URBAN COLLISION:
AN ANALYSIS OF THE BUILT FORM IN THE CASE OF ISLAMABAD AND
RAWALPINDI, PAKISTAN

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ABSTRACT

URBAN COLLISION:
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Master of Science, Urban Design, Department of City and Regional Planning
Supervisor: Assoc. Prof. Dr. Olgu Çalışkan

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Traditionally the cities have evolved incrementally, but the modern approach to urbanism created a rupture in this evolution process by idealizing the holistic creation of a new urban utopia and, in most cases, disregarding the existing urban context and history. Due to the new typologies introduced by the modern architecture and urban design policies, a controversial relationship morphologically arises between the modern and traditional fabrics. This can be observed best in the urban peripheries where the modern developments meet with the traditional urban fabric. Then the so-called in-between fields and fabrics represent the condition of *"urban collision"*. Those areas generally function as a buffer and maintain a balance between the two different urban orders. They could provide either cohesion or fragmentation within the whole (new and old) urban fabric.

Sufficient literature is available on distinguishing the typologies of the modern and the traditional architecture and urbanism, but little research has been conducted on recognizing the spatial configurations between such dichotomies. This thesis aims at developing a conceptual framework for identifying the fields of urban collision and categorizing it in accordance with its relationship with the old and the new patterns of development. This framework following a morphological review of the

world cities that accommodate such a close spatial encounter called 'urban collision' further gives a detail insight. The research then morphologically examines the built form of the capital city of Islamabad and the traditional city of Rawalpindi along with other traditional villages around the modern city. Emergence of the collision areas is discussed regarding their social and economic implications. Accordingly, the modernist planning experience of Islamabad is assessed in consideration of the conception of urban collision.

Keywords: Urban collision, modern planning, traditional fabric, urban pattern.

ÖZ

KENTSEL ÇAKIŞMA:
İSLAMABAD VE RAVALPINDI - PAKİSTAN ÖRNEĞİNDE KENTSEL FORM ÇÖZÜMLEMESİ

Falak, Harem
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Geleneksel olarak şehirler aşamalı olarak evrimleşmiştir, ancak şehirciliğe modern yaklaşım, yeni bir kentsel ütopyanın bütünsel (total) yaratımını idealize ederek ve çoğu durumda mevcut kentsel bağlamı ve tarihselliği göz ardı ederek bu evrim sürecinde bir kırılma yaratır. Modern mimari ve kentsel tasarım pratiğinin ortaya çıkardığı yeni yapı tipolojileri nedeniyle modern ve geleneksel dokular arasında morfolojik olarak karşıt bir ilişki ortaya çıkmaktadır. Bu, en çok modern gelişmelerin geleneksel kent dokusuyla buluştuğu kent çeperlerinde gözlemlenebilir. Bu bağlamda 'arada kalmış' alanlar olarak nitelendirebileceğimiz kentsel dokular "kentsel çakışma" durumunu temsil eder. Bu alanlar genellikle bir tampon görevi görür ve iki farklı kentsel düzen arasında bir denge sağlar. Bu tür alanlar, (yeni ve eski) kentsel doku bütünü içinde ya bütünlük ya da parçalanma durumunu oluşturan temel etmendir.

Modern ve geleneksel mimari ve şehirciliğin tipolojilerini ayırt etmek için yeterli literatür mevcuttur. Ancak bu tür ikilik içindeki mekansal konfigürasyonları tanıma konusunda çok az araştırma yapılmıştır. Bu tez, kentsel çakışma alanlarını belirlemek ve eski ve yeni gelişme kalıplarıyla ilişkilerine göre tiplendirmek için bir çerçeve geliştirmeyi amaçlamaktadır. Bu bağlamda çalışma, parçaların

tiplendirilmesi, 'kentsel çarpışma' olarak adlandırılan yakın bir mekansal karşılaşmayı barındıran dünya şehirlerinin morfolojik bir incelemesinin ardından üretilen kavramsal bir çerçeveyi ortaya koymaktadır.

