

Many factors may influence where, when, and how people choose to move through public space. The range of motivations might be decisive in the choice of "streets" and "channels" offered. In a selected area, preferably, between the nearest main city streets, the following analysis should be undertaken:

- a variety of points on the edge of this area are to be taken, and the number of choices of leading ways to the site being considered for design.
Correlation of block sizes in each area with the amount of choice.
- Plot the most direct route and the least direct to the nodal space and to the local surroundings.

The urban design staff stresses the care which should be taken in considering permeability, so that the difference between fronts and backs in houses -which gives the users the opportunity to have private/hidden activities - is provided for.

(2) Variety and form of urban blocks.

In the analysis attention is given to the relationship between the form of blocks and the level of variety of uses in a particular urban area. The aspects to study include: how blocks are defined by surrounding streets, the size and shape of blocks, their typology (depth, accessibility, and adjacent private open space), and their relationship to uses, subdivision of blocks, uses and activities within blocks, and what is generated by them, harmonization and conflicts of uses.

(3) Legibility at the city scale.

Lynch's typology (Paths, Edges, Districts, Nodes and landmarks ) could be used as a tool to understand how the city is organized and to what extent the existence or the non-existence of these elements, and their organization, could help users to navigate within it. Legibility at the local, scale.

Location linkage, enclosure, landmarks, and entrance points-have been defined by the Urban Design Staff, who have considered the measures which could reflect the legibility of an urban space. The study should focus on the characteristics of these elements:

Location and linkage:

what are the number of alternative ways of getting to the space from an approximately 400 meter radius.

Enclosure:

Length, width and surrounding heights of the area are to be measured to ascertain height/width ratios ; analysis showed that height/width ratios of less than 1:3 seem weakly enclosed (90).

Landmarks in the space:

the characteristics of a central focal space, and people's behavior in it would be the objects of the study.

Entrance points:

these are relevant to the study because they help to demonstrate the degree to which one leaves one urban space and enters into another, as well as the distinction between inside and outside. Characteristics of the built space are to be analyzed.

(4 ) Robustness:

This study of this aspect could be undertaken in two areas.

In housing areas to highlight the fallowing aspects:

-the requirements of privacy;

-the dictates of orientation;

-the interface public/private.

In urban areas, it would be useful to study the range of activity patterns and their requisite physical settings. Working from the edge of the space, the interface between inside and outside of the buildings, and the interior of the space itself are to be analyzed.

(5) The visual structure of the street.

The Urban Design Team at Oxford Polytechnic, have stated that:

> **Streets in established parts of towns are made up of many different elements (predominantly buildings) built at different times, for different uses incorporating different architectural elements. When called upon to design (or criticise design) within this context the designer is expected to understand how and why each element contributes to the whole and to make proposals which add rather than destroy these qualities (Bentley et al; 1986).**

The visual appropriateness of the street has been considered in the light of the study of elements and details such as architectural features, street furniture, signs, pavings, activities, and how they relate to each other, to the building adjacent, and to the street as a whole.

(6) Personalization and the typology of buildings. The study of this aspect is based on an investigation of different building types which have been doted of a personal identity and which affects the public perception of the city. In addition, the analysis of how the detailed design of the buildings make it possible for these types of personalization to occur, is to be undertaken.

### 6.6 - Conclusion

Some conclusions may be drawn from the study above. Firstly, theories in environment, behavior, and design present a common goal, That is to say, they focus on a qualitative experiences of its users. Their acceptance is shown in their introduction in the academic departments; the development of Urban Design appears to be strongly related to a better understanding of people's satisfactions or dissatisfactions in using urban space. This coincides with the recognition that there are complex mechanisms and processes involved in the interaction person-environment, and that it is impossible to design ideal Systems without a thorough understanding of how present Systems function and malfunction.

Secondly, during the last decade, a renewed interest in urban public spaces in general, and most particularly in streets and squares, both among town dwellers, theorists and practitioners of urbanism, may be observed.

Thirdly, theories about urban space, belonging to different disciplines, would seem valuable only if they are combined. This is because of the complexity of the interaction between people and their urban environment and the different factors involved in the man-environment interaction.

Fourthly, the advances in urban design theories demonstrate that modem practice has reversed many of the principles of design of the past which led to the creation of urban layouts which do not sustain social patterns such as the case of enclosure (89). One of the recommendations which emerges is the necessity of a re-evaluation of past urban design so that better understanding might be gained, and better design achieved.

Finally, Responsive environments provide useful "tools" for the evaluation and the design of urban public spaces. In addition, The Social Logique of Space and Responsive Environments seem to be complementary concept and therefore may be considered effective methods for a comprehensive analysis.

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## CHAPTER 7: AN OVERALL STUDY OF THE STREET IN THREE MAJOR AREAS IN CONSTANTINE.

### 7. 1- Methodology

The choice of the methodology is made according to the problem set by the researcher. The approach may be deductive or inductive. The deductive approach implies that according to pre-estabished principles observed phenomena are studied. The inductive approach is based on the observation of a set of phenomena and draw conclusions which constitute the recognised patterns and structures (the choices established in Responsinve Environments have been built on a inductive approach). The former starts with the cause and point out the effect while the latter observes an effect and searches for a cause. The deductive approach implies some prior knowledge of the problem which is the case in this study. In addition this issue , the street multiple dimensions is at the core of urban design: architecture, planning and human interaction with the urban environment are highlighted. The last four decades has provided us with valuable academic works to enable a deductive approach. The diagnostics, the proposals and the recommendations are undertaken in the light of the insights gained from the concepts and the advances in the field of urban design developped in this study. Observations of the street-space, involvement in the daily life and discussions are the key elements in this study.

The main theories to be tested are :

-The dimension of closure in the street space.

- The need for a back space.

-The back to back principle.

-The establishment of depth.

-The failure of the segregation concept.

-The building- in- the- park misconception.

-The need to intelligibility, variety, robustness, personnalisation, etc...

-The interaction man-environment and its dimension within the street-space.

-The interrelations of the street space , planning, architecture and people.

### 7.2- Introduction

The problem of traffic in Constantine, as in many cities in Algeria, is worsening and it seems that there is no attempt to examine thoroughly the relationship between buildings,

streets and users.We may distinguish in the city of Constantine, despite its very excepyional site, three major built areas which can be found in many cities in Algeria. The three major areas are (fig ):

A_The city center which includes the medina (the old arab city) and the arteries established by Haussmann (see section2.2.1).

B_The numerous social housing areas which the government has started to built in the sixties and wich advocated the ideology of “the building in the park”.

C- The residential areas developped in the seventies and which constitute the private sector.


**Figure 54** : The three major areas studied in the city. (from Constantine's map).

### 7.3- The city center.

"The final report" concerning the situation of traffic in Constantine (the city center and the Koudiat) undertaken by a team of engineers working at the council, in 1990, did point out that the situation is thorny because of the concentration of commercial activities, offices and services on the one hand and the compexity of the network of streets and their width.

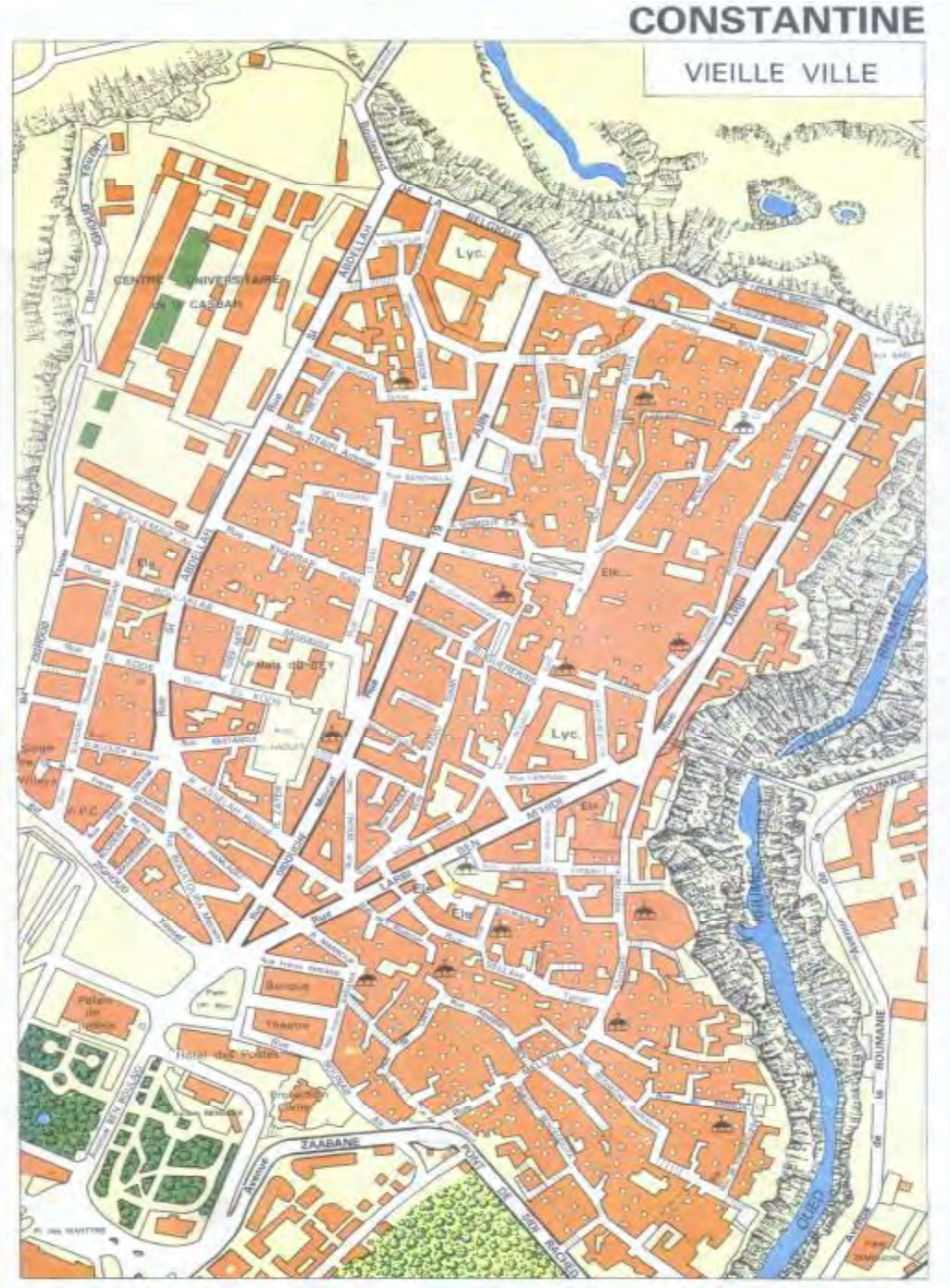


**Figure 55** : Constantine's city center (From l'office de tourisme, scale; 1:300000 ).

There are streets that are 7to 9meters wide (23 ft to 29ft) (Abane Ramdane street and Ben Boulaid street). The others are narrower and often the slope is steep. The only remedies to reduce the pressure on the city center , in this report, are:

- building parkings out of the core of Constantine to alleviate the flow to this part of the city.

-encouraging public transport.

-planning new roads and highways to go round junctions.

The relationship between traffic and buildings is overlooked in this report.

Our task is to distinguish the aspects of the problem of congestion and conflicts which may be related to the quality of the built space.

-Firstly the lack of parking space is not only due to the exploding number of cars but also is due because the number of shops is important and new ones are “bursting” every day in converted spaces ( rooms in a flat, cafes, offices...). These shops have no back space where private activities such as loading, unloading, collecting rubbish and clutter should be held. These activities which then take place on the roadside and even sometimes on the roadway lead to conflicts between motorists and pedestrians, disrupt the flow of the users and interfere with their mobility and obstruct the accessibility of buildings.

-Secondly, the sidewalk is “squatted” by a display of a large variety of goods which in turn adds to the conflict between vehicular traffic and pedestrian flow (figure 56).

**Figure 56**: A street (Lannabi street , see figure 55) in Constantine's city center.
Many conflicts in this street betwwen pedestrians, cars and "illegal" sale.
(photo taken by the author in January 2008).

The old fabric of the built space is ill-equipped to house and accomodate commercial activities at that scale which enclose even wholesales activities.

-The size of the majority of the shops is inadequate.The internal space has no depth ( in some shops depth does not exceed 2meters and the surface 6square meters) .

- The internal layout does not allow the variety of uses needed in a shop. There is no room for storage and the display is taken on the street because of a very limited depth.

-Thirdly the sidewalk is often too narrow (3ft). This does not help the large number of pedestrians to use the street space in a comfortable and safe way.

- Moreover the disabled seem to be totally excluded from the urban space because of the lack of a wheelchair 's requirements .

-The cafés's external space has almost completely disappeared. Consequently people, with their strong feeling of "to see and to be seen" in public places (see chapter 4) are standing up at some points in the city (fig 57).

**Figure 57**: Place La Pyramide. Constantine
A meeting point, a "place" where men even standing up seem to be enjoying themselves. But what can the urban designer do to make it a more enjoyable? (author, 2008).

Finally we observe that the level of the noise is high and constitute a nuisance particularly for those who live on both sides of the street.

There is a variety of streets in the city center. The examination of geometrical relationships which are associated with the function of traffic flow and our perception of space and closure help establish the following rules.

The relationship between the vertical (enclosing walls) and horizontal dimensions in street is more than three to one. There is a feeling of narrowness and crampedness. This feeling is less strong in Abane Ramdane street because it is slightly wider. On both streets traffic congestion is at its highest level. Pedestrians and cars are struggling pushing their way through. On the other hand the sense of enclosure is almost totally lost in Emir Abdelkader street because the buildings are set far from the street channel. We observe that the vehicular

channel is wide enough to house four lines with a strip in between but the height of the buildings is less than the width of the street. In the former case there is dissatisfaction because the height exceeds the width more than twice and in the latter the street space lacks definition because the built fabric is located at a distance from the street channels with rooms between buildings.

Consequently it appears that, according to traffic and perceptual considerations, the width of the street should not be less than 16 meters: six meters for a double line of traffic, three meters on each side of the channel reserved for parking and at least two meters (double) for pedestrians. Since the average height of the built form come close to 12 meters this rule is likely to obliterate traffic problems to a large extent and to maintain the street wall in its role of setting up enclosure. This rule has also the advantage, particularly in residential areas, to reduce the face to face inconveniences and the level of noise.

### 7.3.1- Recommendations.

We must admit that the city center of Constantine, fifty years ago, formed the hub of the whole east of the country and did not present any of the problems cited above. The demographic explosion (Algerian's popolation shifted from 10millions in 1962 to 33millions in 2006) and the increase of the number of cars are worsening the problem of the traffic. The major proportion of the built form are being rehabilitated ( because of cracks in the walls and in staircases, dust and grime on the fronts). This makes the everyday life uneasy and unpleasant. However one has to point out some of the qualities of this main part of the city (without loosing sight of the qualities illustrated in the precedent chapter in term of the structure of the built space ,its legibility, its enclosure)and identified as lessons in urban design :

-The varying unit sizes encourages variety.

- Mixing economically marginal uses with high turnover users induces the appeal of the street-space and its robustness.

- There is a high level of personnalisation and richness which affect the quality of the street-space.

As the attraction of the medina and the colonial shopping arteries is very strong and the urban fabric is very dense (and for all the problems cited earlier) it appears that to alleviate the pressure on the city center large shopping centers including cafés, restaurants may be

built at the outskirts of the city services . The user will find the different products (fabrics, shoes, pret-a-porter, haberdashery, etc) gathered in the same place. The gain of time and the comfort linked to these models will constitute, gradually, an asset to compet the attractiveness of the old core. As time goes by an equilibrium may be reached and the pressure on the city center will be alleviated, this on one hand. On the other hand the medina and the colonial arteries may become exclusively a pole for craftsmen, luxurious shops for traditional dresses and fine fabrics. The city center's services may be reinforced and the cultural character of Constantine may take a sublime dimension.

**7.4.-The multi-storey social housing areas**.

The principles of these modernist developments, "the building in the park", and the spatial stuctures of the street-space have been examined in section 2.3.2 and 3.2. During the last two decades the ground level of these developments has become a succession of shops which generated a street overflowing in term of activities. On the one hand this change may de considered in its positive aspects:

-there is more social interactions.

-the commercial activities generate a more livable street.

-the inhabitants do their shopping in better conditions.

-the neighboorhoud is safer because of the presence of people.

On the other hand, a further examination underlines the endemic problems which lay between the roadway's users, the inhabitants and the clients. The built space is ill-adapted to commercial activities: there is no differentiation between back and front, then there is no space to house the numerous private activities consequently the activity of loading and unloading goods is in total conflict with the pedestrian and the motorist flow.

Moreover the configuration of the internal space (vehicular channel added to the pedestrian path) in term of depth is inadequate. At the ground level the display of goods is taking place on the sidewalk and the pedestrian is "pushed" on the roadway putting at risque its safety. Moreover there is a considerable problem of parking (There is not enough room for parking the cars of the residents and this problem is worsened by the external users who come for commercial purposes. The last but not the least is the scene of rubbish on different parts of the street and which constitute a distressing spectacle.

The nuisances for the inhabitants of the flats situated at the upper levels are multiples. The commercial activities, not only during the day but sometimes late in the evening, generate a high level of noise ,mainly because of the traffic (1). During summer the inhabitants's nights are sleepless because of the social gatherings which take place at the ground level , on the street.

When in the developed countries the apartments at ground level are often reserved for the disabled, in these developments they are devoted to commercial activities which once more shows our failure in taking care of this branch of our society.

This study and to be more precise the study of the street wall has unveiled a major issue which is characteristic of the Algerian urban environment, the function and the use of the balcony and the loggia (see figure (58).

**Figure 58** : The exposure of a private activity on the street space.
This has at least three unfortunate consequences. (author, 2008) .

Firstly these activities constitute one of the numerous reasons of quarrel and disput between neighbours.

Secondly the streetscape gives out people's intimate life.

Thirdly theses "bunches" of clothes, covers and rugs do not constitute the best display.

The different layouts in the multi-storey housing areas include, generally , a balcony and a loggia. When the latter is designed to house private activities, the former, the balcony is an architectural device that has been used in architecture and building throughout history but is recognized as a feature of modern architecture to reduce the sun's radiations during summer, to enjoy it as an external space and to provide open air space to the dwelling. In addition, they have an important role to play in the amenity of urban environments. Many recognize their contribution to safety through people overlooking the public realm and providing "eyes on the street". But what preceeds added to the list of balcony types relate to a lifestyle which seems remote from the Algerian sociocultural usages.

- Standing Balcony (also known as a Juliet Balcony) : It is the smallest balcony type and allows standing room only. It is 0.6 m in depth ans is cantilivered. Doors may open inwards or outwards ( or slide sideways).
- Bench Balcony (also known as narrow balcony): It is 0.6 to 1 m in depth. They seem suitable for overlooking laneways.
- Half Table Balcony (also known as a side-on Balcony): these type of balconies range from 1m to 1.5m in depth and allow the furnishing of a small table and chairs. Ergonomic data indicates that 1.5m is marginal for the provision of a small table and chairs.
- Three Quarter Table Balcony (also known as Face-on Balcony) : this balcony will allow chairs to face square the balustrade and view. Depths range from around 1.5m to 2m.
- Full Table Balcony (also known as Al-Fresco Balcony) : a generous space is offered in this balcony, over 2.5m depth should be considered.

As a matter of fact there is an alteration in the function of both spaces. In the public housing we have three scenarios:

-The wall between the balcony and the room is demolished in order to aggrandize either the bedroom or the sitting room (it depends on the spatial relationship) .

- The balcony, to be used as an internal safe space is closed using windows and wrought iron features.

-The balcony, without any transformation, is used for hanging the washing.

The loggia is often used as:

- a kitchen when the kitchen itself (larger space) is transformed into a room.
- an extention of the kitchen.

We end up with a general situation where private activities such as hanging the washing are taking places in the balcony or, often, out of the balconies).

A key concern for many countries over recent years, has been the increasing prevalence of air conditioning compressors and aerials. They have impact on space requirements , noise and visual pollution and exhaust of hot air.

The Subiaco redevlopment Authority Report (Australia) determined that the appropriate design of each balcony should be based on intended function (2). Depth, width, recessing, covering, location and balustrating are the main issues which can be finalised when the balcony's purpose has been established. A balcony of a minimum 5 square metres ($m^2$) should be mandatory for every multiple dwelling unit. The balcony should be accessible from a living unit (not a bedroom). In addition, minimum dimensions should not include space set aside for air conditioning compressors or barbecues.

The Algerian situation calls for a space for the drying of washing (when appropriately screened) as well as a space to dust carpets and blankets. It is a big challenge for architects, planners and urban designers to work design proposals which does meet people's needs in terms of dwelling and in terms of bringing a qualitative enclosure to the street space.

The quality of the street wall, the interface public/ private realms brings out the questionning of the balcony in the design of the Algerian dwellings as a whole since the balcony is a crucial element in the urban space and also because this phenomenon is observed also in the residential areas where the built surface is larger and where the balcony is used for private activities ( clothes, carpets, blankets are hanging over the balustrades).

The need for a back space and the urgency for regulations are not the only conclusions reached in this research. Since the balcony is not used as it is intended purpose and that it is becoming areas set aside for air-conditioners, water systems, clutter, extensions, and hanging the washing which, the least we can say does not take part in enhancing the quality of the urban environment in general and this of the street space in particular, should not we work to find layouts which respond better to the inhabitants needs (private space) and whose use do not encroach negatively upon the street space. These furnitures and non- furnitures items should be screened from view because they compromise the architect's arrangement, ordering, the harmony of the elements he composed with the façade and the building's street appeal.

### 7.4.1- Recommendations.

The problem of the street in the multi-storey social housing is a very sensitive matter since these developments have been into question (see sections 2.3.2 to 3.2). Unfortunately, these towers are still repeated (the new town Ali Mendjeli is another illustration of the "building in the park "principle. The housing crisis should not prevent politicians and professionals from taking the right decisions and adapting new forms and models. It is our duty to instaure debats and establish reports within multidisciplinary gatherings in order to induce an awareness of all who are involved in the living conditions of the Algerians, that is to include professionals, researchers and politicians. It is architects's, planners's and urban designers's responsability to produce designs which take into account the numerous recommendations established in this research and in others in which the problem of housing has been tackled. The Algerian's needs and sociocultural activities must be taken into consideration within the scope of public space dimensions.