Araştırma daha sonra Pakistan'ın başkenti İslamabad'ın ve güney çeperinde yer alan geleneksel Ravalpindi kenti ve modern kentin çevresindeki diğer geleneksel köyler arasındaki kentsel çakışma koşullarını morfolojik olarak incelemektedir. Çakışma alanlarının ortaya çıkışı, sosyal ve ekonomik etkileri açısından tartışılmaktadır. Bu doğrultuda İslamabad'ın modernist planlama deneyimi, çakışma kavramı üzerinden değerlendirilmektedir.

 Anahtar Kelimeler: Kentsel çakışma, modern planlama, geleneksel doku, kent formu.

To dearest Eshaal, and my beloved parents.

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CHAPTER 1

INTRODUCTION

1.1.   Context of the study and problem definition:

The relationship between man and his environment has progressed with time and this has resulted in modifications of the natural and built environment, as per the needs and demands. Traditional cities have evolved incrementally in the same process. However, the emergence of modern urban planning in the nineteenth century was a rupture in this evolution course. The visually-oriented modernist urban planning negated the existing context and the surrounding urban tissue to aim for an idealized fixed image of the city built in a set period. Modern planning of the nineteenth century aimed for a *new urban utopia*, it was a completely different ideology from the past urban regimes and therefore it negated all that was connected to the history. The dominance of modern urban planning over the traditional urban fabric was strengthened by the monumental status of modern built fabric through designing large open space in the form of green area in front of the modern buildings. Modern planning was deliberately set it in isolation especially from the preexisting old urban tissue. This was a conscious attempt of the modern planners to creating a barrier or a buffer area in-between the traditional preexisting urban fabric and the new modern planned. This in-between area or a buffer between the modern planning and the traditional urban fabric was when reduced

with time due to factors like rapid urbanization, as well as modifications within the urban tissue, raised tension and pressurized both the urban fabrics. This urban tension was caused because the modern urban planning was never designed to be incorporated with the preexisting traditional urban tissue rather it divorced and deemed upon the preexisting chaotic nature of old towns. This planned or unplanned close contact of two poles apart urban forms, the modernist and the traditional urban fabric results in "collision".

*The word collision originated from Latin meaning **collīdere to collide,** meaning **coming together with force.** The English dictionary describes it as* two different entities or two sides and an occurrence. Collision is considered as a physical phenomenon of the proximity of two entities, physics-the branch of science describes it as *"the meeting of elements in which each exercise force upon the other, causing the exchange of energy."* A collision occurs when the border condition of the opposing two entities is altered and diminishes in time; sometimes creating tension in both systems in other words conflict. Conflict is described as the tension between two contrasting entities. It is an incompatibility, a clash of opposing elements. Urban collision is described as when two contrasting urban forms, in this case, modernist planning and the traditional urban fabric are in proximity. Their close occurrence is an urban collision. Not all contrasting elements' collisions cause conflict; sometimes the contrasting elements are arranged and integrated so that they coherently form one whole system.

The concept of urban tissue suggests a notion of ***"interweaving and of connections between parts, with a capacity for adaptation"*** *(Samuels, et. all, 2004).* A city's urban tissue carries the stamp of the past urban planning schemes, modified according to the different ideological planning perspectives and serves as the cradle of culture, ideology, political order and economics. In other words, urban tissue comprises the *city's connection linkages* consisting of paths, nodes, streets, junctions *and the urban mass* in form of the building blocks, parks etc. In general,

all cities constitute the two elements of urban network structure and urban figure. Yet, in each city, these are combined in a specific way, originating different types of urban tissues which give each city its unique character. It is this alteration in urban network structure and organization of build fabric that sets apart one planning ideology from the other, like the traditional and the modernist urban fabric each can be distinguished by analysis of its network structure flow and the layout of the built.