Housing is a weighty issue in urban design. Housing accounts in our country for about half of our new-build production, and social housing is taking a larger part than the residential one.Therefore it constitutes a vital component in any proposal.

How architects, planners and urban designers do make decisions about appropriate housing form both in the initial design hypothesis and during the negotiation process that defines its final form?

All designers tend to draw on four main categories of resources (Hayward, 1997):

1. Stereotypical views and responses developed over a period of time.

2. Past models of physical form- either previously used by the designer or studied from life or publication.
3. Rules and design guidelines.
4. Briefing and bringing the needed corrections.

Dark (1984) has demonstrated the very real danger of stereotypes and how much we should try to go further in changes but always not loosing sight to what problem we are offering such and such solution.

We should look with rigour at the numerous and specific aspects of design.

At the academic level teachers have the difficult task , relying on the study of housing schemes, to highlight the failures, the compromises, the misconceptions and to make sure that they will not be in further designs.

This study points out to a a thorough examination and a reconsideration of the design of the balcony and consequently request a questionning of the layout of habitation in the public and private sector and the prevision of specific areas for these private activities.

**7.5- The residential (individual housing development) areas.**

Academic studies point out that even apparently humble dwellings are often basic cultural phenomena. They embody human decisions and choices and specific ways of doing things. The house embody various purposes; the first being to safeguard people and their posessions from natural and human elements. But “establishing places”, enunciating social identity and indicating status are also elements of deep meaning in any habitation : “they are basic cultural phenomena” (Rapoport, 1980).

Culture includes values, beliefs and ideals. When differentiation is capital in architecture personnalisation comes naturally . The house-settlement is based on activities and the settings to house them. The last and not the least, theories about what architecture should do are concerned with order, rythm, form, symmetry, asymmetry, the play of volumes, forms, details.

John Ruskin (3) wrote this eloquent definition:

“We require of any building, (i) That it act well, and do things it was intended to do in the best way. (ii) That it speak well, and say the things it was intended to say in the best words. (iii) That it look well, and please us by its presence, whatever it has to do or say.

The study of the street-space in the residential areas (fig 56) unveils a critical attitude or state of mind if one can say towards the design of the individual house in general.The study of the internal space is not the subject in this research, only when it has an interaction with the street space.

First of all we observe cubic buildings with two blind sides (one blind side when the plot is situated at the corner), and three or four levels with almost no difference between the back and the front. It is arduous to talk about harmony or richness of details or the feelings (such as pleasure, excitment, curiosity etc) they inspire.

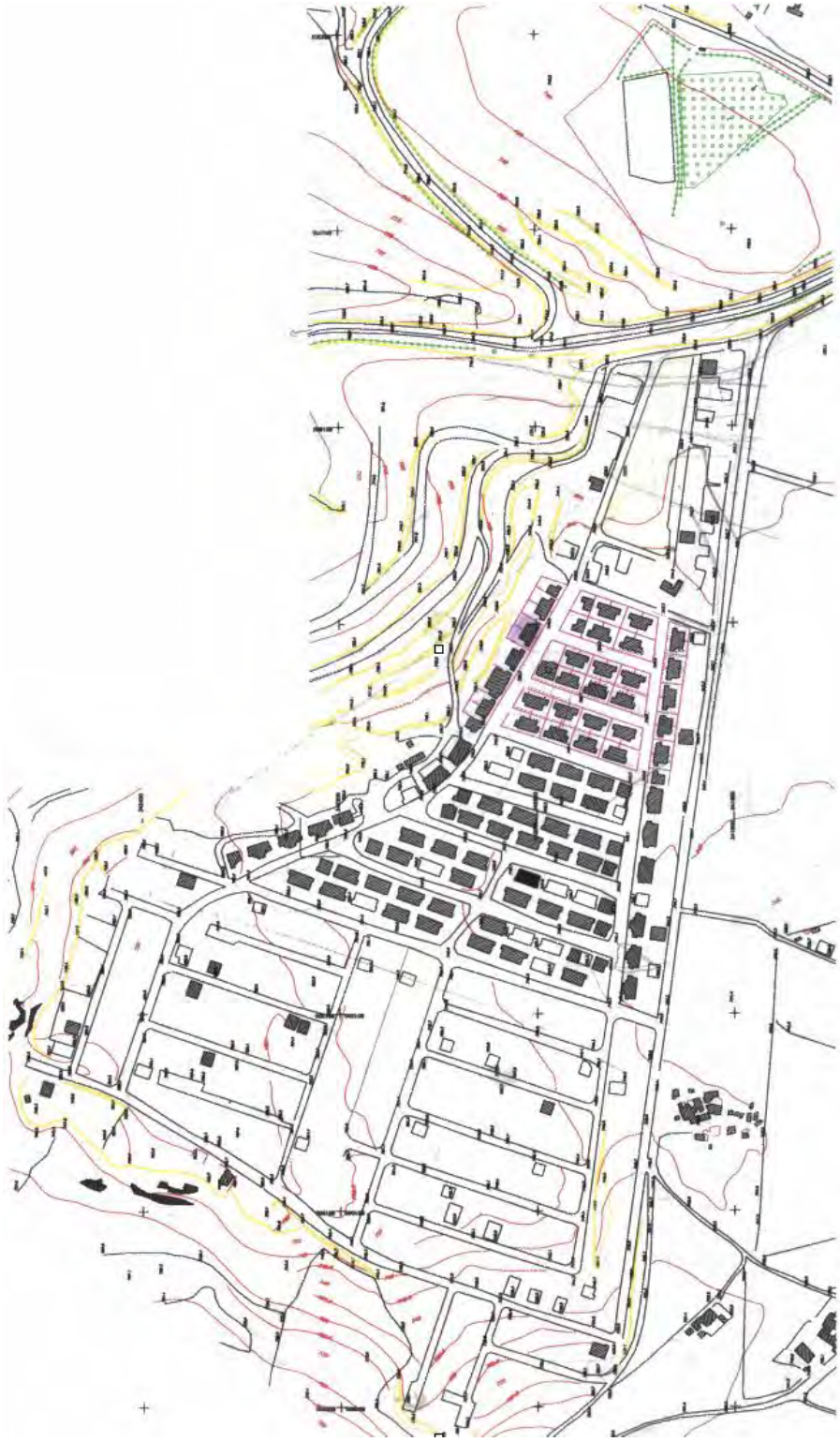

**Fig 59:** El Fedj Individual Housing Development.

(Sketch made by a group of students at the department of architecture, Constantine University, 2008).

This study reveals a staggering attitude towards the use of the ground level: in an average of 8 houses over ten (particularly on the main street) the whole surface is devoted to commercial activities and the house is a “flat” of two, three even four storeys with a terrace at the top.

**Figure 60** : A model of the “house” in the private sector.
The ground level is devoted to commercial activities.
(El Fedj residential development). (author, 2008).

In these residential areas (private sector) architecture is reduced to a shelter and to a response to manifest functions and economical factors. The problem of unemployment and the need to rely on their own ressources seem to have taken over sociocultural values.The average size of the plot in these areas is 220 square meters. The architect must leave two meters at the front in order to make sure that the street channel is free and six meters at the back of the house for the vis à vis . But the lack of a strong policy leaves the way to many overtakings. Consequently the problems encoutered on the street-space are identical to those identified on the streets in the multi-storey housing areas because commercial activities of different kind are taking place on the street-space. Moreover there is no space for private activities consequently the street edge is the theater of hanging the washing , blankets and carpets. The public space and particularly the walkway is “abused” in three ways:

- the commercial activities stretch out on this pedestrian space . When these activities are not coming to meet the first needs the pedestrians leave totally this side of the road.

**Figure 61**:The main street in El Fedj development.
This sample illustrates some of the activities held on the side of the road- on the "Pedestrian walk"- which is in fact squatted: display, charge and discharge of goods (in this case bricks) and parking. On the other side of the road , the trees are planted right in the middle of the sideroad . The pedestrian movement is vey uncomfortable if not unsafe because he is constrained to walk on the vehicular channel. (author, 2008).

Some owners give the front door space a great deal of care and treatment but not to be used by the pedestrian. They use a somewhat "clever" device (trees in the middle of the path) to push away any user and to make this public space a private "forbidden" space (figure 62) . Some inhabitants stretch out the edges of their house to the extreme overriding the limits imposed by the developer (fig63). There is no recognition to the hierarchy of space, of the public/private interface. In addition we observe a total dereliction.

**Figure 62**: A sideroad in a private housing development. Constantine. (author, 2008).

**Figure 63**: A sideroad in in the same private development. Constantine. (author, 2008).

It appears that the notion of publicness of the streetspace in general and of the sideroad in particular does not seem to be clearly appreciated by the public mind. The sideroad is approached as a space which belongs either to the house or to the shop. These radical attitudes have many negatives consequences on the quality of the streetspace. The least we can say is that this diverts the pedestrian from using their right of way and does not help them discerning the pleasure and the benefits of of walking.

### 7.5.1- Recommendations.

From what preceeds, it appears that economical factors and individual choices are leading the way in the design of the physical urban environments. The consequences on the quality of the public environments are grave. The private sector must not be allowed free rein over the public life of our cities. It is time to seek the middle ground. Architects and urban designers must not only understand the needs and the motivations of individuals but must conceive and produce schems which fulfill individual's demands but ought also , in their three-dimensional structure and form sustain a set of qualities which when achieved will bring to the public space in general and the street-space in particular its multiple dimensions. Finally policies and measures must be fostered to protect the pedestrian space as well as the vehicular space from the trepassing and the "extent" of the built form on the streetc space and the activities held on it.

## 7.6- The streetscape

People do appreciate built environments ( see chapter four) and the fact that a large number of people are strolling every day , in all seasons, in some streets such as Boulevard

Belouizdad “St Jean”, Abane Ramdane “Rue Role et Rue Rohaud de Fleury”and et Aouati Mostefa “Anatole France” can be related to a satisfying and vigourous environments. This is not only due to the large variety of activities but may be related to the quality of visual events on people’s feelings of pleasure and recreation. The word streetscape (or townscape limited to the street environment)

Is a newcomer to the english language and its definition is “elusive” (4). It stands dor something more than the complex of built and unbuilt spaces ( see the precedent chapters) . This section concentrates on the setting of buildings and houses and their visual quality. This assessment is undertaken according to the information theory and the Gestalt laws.

In a large part of the new urban developments in Constantine, and in many parts of the Algerian cities, at the street level the built form is characterised by common features. The streetscape in the multi-storey housing areas is undermined by two major characteristics: the disappearance of enclosure (see section 3.2) and the “simplicity” of the facades (fig 42).

**Figure 64**: Facade in a modern housing development .
This facade has a very great redundancy and low information content because its

Rows are of equal subdivisions and the simple rectangular overall shape. Rhythms are regular. It can be described with such adjectives as too simple, dull, Toneless. The eye may pick out the details of the ornamanted protections on the Windows which are at odds with each other and break down continuity, equality And Rhythm. In the case where the visual system opts for that alternative it will produce ambiguity. (author, 2008).