The traditional urban forms follow a bottoms-up approach where the smallest urban unit is linked to the adjacent path, the path to the street, the street to the main road and then to the highway. Whereas the modernist urban cities are planned by a top-down approach the inverse of the traditional. Rowe, C. and Koetter, F (1978); explains this order of a city in terms of *"solid and voids dialect"* and states that; *the solid and void representation of planned cities is completely different from traditional city fabric.* (ibid. p.62) However this difference is what makes the whole urban tissue connect as one. The weakness of one urban fabric becomes the strength of the other. In that sense an urban tissue can never be considered complete, it is rather ever-evolving with the ability to adapt. The urban tissue carrying the imprints of diverse urban planning theories developed over time; resulting in *urban interactive tension or other words collision in the interwoven network.* This urban tension is most prominent in the periphery- the boundary of two contrasting urban orders or forms.

From socialist utopians to the capitalist, the urban periphery was envisioned as solutions to problems of the urban core. Steiner. D (1951-2020) has defined the urban periphery as *"a state in-between, between old centers and new islands".* In the twentieth century, the periphery emerged as an area where the design interventions of modern urban planning could be realized without finding the resistance of conservative city fabric. It became a space of adjacent competing urban forms without dominant spatial character. Due to these issues, it required a

framework for integration. As Healey (2007) explains about this framework as treating the urban space not as separate containers; rather an amalgamation of various urban ideologies. So to generate numerous relations, activities and ideals co-exist, interrelate, combine, conflict, dominate and produce creative interaction.

The thesis highlights the urban collision between the modernist planned and the traditionally grown urban fabric. It aims at developing a framework for recognizing the space of collision. The thesis also critically examines the functionality of the urban collision space and characterizes it on bases of its functionality. The research aims at emphasizing the space of urban collision as a design opportunity for the traditional urban fabric and the modern planning to coexist as one.

To understand the governing principles and characteristics of the space of urban collision between the modernist planned and the traditional urban fabric, the historical case studies are critically evaluated which covering the pre-modernist to the modernist era. The case studies are then morphologically mapped out to evaluate the characteristics of the space of urban collision. The typologies of the urban collision are derived based on its functionality. An in-depth investigation is performed for the case of Islamabad and Rawalpindi to evaluate the political and other factors involved in the formation of urban collision between the twins cites of Pakistan. The unique case of Islamabad-capital city of Pakistan is planned by C. A Doxiadis from scratch and was set deliberately adjacent to the preexisting city of Rawalpindi, an important traditional regional center, positioned on the Trans- Asian Highway, a route that connects the Middle East with the Indian subcontinent and extending further into the Far East. ***Islamabad was to be fed on Rawalpindi resources.*** (Botka, 1995). By name, these two are known as "*the twin cities of Pakistan*" 20km apart with people commuting daily from one city to the other, but the urban network and fabric differ significantly.

Islamabad a modernist grid planned capital city from the scratch manifestation of *"total design"* planned and built to house the seat of government, whereas Rawalpindi settlement dates back to 1765, with the oldest railway system and headquarters of the Pakistan armed forces. Islamabad shares three sides with Rawalpindi and the fourth side faces Margalla hills completely enclosing Islamabad. Islamabad Master plan which was designed by C. A Doxiadis forecasted linear extension. The need for coordination of development was utmost important. But due to political and other factors which this thesis will highlight; Rawalpindi never followed the dictated master plan of Islamabad. Contributing to this problem factors like rapid urbanization over time, lead the modernist city of Islamabad and the traditional urban fabric of Rawalpindi, extend towards each other; diminishing the peripheral buffers between them. This resulted in an urban collision between the modernist Islamabad and the traditional Rawalpindi, as both cities were initially conceived to work together by C.A Doxiadis's imposed master plan over Rawalpindi. ***The master plan of Islamabad is under reconsideration since June 2020*** (The Gazette of Pakistan, Review of master plan of Islamabad 2020-2040, 2020). The twin cities suffer due to issues like urban fragmentation, ineffective mobility, hindered urban growth, disorganization and urban dispersion etc. Thus, both cities are unable to perform as planned.