In the residential areas architecture has given birth to identical components: a concrete frames within which "garage doors", made of corrugated iron and whose dimensions are two meters by two meters are fitted, at the ground level ( see figs 60, 62).

**Figure 65**: A row of buildings in a private housing development. This facade (according to the Gestalt-laws) has a maximum information and a minimum redundancy because of the diversity of: the pattern and subdivisions of windows ans balconies, the materials of the facades, and the inequal horizontal subdivisions . The horizontal lines of the buildings are ambiguously not lining up. This makes the recognition of similarities or equalities very difficult. The room between some buildings (the unfinished ones) and the non-alignment of the facades end by taking away coherence. (author, 2008).

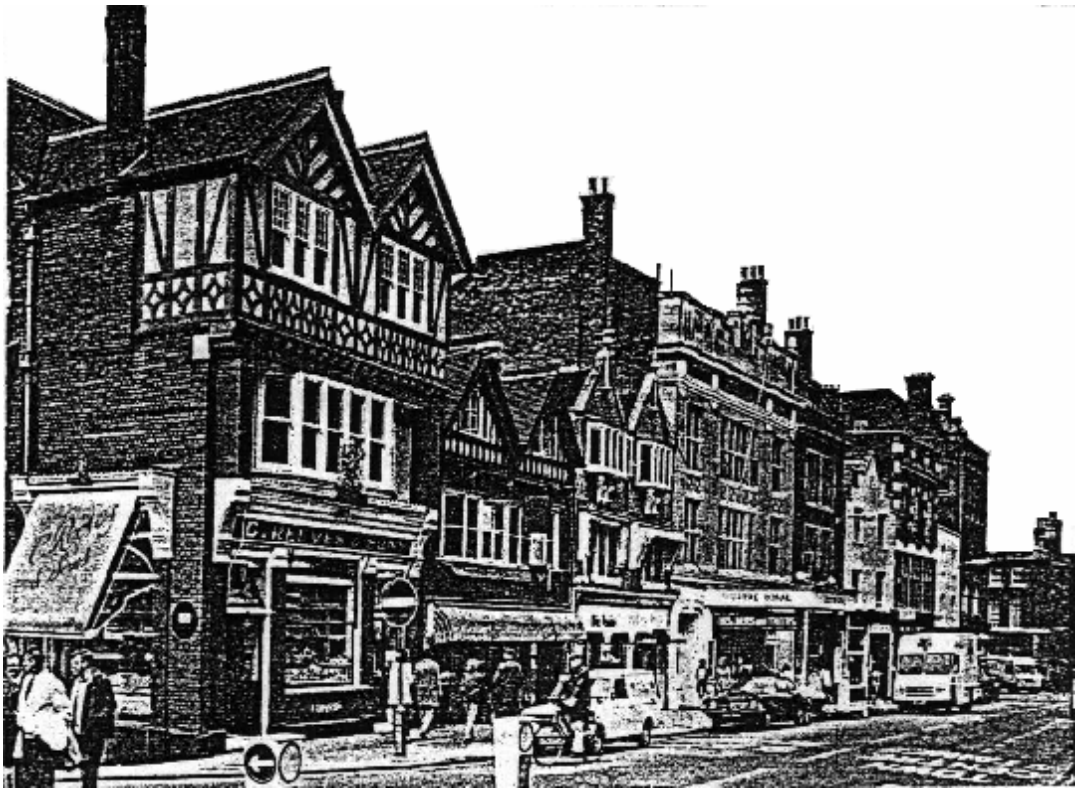

**Figure 66**: A row of building in Windsor, England, very rich in contrast. Heights, Widths, forms, materials of the facades, the patterns and subdivisions of Windows, all are different. Therefore there is a maximum of information And a minimum of redundancy. But it remains a coherent facade through Continuity. (From Prak, 1989, p 72).

The impoverishment of the architecture of the built form on the street-side is observed at many levels: the plan form, the facades, the volumes have been reduced to their lowest common denominator, often, in order to make production cheaper and to optimaze use (in most cases commercial )(see the precedent chapters) . Architecture has become dumb: there is no subtlety in the variations in materials, in detailing, in ornament, no richness at any level (lines, materials,solid/void ) and no expressed formal languages. This vulgarisation of architecture and concurrently of urban space calls for the questioning of professionals, politics and the society in general. Modern architecture which has been accused of many misconceptions and particularly of the denial of historical architectural languages did not go to that extent. The plan configurations, the volumes the facades and the structure of some projects demonstrate a passionate approach to architecture and to city planning . The aim is not to favour outstanding scenographic episodes but to encourage the realisation of architecture as a tectonic fact : elements and vocabulairy from the universal styles and from

vernacular and regional architecture should be exploited by talented professionals in order to bring richness,variety and robustness to the street-space.

Moreover the “unfinished” is the characteristic of the built environment which adds to the negative aspect of the street space. In effect the “houses” are built side-by-side. The width of each facade averages ten meters which is considered “unsufficient” for most of the owners. People are noy building a house for one family. Generally they built a two if not a three or four floors block in order , eventually, to ”offer” each one to their children. The problem of housing is so acute in Algeria that the fear that their own children may never get the chance to find an appartment has exacerbated their worries to the point where they make plans beyond their means. In addition some people are very retuctant towards the collective housing when others fear the loneliness. The last reason which may be behind this behaviour may be cultural; it could be an attempt to keep the “birds” not far from the “nest”.

Consequently the visual quality of the buildings is blurred because of the unfinished character not only at the level of the facade but also at this of the skyline. Whether it is a one level building or more concrete posts with steel bars coming out are hanging out at the top of many blocks. This state may last years if not decades before the work resume. The facades , often have no coating ( bricks, breeze-block which are not very aesthetic expose their “nudity” (see fig 40). This gives to the streetscape a bare, crude character. Lately, measures were to be taken by the government to oblige the owners and developers to give the finished touch to their constructions.

**Figure 67**: The lasting work in different locations of a housing development. Posts with steel bars coming out and facades with no coating characterize This built environment. This does not leave any coherence in the perception Of the street scape. (author, 2008).

### 7.6- Conclusion

The street issue in Constantine ,as in many cities in Algeria and in many parts of the world, points out two major questions. The first concerns the existing urban fabric and the second the futur developments. The problems in the former are numerous and substancial and need the assistance of politicians ,developpers and the inhabitants as a whole (residents, the shop-keeper association) and the professionals (from different disciplines architecture, planning and engineering). Concerning the latter this study seems to be the first step to stop undertaking the same misconceptions (such as "the building- in- the park approach) and to put emphasis on the important relation street-space/built- space and the user's well-being. Finally rules must fostred and effectively followed and strongly stressed on to be effectively adopted by the different categories of actors of the street-space. A "book" of regulations and laws relating to what we can and what we cannot do in term of design, use, and activities within the

street space must be conceived and be rigourously taken into account. The publicness of the streetspace and particularly of the sideroad is a notion that has to be taken into consideration in the design process and in term of legislation.

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## CHAPTER 8: RECOMMENDATIONS FOR AN “ECOLOGICAL” APPROACH TO THE STREET-SPACE.

### 8.1- Introduction

It has been noted throughout this study that the analysis of several major approaches to the concept of the street and of resulting street forms since the beginning of "conscious planning", implies that the design principles of the modern movement in architecture and planning led to unsatisfactory urban environments . This was mainly due to arbitrary and simplistic views of the city where the rational solution to the problems of production and hygiene used the street as a solution to the problem of circulation. The relation street-space/built-space has been overlooked. Complex events and multiple dimensions have been dismissed, and the potential of the street as a social living built space has been to a large extent overlooked.

Research into the most influential theories on the design of streets and the introduction and assessment of behavioral sciences and urban design theories appear to be essential. Firstly, to understand the misconceptions about the purpose and design of urban public spaces, secondly, to understand the prospects for the rehabilitation of the concept of the street as an an intrinsic element of the built space, and thirdly, to demonstrate that the development of an effective understanding of the ways in which people and their surroundings interconnect should be based on varied multiple interrelated fields of research.

Evidence stemming from Chapters One and Two demonstrated that the concept of the street has been a constant preoccupation for many professions implicated in the making of cities. it has demonstrated that the planning, architecture, and engineering professions, whose development run parallel with the unprecedented phenomena of the industrial revolution, rapid increase in the use of motor vehicles, and demographic explosion have prescribed solutions to the many problems of cities of which the street was considered an intrinsic part. This study has shown a major concern with pragmatic transportation needs, a form of deterministic "scientific optimism" , which took only one aspect of the street into account.
Numerous well-respected studies on the most pervasive models of streets used since the end of the 19th century identified two major deficiencies: urban incoherence and the dismissal of human needs such as the notion of "publicness", (see section 2.6.4. and 4.4.4).

Although there has been renewed interest in streets and squares and the development of interest in man-environment interaction in later decades, technical matters still dominate the consideration of" the street within the scope of urban design . That. is to say the street as a living space' having the potential of housing many various activities, people 's various needs, and its three-dimensional nature do not receive adequate attention.

To broaden the scope of designer's approach to streets the following studies are to be developed:

a ) The relation street-space/built space is the major element in this study. The first step towards the improvement of street design is to understand the misconceptions inherent in the design principles of the streets which appeared during the industrial era .
b) to recognize the importance of continuity in the human experience and then the need to study historical models.

c) The second step is to recognize the usefulness of some behavioral sciences and theories related to urban design perception of the urban environments.

d) The third is to recommend some characteristics which should be taken into consideration in the design of streets, and the use of methods of analysis which have proved to be practical in considering street-space.

Whilst the first aim has been dealt with in Chapters One, Two and ( implicitly ) in Chapter Three, the second in Chapter Two, and the Third and the Forth have been the subject of study in Chapter Four.

**8.2.The need to assess the developments of the street space**

The review of the fundamental developments of street-space since the on set of the Industrial Revolution, and of street issues since the 1950s which gave rise to urban architectural projects and traffic management schemes, has questioned the following principal ideas which have proven inadequate when systematically put into practice:

1. Architectural determinism;

2 . Geometrization of street design and urban layout ;

3. Functionalist approach in the city;

4. The building -in-the park idea ;
Vertical density against horizontal density;
Separation of built form and open spaces.

5. Segregation of pedestrian and vehicular movements.

1. Architectural determinism.

Environmental studies, industrialists, architects and road engineers in the 19th Century related social and environmental problems of cities to the form of the street and the configurations of built space. This view was at the core of the total dismissal of the traditional developments of streets, which were rejected without prior assessment of the potential quality of the old forms. Review of the social and economic situation of the 18th and 19th Centuries shows that there was a set of complex conditions -overcrowding, bad sanitation, and low incomes- which led to these unhealthy environments (see section 2.2.1 and section 3.1).

2. Geometrization .

The major measures which were taken to eradicate the old form of streets and their apparent evils were:
a. the gridiron pattern;
b. the widening of the street-channels;

a. the enforcement of a building line. These principles were associated with the impoverishment of the spatial and visual quality of the street space (Chapters twoand Three, especially section 3.2.2.).

3. Functionalist approach in the city.

The leading ideas of the first decades of the Twentieth Century, applied in the three decades following World War II, reduced the city to living, working, leisure and transportation compartments through zoning. A lack of vitality and variety of uses in the character of the urban environment and the reduction of the level of social encounter were the main results of these approaches (see sections 2.2 and 3.2).