The urban tension between Islamabad and Rawalpindi is not something that happened recently due to merely urban extension rather it is a matter of modernist ideological beliefs towards the traditional existing fabric that laid the foundations of the collision between two urban units. This thesis will investigate the foundation principles of the formation of urban collision in time through the progressive mapping technique.

There is a crucial need to reevaluate contemporary cities and recognize the tension in the urban tissue arising due to the collision of contrasting urban forms at the periphery. Since the urban periphery has a direct relation with the center of the city,

collision and the conflicts arising in response will have implications on both the urban tissues, disrupting the urban network and the flow. This thesis develops a framework for identifying the space of urban collision between the shared peripheries of modernist planning and the traditional urban fabric. The study will analyze the morphological features and characteristics. The research maps out the different typologies of urban collision spaces through the historical case studies and derives the basic functions performed by the urban collision in the built form.

1.2.   Aim of the Study and Research questions:

This research aims to recognize the colliding conditions between the two contrasting urban forms, the modern planned city and the traditionally grown existing urban fabric. Elaborate and define morphological characteristics of the shared space in this thesis termed as the field of urban collision. The thesis focuses on the functionality of the field of urban collision and understands the critical process of its formation in time.

The thesis will critically analyze this unique urban interaction between modern planning and the traditional urban fabric by mapping the historical cases and their different collision conditions. *The motivation behind this research was to develop a better understanding to see cities not just as a collection of building blocks having geometrical regularities; but rather as urban tissue having different parts like modern planned and traditional urban fabric weaved together. The thesis aimed at juxtaposition the modern planning traditional and rather forming an approach of which is better or worse; through the space of collision the thesis aims to understand their relationship to coexist in an urban setting holistically.*

The aim is to recognize and understand the nature of urban interaction during an urban collision between the modern planned and the traditional urban fabric.

Although there is ample literature on recognizing the modern planned cities and the traditional urban fabric as two distinct urban entities; little research is conducted on the characteristics of the shared space between them. The thesis will answer the following questions;

What is the foundation of urban collision between the modernist planned and the traditional urban fabric? This will define the ideological beliefs of modern urban planning towards the traditional preexisting urban fabric through the cases from the history with similar conditions of urban collision between the modern planned and the traditional urban fabric.

What are the morphological characteristics and different features and functions of the collision space? This will be achieved through morphologically mapping the built form and developing a framework for categorizing the different typologies of urban collision. Analysis of the historical case studies; based on the actions and reactions of the modern urban fabric to the traditional and vice versa.

What is the process of formation of urban collision in time and its implications? In the case of Islamabad and Rawalpindi. Through highlighting the political factors involved the formation process of the space of urban collision will be investigated and its effects on the surrounding urban fabric will be discussed. Progressive mapping will give an insight of the overall scenario of urban collision formation in time. This will help understand the effects of the space of collision on the holistic urban tissue of both.

1.3. Methodology of Research:

This thesis attempts to inspect the before-mentioned issues through descriptive, quantitative, qualitative and exploratory research methods for leading the study. To

create a theoretical framework as the basis of the research, a literature review is conducted in two parts.

The first part dedicated to the theoretical understanding and discusses the ideological belief of modern urban planning and its stance on the preexisting traditional urban fabric which will establish the foundation of urban collision between modern planning and the traditional preexisting urban fabric. *The thesis critically analyzes through selecting case studies that exhibit the same condition of urban collision. The cases are picked from diverse regions and time periods from the early-modern era;* like of Edinburgh Extension Plan, Vienna planning, Barcelona planning by Cedar and Athens urban planning. Other examples will be discussed to establish theoretical understanding from the modernist urban planning perspective. The case of Le Corbusier's Plan Obus-Algeria establishes a core understanding of the modernist principles and approach towards the existing urban fabric. The example of urban planning of Cairo will also give an insight view of the changing city's urban fabric with new planning and the condition of collision. These case studies will help establish the understanding of modernist planning and its implications on the traditional urban fabric and will establish a theoretical understanding of the field of collision and its formation.

The second part deals with defining morphologically the field of urban collision. Analyzing and categorizing the morphological characteristics of the urban collision space based on its function performed which will help establish the typologies of the urban collision.

The third part of the thesis focuses on the case study of Islamabad and Rawalpindi highlighting the political and other factors involved in the process of formation of the urban collision over time and its economic and social consequences on the urban tissue. How in time did the interactive tension in the

space of urban collision start building up and what factors contributed to the formation that lead to the urban collision into urban conflict.

The general discourse of this research is constructed mainly on *C. Rowe and F. Koetter-Collage city* - upon which the understanding of collision between the modernist and the traditional urban fabric is based. Rowe's assessment of the contemporary city and recognizing it as a product of both traditional and modern urbanism with the mapping technique of figure and ground juxtaposition for comparison and contrast helped in this thesis research as the urban tissue analysis of various case studies have been compared on the same outline. *(Hurtt, 1983, p.57).*

The supporting literature for this research is *S. Hurtt-Conjectures on urban form-the Cornell Urban Design Studio 1963-1982.* It further explains the design motives of Cornell design studio led by Rowe. Additional literature for the understanding of urban fabric is based on Samuel, *P. Paneria, J. Castex & J. C. Depaule- Urban form, which explains* the morphological characteristics of the cities. It gives an in-depth perspective of understanding the city as urban tissue. It further highlights the modernist urban planning modifications and their impact on the preexisting urban tissue. The thesis investigates the two contrasting urban orders, that is a modern urban planning and the traditional urban fabric, which are explored through the morphological investigation of the past urban planning case studies with the help of historical maps, and critical analysis through progressive mapping techniques. To comprehend the formation and the foundation factors responsible for the urban collision over time. This thesis opens up the horizon and invites new design approaches and concepts on peripheral urbanism through its attempt to recognize and understand the functions performed by the collision space between the modernist and the traditional urban fabric.

It contributes to the field of research by recognizing and morphologically analyzing the unique urban interaction between modernist planning and the traditional urban fabric that causes urban collision between them. *The thesis opens up the discussion on recognizing this space of collision as an opportunity for the urban tissue.* The research has been created upon critical review of the existing literature, archival research, urban morphological analysis, mapping techniques and personal observations of the author, who resides in the city of Islamabad the capital of Pakistan and has experienced the two urban network structures and their colliding urban forces interaction over time thus came up with preliminary ideas and to develop more insight and hypotheses regarding the explanation of the problem. The uniqueness of this research lies in critical analysis and referring to data and creative urban maps from historical manuscripts for comparing and analyzing the space of collision. This will be followed by a morphological mapping study to understand the functionality of urban collisions. The research gathers and interprets the original archival documents on the planning, design and construction of Islamabad through governmental and consultant texts (i.e. reports, letters and papers) and visual materials (i.e. maps and images). Analysis of the space of urban collision through different morphological mapping techniques will be a prominent part of this thesis, along with determining the typologies, characteristics and process of formation of the space of urban collision.

1.4.   Structure of the Research:

This study is organized into five chapters (figure 1.1). The current chapter, **Chapter 1**, provides an introductory outline of the study including contextual statements, problem definitions, and objectives of the study, the importance of the topic under discussion, research questions and methodologies for the research study. ***Chapter 2; the dichotomy of the modern and the traditional urbanism and their coexistence;*** describes the traditional urban fabric and the modernist planned