4. a. The Building-in-the-Park Image;

b. Vertical Density against Horizontal Density;

c. Separation of Built Form and Street-Channel.

These three interrelated design principles were based on a spatial visualization of the functional city. The main goal was the "aeration of the city". As a consequence the street became a channel mainly for rapid transit, and lacking clear spatial definition. This study has outlined the effect of the lack of a sense of enclosure which led to the further reduction of the level of social encounter. Furthermore, the transformation of the block into a barre with no depth led to a lack of transitional spaces from public to private and affected negatively the degree to which people can use a place for different purposes (see sections 2.2 and 5.2; 5.6).

5. Segregation *of* pedestrian and vehicular traffic.

This concept bas been strongly criticized because of its negative impacts on urban environments and on the quality of urban life, mainly because it was established with a bias towards vehicular traffic. This led to several environmenta1 problems:

a. increasing pressures upon developments (density); b. increased traffic densities;

c. The "gadgetry of circulation" in which pedestrians are relegated to use upper-levels walkways, under-passes, lanes, and precints does not allow user appropriation, manipulation, and transformation (sections 4.2, 4-3, and 4.4).

The identification of the street as an inherent element of the built space,the recognition that the underlying mechanisms of human behavior are stable and that the design of ideal models depend on a thorough understanding of how present systems function or malfunction;the f act that the ancient cit y was designed to absorb different events and life styles without breaking;the misconceptions growing out of the tendency to generalizations about urban environments and the Western conceptualizations about. the city in the Near Eastern city, point to the need to a better understanding of preceding models of urban environments on the whole and of street-space in particular.

Some usefu1 environmental sciences and urban theories have been created by scholars and scientists in many fields in order to understand the complexity of man-environment

interaction. A variety of psychological, social and historical, and aesthetic perspectives were brought together so that better insight would be gained with the design of streets which would offer more positive social experiences.

A complexity is recognized as inherent in the concept of space while materialistic and simplified concepts have proved inadequate to sustain many positive design theories. The physical definition of space (element of enclosure) and its social connotations are the key elements which must be borne in mind and investigated when establishing design theories (see section 6.2).

Environmental psychology interested in perception and cognition, considered to be the psychological functions that enable the individual to convert sensory stimulation into organized and coherent experiences. Some research scientists (generally who hold titles in many varied disciplines including architecture , design , psychology , sociology, geography, psycholinguistic studies, semantics, etc) attempt to understand the perception process itself while others aim to rate perceived features, including the person-environment transactions. Environmental perception, territoriality and the notion of neighborhood , the Gestalt psychology, place theory, and the image of the city, are major ecological research areas (see section 6.3). The design process must include recognition of these fields which deal with the observable and the individual's concepts. These will help to define the design principles of responsive street-spaces. Design strategies in urban environments such as the figure-ground theory is the first axle.

Urban designers established this framework to clarify the structure of urban spaces and the relationship between built and unbuilt spaces. It is based on a comparison between traditional and modem conceptions of the city and incorporates the notion of perception. This approach although useful at a primary level of the analysis of urban spaces, tends to be supplanted by Hillier s space-syntax in which the social logic of space is the major concern (sect .3.1).

This is based on an analysis of existing patterns of architectural space which includes representation, mathematical calculations, systematic observation of use and movement, and interpretations of the evidence gained. Analyses of spatial order and its social, consequences

have been carried out, using the space-syntax method of analysis, and correlations have been made between the spatial structure, particularly the quality of enclosure, and the pattern of movement and use. Fundamental differences between the old and recent street plans studied have been highlighted. Hillier suggests that there is misunderstanding of the principle of enclosure in urban plans for modern space. Urban landscape in the past avoided over-localization essentially by a variation in the degree of "publicness" of space, to give greater or lesser seclusion, but maintained that open space was public. Modern practice on the one hand did not keep the back of dwellings and other buildings as private and hidden space and on the other hand attempted to extend the concept of privacy from the family to the group with a fragmentation of the built space. This led to a lack of intelligibility as one moved around, a discontinuous structure of the open space, and a monotonous repetition .

### 8.2.1- Design guidelines with regard to the built form

The assessment of the main approaches, theories, proposals, designs, careful observations and surveys in these study have led to draw the following design recommendations:

- Firstly the continuity of the street wall and its enclosure .

-Secondly the differentiation of external space is vital . This is strongly linked to the design principles developped within the built space . The structure of space must rely on different conditions of backs and fronts.

The back space for private activities either in housing or commercial activities appear to be essential for the technical and human dimensions of the street space.

- A minimum depth (9 meters) is required for commercial activities to prevent the occupation of the sideroad by any mercantile development.

- The parking space must carefully be considered in the design process since the car is deeply embedded in our daily life and each activity should be provided with parking area. The street channel (the road) is to convey traffic. The sideroad is a public space neither an extention of the house nor of the shop.

Some principles of design of open space have been defined and appear to be appropriate to street-space, recognized as major component of urban layout. Both Hillier's and Bentley's teams put forward some principles concerning the different scale of

environments and the qualities of outdoor spaces which may affect people's choices, and there are also tools of analysis.

(1 ) Intelligibi1ity of space is based on a perception of structure of built and inbuilt space which makes possible the distinction between comprehensive and local parts in the city.

(2) The continuity of space is viable when unused spaces are avoided.

(3) Predictability of space emphasizes the correlation between the potential of encounter and the spatial pattern.

(4) Permeabi1ity -or the degree of accessibility of a place- depends on the choice of people to move through a "street" or a channel.

(5) The variety of uses is considered of beneficial effects on the ways people move through an urban area.

(6) Legibility, stresses the importance of the existence of elements which help "navigating" in the city. Many typologies have been developed, initiated by the work of Lynch.

(7) Robustness is the quality of a place which allows the possibility of different uses.

(8) Appropriateness is mainly a visual quality of the street. It stems from the reinforcement of the quality of the whole design by the interrelated conditions of legibility, variety and robustness at both large and small scales.

(9) Personalization is made possible by specific detailed
design of buildings, and this affects people's perception of the public space.

(10) Richness of the built space is a quality on which depends the enjoyment of experience in the urban space .

- The law of visual perception should be taken into consideration.

**8.3 -Pedestrian design considerations**

Sidewalks serve as critical links in the transportation network. This pedestrian facility is required along most sections of streets and is an integral part of the transportation system. The design of this pedestrian facility should be based on local transportation plans, the roadside environment, pedestrian volumes, user age group and the continuity of local walkway along the roadway. Sidewalks must be accessible for the disabled. The ADA ( American with Disabilities) is a civil right law that identifies and prohibits discirimination

based on disability. The ADA requires public entities to design new facilities or alter existing facilities, including trails, to be accessible to people with disabilities.

The only factors that will preclude providing pedestrian facilities in a project are as follows:

-Pedestrians are prohibited by law from using the facility.
-The cost of the improvements is excessive and disproportionate to the original need or probable use (as a guide more than 20percent of the original estimate).
-Low population density or other factors indicate that there is no need.

The adequacy of appropriate pedestrian facilities is addressed in mobility and safety and to enhance the quality of the built space and its accessibility.

The types of land uses that indicate high pedestrian activity are residential developments (with four or more housing units per acre) , retails stores, schools, restaurants, recreation areas.
Pedestrian travel along streets:

The minimum clear width required by a person in a wheelchair or a walker is 3ft.Utility poles and other fixtures located in the sidewalk can be obstacles for pedestrians with disabilities. Utility company lines, poles and other fixtures should not accomodated within the right of way. Improvements projects might provide opportunities to eliminate existing poorly located utilities that are hazards to pedestrians.

Hanging or protruding objects within the walkway are also hazards for pedestrians with visual impairments. The minimum vertical clearance for objects overhanging a walkway, including signs, is 7ft.

The most desirable installation for the pedestrian is a sidewalk separated from the traveled way by a buffer strip.The minimum width for the sidewalk is 5ft and the buffer is not less than 3ft. Where a sidewalk is separated from the traveled way only by a curb the minimum sidewalk width is 6ft. Wider sidewalks are used in areas of high pedestrian traffic.

Sidewalks 8ft wider are more appropriate at these locations. Fixtures or plants (trees) must be accomodated out of the way of the pedestrians. Physical barriers may be implemented to discourage pedestrians from entering the roadway at points which are notsafe. Finally legislation and law enforcement must be established in order “to protect” this passageway from any other activity.

An area of at least 10 feet adjacent to the intersection should be kept clear to allow pedestrians wait while crossing the street (see fig. 67).

Paving, landscape planting, street lighting and street furniture must be carefully implemented (see figure 65).

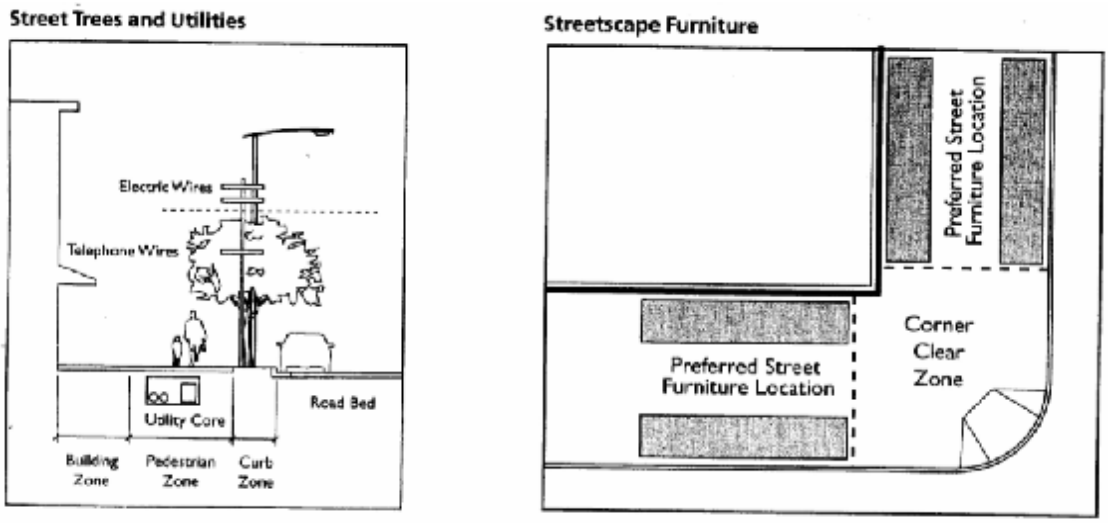


**Figure 68**: Street trees and utilities and streetscape furniture.

These are vital in term of functionality. In addition they bring a human scale to the Roadside. A clear central zone is required to make the roadside “pedestrian- Friendly”. (from Schellinger, 2006, p.48).

The paving material, the street tree selection should include climatic concern, aesthetic desire, and maintenance requirements. The space available for root growth and the size of a mature tree crown and canopy must be considered. Street lighting must provide wayfinding purposes, illumination, and safety for both pedestrians and motorists.