cities and further expands the research by discussing the contrasting conditions between the two urban orders in history. This part discusses the example from the early modern, which are the Edinburgh extension plan, Athens's new urban planning, Vienna extension plan, renovation of Paris, Barcelona extension and also includes modern urban examples like Le Corbusier's Plan Obus-Algeria, Amsterdam, Ankara master plan and Cairo master plan. ***Chapter 3 deals with the Urban Collision***, defining the phenomena of urban collision as well as detailing the typologies of the space of urban collision. The wide ranges of case studies from the previous chapter are narrowed down and this chapter morphologically maps the field of urban collision of selected cases. The selected cases are critically analyzed to establish a framework for defining the characteristics of urban collision space. ***Chapter 4 is dedicated to the case study of Islamabad and Rawalpindi***- It aims at studying the formation of the space of collision, through progressive mapping of the space of collision in time. The process of formation of the urban collision will be understood in detail along with the implications of the urban tissue. This chapter also highlights the key issues which are responsible for the urban collision between the two cities. Reveals the problematic conditions both cities face due to urban collision. ***Chapter 5; Conclusion-*** it aims at binding it all together in a coherent manner. By recognizing the characteristics of unique urban interaction involved, the research opens up new design ideas and concepts for the space of urban collision between the modern planned and the preexisting traditional urban fabric. This thesis is a contribution to the field of research by evaluating morphologically the space between modern and traditional urban fabric, and its features and investigating the design operations based on its functionality.

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Chapter 1

Contextual framework and problem definition

RESEARCH QUESTIONS

1
What is the foundation of urban collision between the modernist planned and the traditional urban fabric?

2
What are the morphological characteristics, types and features of the space of collision?

3
What is the process of formation of urban collision in time and its implications? In case of Islamabad and Rawalpindi

THEORATICAL FRAMEWORK

Chapter 2

The dichotomy between the Modern and the Traditional urbanism and their coexistence

Understanding the ideology of the modernist city planners towards the exisiting traditional urban fabric. The thesis critically discusses the examples from history of imposed modernist planning onto exisiting traditional urban fabric.

- Describes the traditional urban fabric and the modernist planned cities.
- Discussing the contrasting conditions between the two urban orders in history.

- Case studies in history traditional urban fabric encounters modern planning.

Chapter 3

The Urban Collision

Establish an understanding the characteristic of urban collision through defining the typologies and morphologically mapping case studies in detail.

- Defining the urban collision
- Describing the typologies of urban collision.

- Morphological mapping of each case study critically in detail.

METHODOLOGY

Chapter 4

The urban collision in case of Islamabad and Rawalpindi

It aims at studying the process of formation through progressive mapping the urban collision in time. The process of formation of the urban collision and its implications onto the urban tissue.

- Political and other factors responsible for urban collision in case of Islamabad and Rawalpindi
- Progressive mapping of the space of collision

- Implications of the space of collision in case of Islamabad and Rawalpindi

Chapter 5
CONCLUSION

This thesis aims at *identifying the space of urban collision between modernist planning and the traditional urban fabric and analyzing its morphological features and characteristics.* Through exploring the characteristics of the space of collision and understanding its dynamics how one urban space reacts to another, urban collision can offer new prospects for design in an urban setting.

CHAPTER 2

THE DICHOTOMY BETWEEN THE MODERN AND THE TRADITIONAL URBANISM AND THEIR COEXISTENCE

This chapter has been divided into two parts the first part gives a brief introduction to traditional urban forms and modern planning and further discusses the ideological perspectives of modernism towards the existing traditional urban fabric. The research further expands and highlights the holistic urban implication when the traditional urban form is in close proximity to the modern planning. It gives a general theoretical outlook on how the urban periphery of old towns was altering with the emergence of modern urban planning and what morphological changes occurred in the urban tissue.

The second part of this chapter discusses the history of the renowned urban planning cases that have the preexisting traditional urban fabric with modern planning; this will further strengthen the understanding of the kind of association developed between the modern and the preexisting traditional urban fabric. It discusses in detail the need and motivation behind the new modern planning and the treatment of the old traditional urban tissue. It establishes an understanding of the changes occurred in urban tissue of cities corresponding to the traditional growth and the modern planning.