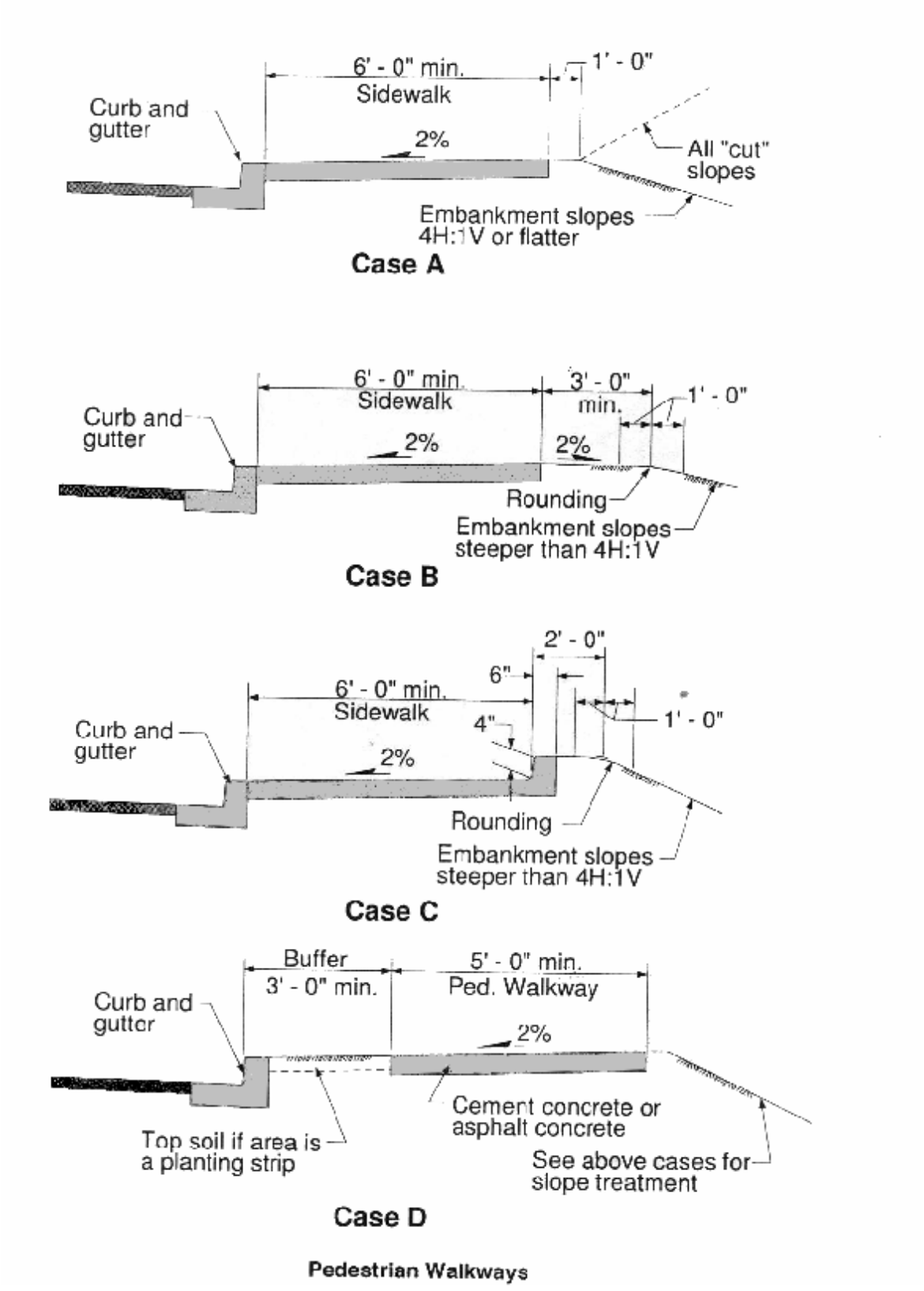


**Figure 69** : Pedestrian walkways. The minimum clear width required by a person or a walker Is 3 ft (90cm) , for two its 6 ft. (from Pedestrian Design Considerations, Design Manual M 22-01, June 2005, pp. 1025-10).

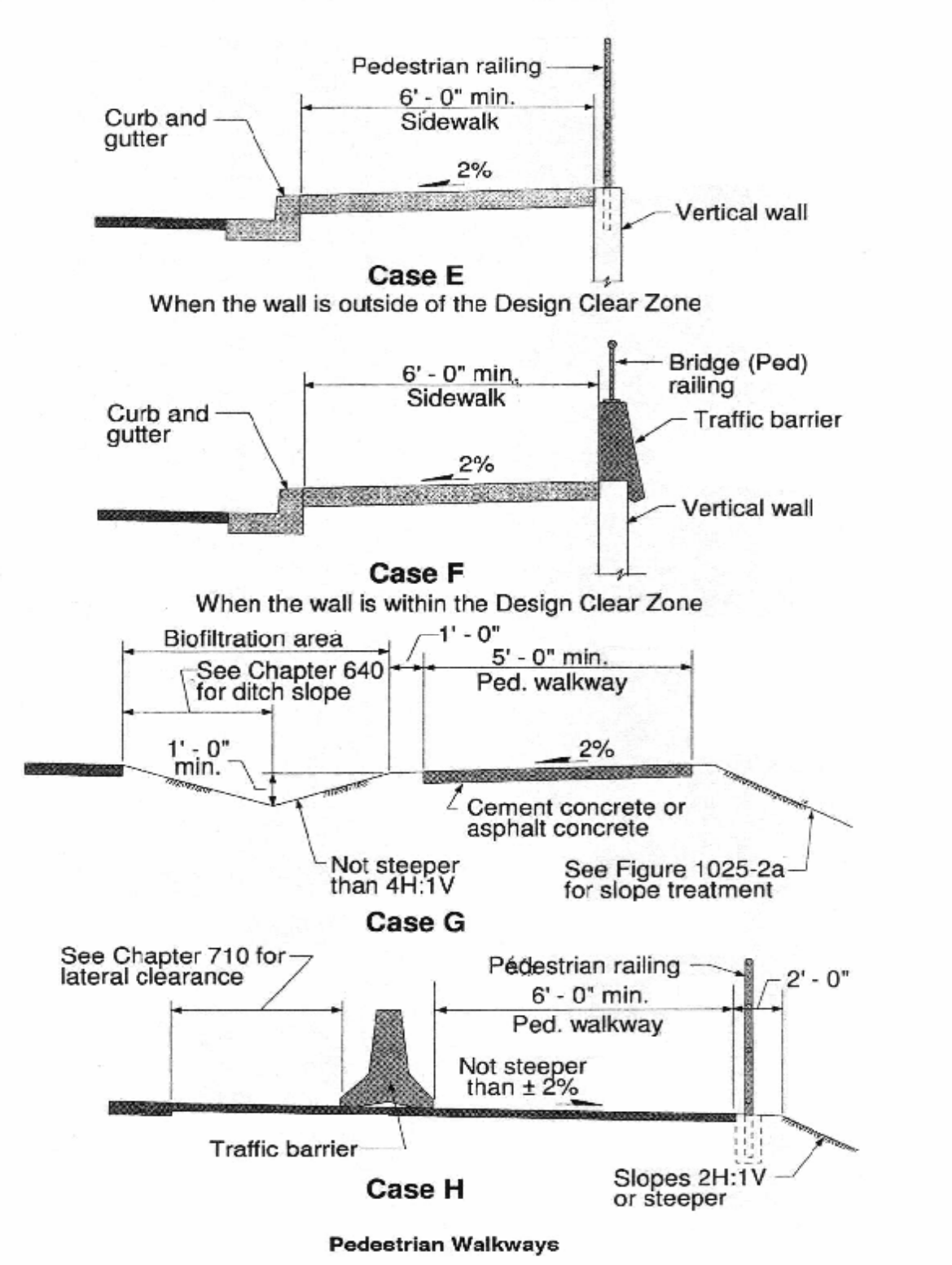


**Figure70** : Pedestrian walkways. The slope should not be steeper than 2per cent. (from Pedestrian design considerations, Design Manual M 22-01, June 2005, pp. 1025- 11).

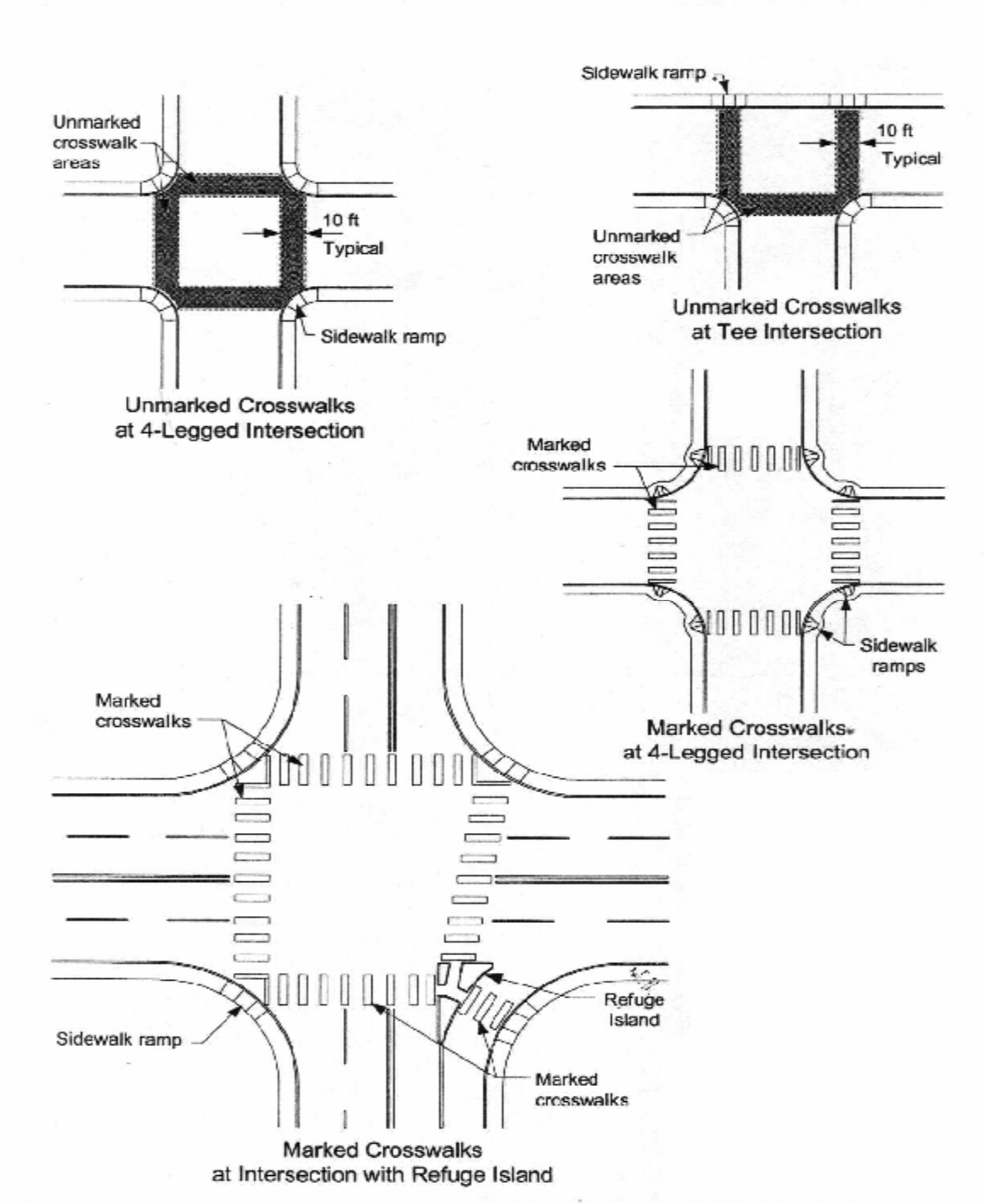


**Figure 71** : Marked and crosswalks at intersection.
Wide, multilane are difficult to cross for pedestrians particularly when There are insufficient gaps in vehicular traffic because of heavy volumes. Traffic lights, marked crosswalks are necessary.
(from Pedestrian Design Considerations, Design Manual, June 2005, pp. 1025- 14).

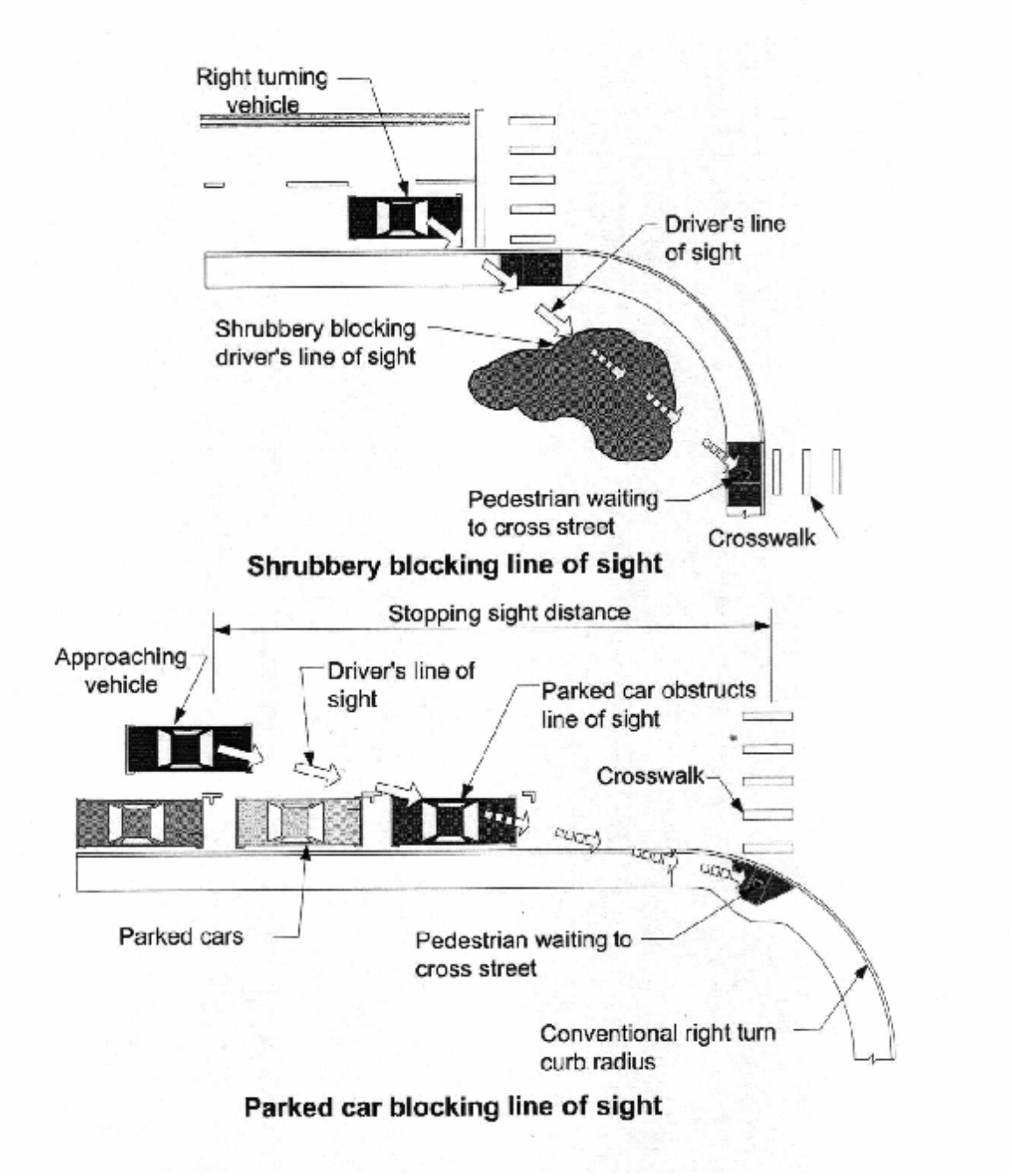


**Figure72**: Parked cars constitute an obstruction : approaching vehicle may not see The pedestrian waiting to cross the street.
(from Pedestrian Design Considerations, Design Manual, June 2005, pp 1025- 15).

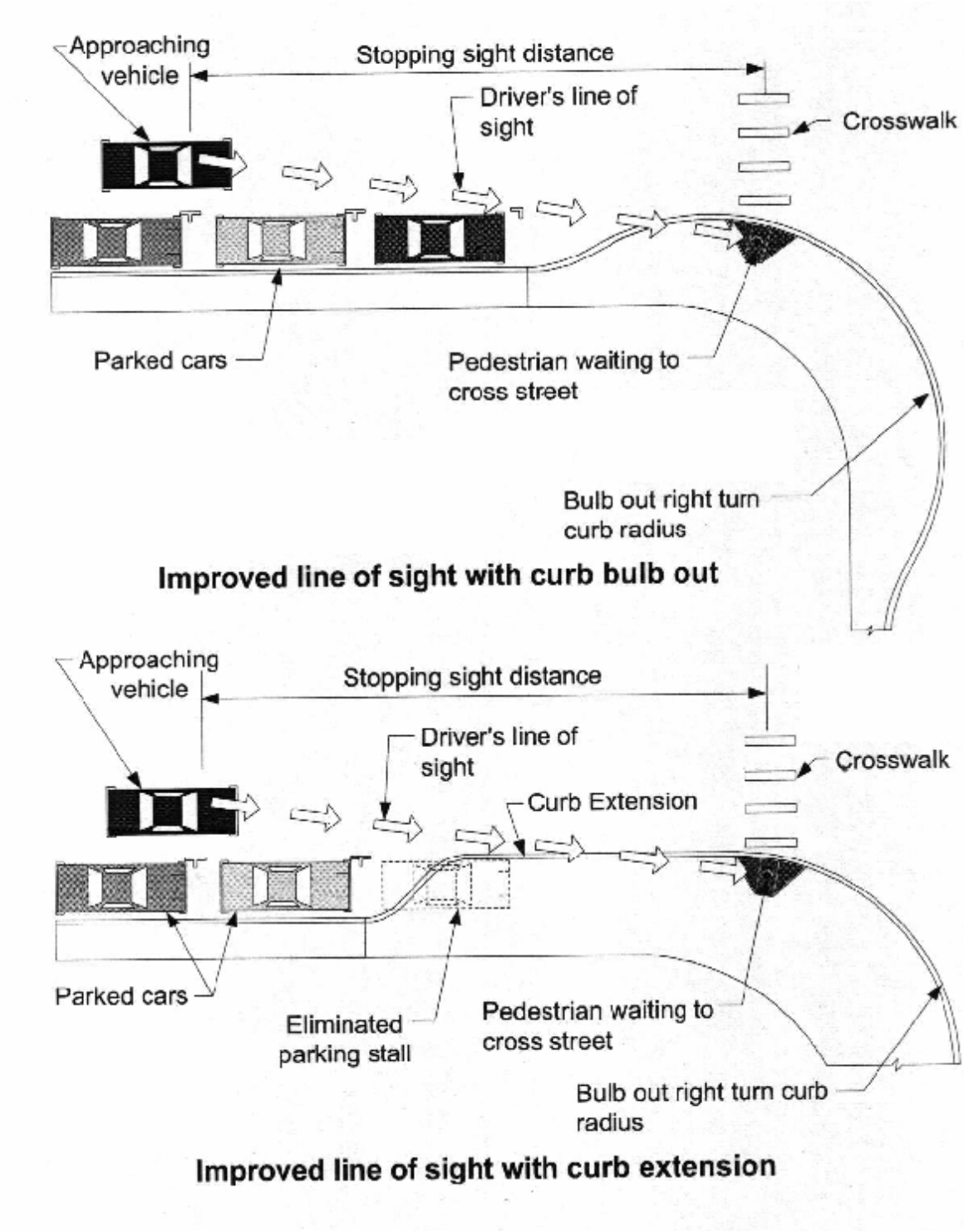


**Figure73**: Improved line of sight with curb extensions. The safety of the Pedestrian rely on the cautious design of the road. Behavioural Studies and observations help establish improvements in order To maximise security.
(from Pedestrian Design Considerations, Design Manual, June 2005, pp. 16).

**8.3.1-Pedestrian crossings**.

The street in this study is considered as a three dimensional space, therefore its enclosure, the built space on both sides of the roadway and the passage from one side to the other has to be considered. The choice must be given to cross and to go from one side to the other.

Multilane streets are difficult for pedestrians to cross particularly when there are insufficient gaps in vehicular traffic because of heavy volumes. Appropriate safety features necessary for the crossing are recommended.

Crosswalks, whether marked or not exist at all intersections. However marked crosswalks define the pedestrian route and permit enforcement of pedestrian crossing laws. The standard crosswalk marking consists of a series of wide lines aligned with the longitudinal axis of the roadway. When locating crosswalks at intersections we have to consider the visibility of the pedestrian from the motorist's point of view. Shrubbery, signs, parked cars, and other roadside appurtenances can block the motorist's view of the pedestrian. In urban areas where vehicle speeds are in the range of 25 to 35mph, a sidewalk bulb out( a curb and sidewalk bulge or extension out into the roadway used to decrease the length of a pedestrian crossing) also shortens the length of the pedestrian crossing and reduces the pedestrian's exposure time.

In areas where heavy pedestrian traffic is present and opportunities to cross the roadway are infrequent, consider providing a pedestrian grade separation. We must point out that elevated grade separations, where the pedestrian is required to climb stairs or use long approach ramps, tend to be under-utilised (in Constantine's city center the elevated stairway had to be removed) .Pedestrian tunnels are an effective method for providing crossings for roadways. However pedestrians are reluctant to enter a tunnel with an unsafe profile because they are unable to see if the tunnel is occupied. The location of transit stops is an important consideration in providing oppropriate pedestrian facilities. A transit stop on one side of a street usually has a counterpart on the opposite side because transit routes normally function in both directions on the same roadway. We must consider the presense of nearby transit stops and the opportunities for a pedestrian to safely cross the street.

### 8.4-Community involvement and civic education

When community involvement is a catch- phrase in most part of the world, in our country its use is rare. In addition countries such as Switzerland, Sweden, Netherlands, and Britain have formal advisory groups who represent the community at large and who have access to planning decisions. In many towns in Algeria it seems that there is no sense of civic unity and shared entreprise towards the public space in general and the street space in particular. Moreover we observe an extremist and popular attitude towards the street space: either it is considered as the extention of the private space (of a house or a shop) and then the sidewalk is " private a garden", a display point, from which the pedestrian is excluded, or the sidewalk is completely abandoned and becomes an area where all sorts of litter are exposed (see chapter 5).