2.1. Traditional and the Modern in context of urbanism- A theoretical framework:

The urban form comprises the physical features that make up our living environment; it includes the shape, size, density and arrangement of settlements. This is linked to urban morphology, which is the study of the form of human settlements and the process of their formation and transformation, regarding the spatial structure and organization. The basis of urbanization was established *when Paleolithic man moved into the shelter accommodations from the cave (Gallion and Eisner, 1950, p.3).* The process of urban settlements was further reinforced when man shifted from nomadic hunting to agrarian setup along fertile valleys and the families combined to form tribes, and the tribes combined and formed villages. The locations of the villages were chosen near the waterfronts, greener environments and protection of terrain. When man achieved all his basic needs; he then pondered upon his social and political desires; thus, the physical form of the settlements started to take *shape by the economic, social and political forces of society* (Ibid, p. 4). The villages which held geographic, economic and social advantages grew into cities and their urban tissue transformed gradually.
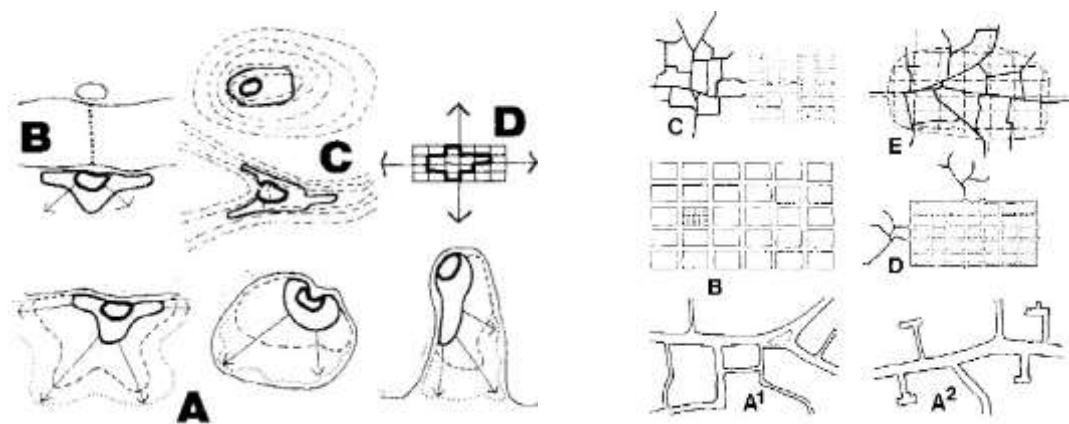
Figure 2.A. urban form origin; the organic growth and the planned settlements. Key- from organic western European street to Mesopotamian to gridiron planning then the organic growth nucleus with grid extensions; (Left) **2.B**. Location and its effects on the growth of the settlement. (Right) (Source: Morris, 1994, pp.10, 11)

Urban form is recognized in two variants; organic and planned (Morris, 1994, p.8; Kostof, 1991, p.43) as described in fig.2a. The natural, unplanned process whereby an urban settlement evolves from a village origin is termed organic growth without any predetermined planning interventions, whereas the planned urban development is designed and coordinated. The First main civilizations of man are Mesopotamia, Egypt, the Indus Valley, Mexico, Peru and the Yellow River in China out of which evolved the Greeks, the Romans and the Western European Christian civilization. Hippodamus of Miletus (Mazza, 2009; Paden, 2001), Mohenjo-Daro in the Indus Valley, dating to 2500 BC featured a north-south-east-west orthogonal grid (McIntosh, 2007).; ancient Chinese capital city Kao Gong Ji, 500 BCE (Elman and Kern, 2009)and the Egyptian cities like El-Amaran, and Kahun (Morris, 1994) are the earliest known examples of planned gridiron urban settlements. Morris refers to the forms and morphology of urban settlements have been determined by two main types; the first one is the natural attributes that play a role in shaping and molding the urban pattern including the geographic location, the topography, the climate and the construction materials available as described in fig.2b. ***The second key determinant influencing the urban form is the man-made involvements*** which include, trade, politics, social system and religion. (pp. 10-17).