The community (in terms of groups and of individuals) has a major role in making the street a vital inviting factor in our daily life. Consequently it appears that we have to start by introducing in our schools, within the civic education frame, the importance of public spaces. The stress must be put on our rights as well as on our duty towards the front door space. Detailed policies must be fostered in order to protect the street-space and consequently the quality of human daily experiences in this important component of urban spaces.

### 7.5- The design of the street and the urban sustainable development

The following definition was developed to define sustainable urban development at the "Urban 21" Conference (Berlin, July 2000):

"Sustainable communities are defined as towns and cities that have taken steps to remain healthy over the long term. Sustainable communities have a strong sense of place. They have a vision that is embaced and actively promoted by all the key sectors of society. They are places that build on their assets and dare to be innovative...Sustainability strategies emphasize the whole community, ecosystem protection, meaningful and broad based citizen participation and economic self-reliance".

The key word to specify the association street / sustainable development is traffic and consequently hint to the need to reduce the emisions of carbon dioxide and to cut down the consumption of fuel. We cannot leave this task to manufacturers and to governments who are

working to encourage better choices, for example, by incentivising lower emission vehicles.The working group “Grenelle de l’environnement” held in Paris (october 2007) recommended that the lowest taxes should be ascribed to vehicles which have the lowest emissions of carbon dioxide. The commute to work by public transport is also highly put forward. However this leave to architects, planners and urban designers a major role to play in this framework.

Firstly, they have to provide cycling paths and walk ways that are safe and enjoyable in order to help people make more sustainable travel choices, for instance, by encouraging more people to walk to the shops and to initiate cycling to school and to college.
Secondly, it falls to planners and to designers to play a significant role in using energy resources in a way that is consistent with the aim of protecting human health, the atmosphere and the natural environment. Daylighting comes to the fore as an alternative to artificial energy consuming, light. In addition “it is impossible to overestimate the important influence of natural light on the interior and exterior forms of buildings and those who dwell in (Phillips, 2004). The first step in that approach is the study of the street’s width in order to allow maximum daylight in buildings. We observe in the residential areas that the width of the space between buildings is reduced to the point where not only problems of vis-à-vis and noise are noticed but a lack of daylight is also, unfortunately, remarqued. The average street’s width , sometimes,does not exceed five meters when the buildings’s hight on both sides of the channel is ten meters.

Thirdly, there is another aspect which should be taken into consideration and which may be specific to the Algerian actuality.

We observed earlier that there is a need to a back space for private activities (chapter 1) or the need to a space for the solar drying of washing (see section 6.3). Once more we will highlight the significance of an outdoor space. There is an almost daily private activity, hanging the washing which takes place on the balconies and on the windowsill.

**Figure 74**: The every day image of the facades : :the hanging up of the washing.
Cité Les Chasseurs. Constantine. (author, 2008).

Many people are unhappy with the state they end with because of the fumes coming out from the traffic. Lately, it appears that there is a demand which is getting bigger for tumble dryers. We may observe a generalisation of this phenomenon which means to a greater consumption of electricity and this will inevitably lead, in the future, to build electric central which in turn will use up more water in a country where the sun is present almost all over the year and the water supply is more than precious. In addition we will have to import this product which is far from enhancing the local economy and the local environment. Consequently the issue of the street is not only, in many aspects, related to this of the built form and the reciprocity is also genuine but also its scope is part of the sustainable development of the country as a whole (see section 8.5). An outdoor space for private activities such as the solar drying of the washing and which does not compromises the aesthetic of the street wall is imperative.

## 8.6- GENERAL CONCLUSION.

The purpose of this research is to settle the street as an overriding part of the built environment and consequently to provide designers with insights and established design principles which highlight the importance of the concept of the street as an intricate element of the urban fabric in general and the built space especially,a space which would offer multiple opportunities for use, appropriation and transformation, and to point out that the street issue lay at the boundaries of planning and architecture theories and the understanding of the interaction user/place. The aim of this study is to constitute an academic store of understanding about the complex functioning of the street.The study also showed some methods of analysis which appear to be useful for further investigation either to enrich or better to understand the urban environment. Finally, the overriding importance of confronting architectural theory, planning decisions, environmental psychology and problem-solving techniques in the design process of street environments must be recalled in order to achieve design of streets (cities) which embody several super imposed (harmonious) functional and human patterns.This study is a thorough examination of traffic and of the conflict pedestrians /motorists. In fact it highlights the fact that the use of motor vehicles is embedded in our daily life. The problem is not any more that of segregation but that of bridging the gaps between architecture, planning and technical management.

The knowledge acquired from this study is to induce a more critical and cautious approach to the problem of traffic in our urban environments and to find more adequate and wholistic approaches in the design of public and private environments : the quality of “indoor”spaces is relying on this of the street space whose dimensions are depending on the negotiation, the synthesis, the design guidelines and the briefing relating to these interrelated components of the city as a whole.

This study points out to the lack of measures and regulations and which may help protect and enhance the quality of the streetspace as a whole and consequently make the street a setting for a better urban life which enhances social interactions, encourages walking (a sustainable issue).

This study unveiled an important issue that is the design of internal spaces for private activities which take into account our specific social needs.

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**Résumé :**

La rue, cet élément intrinsèque de l'espace urbain a subi des transformations radicales de la part de différents professionnels et cela tout au long du 20e siècle.

La révolution industrielle, l'explosion démographique ainsi que l'augmentation rapide du nombre des véhicules de transport et à leurs tête la voiture, ont poussé les architectes, les urbanistes et les ingénieurs des ponts et chaussées a réduire la rue à un « canal » pour le mouvement et destiné à l'écoulement du flux des véhicules.

Par conséquent la rue a été dépourvue de sa dimension structurelle et sociale. Ainsi sa position d'intermédiaire, entre l'espace bâti et l'espace ouvert, l'espace public et l'espace privé, a été negligée.

Les conflits entre les différentes catégories d'usagers et d'usages - piétons, véhicules , parking, chargement, déchargement ,etc.- persistent et continuent à poser des problèmes qui influent négativement sur la qualité de vie au sein de l'espace urbain dans sa globalité.

Cette recherche constitue une évaluation des différentes approches de la rue et souligne la nécessité de reconsidérer le concept réductionniste qui a dominé dans les projets - architecturaux , urbanistiques ou techniques- durant de nombreuses décennies.
Elle permet de reconnaître que le principe de la segrégation piéton- vehicule n'apporte pas impérativement la solution au problème de la circulation

Cette étude est basée sur le principe que la voiture fait partie intégrante de notre vie de tous les jours et qu'il faut la considérer à chaque pas dans nos projets architecturaux et urbains et que toute intervention sur l'espace bâti (en terme de forme, structure, hiérarchie, façades) a d'importantes conséquences sur la qualité de la rue en particulier et de la vie en général.
L'homme est consideré comme un acteur actif, un explorateur qui est en droit de se voir offrir un éventail de choix qui lui permette de faire des experiences positive et agréable à l'echelle urbaine.

Le développement des études et des théories relatives à l'intéraction homme - environnement et à la qualité des expériences urbaines (définissant la discipline Urban Design), qui émergèrent au début du 20e siécle et s'établirent dans les années quatre vingt , et les méthodes d'analyse sont revues dans cette recherche.

Des recommandations et des principes de conception sont établies afin que la rue puisse être vécue à travers ses dimensions multiples à savoir un espace de mouvement, un espace d'échange social, un espace majeur offrant des choix à différents niveaux afin d'apprécier l'espace urbain dans toute sa richesse.

## ملخص:

لقد طرأعن الشارع عدة تغيرات من طرف مختلف مهنى من مهندسين مختصين بتصميم الطرق وتنظيم حركةالمرورفى القرن العشرين
تعتبر الثورة الصناعية والانفجار الديمغرافي و الازدياد السريع فى عدد وسائل النقل و خاصة السيارات و الحافلات من العناصر الاساسية التى دفعت مهندسى البناء و التعميرالى وضع تصميمات معتبرين من خلالها الشارع ك "مجرى" للحركة و بالتالى افقدته بعده الهيكلى فى الم>ينة و دوره الاجتيازى بين الميدان الخاص وال بنيان والفضاء المدينى العام و ما يمثله كميدان للمبادلات الاجتماعيه اصبح الشارع مسرحا لنزاعات بين الراجلين و وسائل النقل المختلفة رغم تعميم التفرقة بينهم .

هده الدراسة بمثابة تصحيح للمفهوم الاختزالي للشارع لدى مهندسي المدن و المهندسين المعماريين . انها تبرز أهمية الادماج الفعلي لوسائل النقل عامة و السيارة خاصة , التي أصبخت جزءا لا يتجزأ من حياتنا اليومية , في تصميم البنايات العامة و الخاصة .

انها تؤكد على عدم اجبار الطريق على تحمل عبء يفوت قدراتها و اشراك البنايات في بعض العمليات المرتبطة بالنقل (مساحات توقف) .

كما أن هدا البحث كشف عن الدراسات التي ظهرت مند بداية القرن و التي تبلورت في الثمانينات و هي تهتم بعلاقة الانسان و الفضاء العمراني (في شكله البنائي) و التي تؤكد على أخد "المستعمل" كعنصر محوري في كل خطوة يخطوها المصمم (مهندس معماري أو مدني) هناك تقييم للمفاهيم و المناهج المتبعة في هدا الحقل من الأبحاث .

كما ينبثق عن هده الدراسة تصحيح للمفهوم الحديث للشارع حيث جرد من بعده العمراني و المديني و تقسيم الانسان الى راجل و مستعمل سيارة وهو في الواقع كلاهما .

الانسان في هده الدراسة يعتبر عضو نشيط يطالب أن يوفر له مجال مديني للاختيارعلى أسس مواصفات التصميم .

تقدم هده الدراسة مبادىء تجعل من الشارع تعطي للشارع أبعاد متعددة في اطار متكامل يجمع بين الهندسة المعمارية المدنية و السلم الانساني .

**Summary**

The street, this integral feature of the urban space , this intrinsic component of the urban pattern and of our movement through towns cities has been the object of many alterations by professionals. The industrial revolution, the expanding cities and the enormous growth in the number of motor-vehicles may be the main factors which led architects, planners and traffic engineers to design environments where the street is mainly treated as a traffic channel, to facilitate private life location and little else. Moreover the great deal of conflicts between pedestrians and motor-vehicles are serious , although the devices of segregation, and the quality of life is worsening.

This study is to point out the misconceptions in modern planning , architecture and technical managements which have dismissed the street structuring role and its intermediate position between private and public realm and between built and open space. It embodies a research into the potential of the traditional street in term of spatial configurations (enclosure for example) and uses.

In addition this research highlights the spatial vocation of the street as a support of the urban easthetic at the architectural scale and its social dimension.
It recognizes that the car is embedded in our daily life and that the problem of traffic has to be taken into consideration when the design of the built form is undertaken.
It recognizes that people are not passive consumers and the identification of a set of qualities the built environment needs to have to realise maximum choices.

The advances in the multidisciplinary environment and behavior field (Urban Design), which concern is that the physical environment has to be scaled to human needs, are put forward . The prevailing theories and concepts in term of methods of analysis of urban space are reviewed.

Recommandations, design guidelines are established on the basis that the built environment and then architecture must take a large part in the design of streets to integrate the multiple dimensions of this important component of the urban space and consequently of our life.