2.1.1. The Traditional city:

The traditional cities in this research are defined ***as cities which have arisen more or less spontaneously over many, many years*** (Alexander, 1965) in other words the urban tissue is shaped through the processes of evolution incrementally. The traditional cities did not develop based on plan but rather grew and evolved in many hundreds of years, it is this slow process of growth that permitted persistent adjustment and adaptation to the physical environment of the city function. For the traditional urban fabric, the image or configuration of the city was not a goal in itself, but a tool formed by use. (Gehl, J. 1987, p.43) it is this evolution process of the traditional urban fabric that makes their urban quality higher.
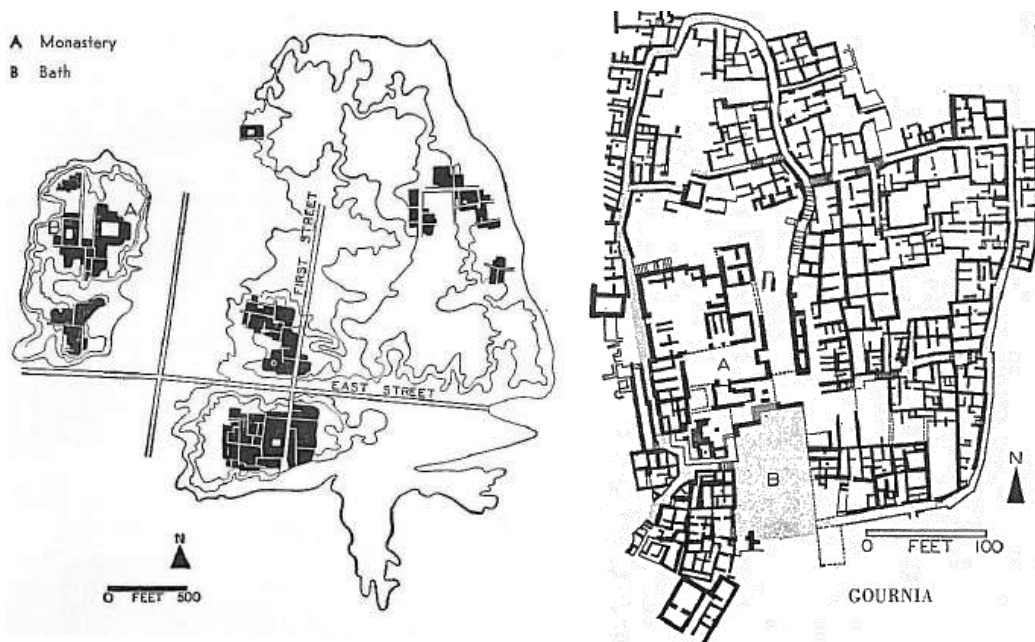
Figure 2.1.A. The traditional orthogonal grid city layout of Mohenjo Daro- Indus valley civilization. Mohenjo Daro (Left) **2.1..B.** The traditional organic planning of Gournia- Greek civilization (Right) (Source: Gallion & Eisner, 1950, p. 10)

The incremental evolution process of traditional cities was not just one layer of city fabric but; there is evidence of traditional city's geometrical forms superimposed upon an irregular pattern, or an informal system may have been grafted upon a city having an original pattern of gridiron streets (Gallion et all., 1950; Morris, 1994). It is important to note that the traditional urban fabric must not be distinguished through mere visuals of organic growth patterns, but the oldest traditional cities were orthogonally as well. Early cities came in many forms; some were geometric like the Egyptian cities and Indus valley civilization- *Mohenjo Daro* 2500B.C which was the earliest known schematic orthogonal layout applied to the entire urban fabric; whereas some grew naturally like the *Gournia, Greek* civilization dating back to 1500B.C. The traditional cities in which great cultures thrived began with a strategy develop and adapt as per the habits of the inhabitants sensitive to the changes and not fixed upon form.

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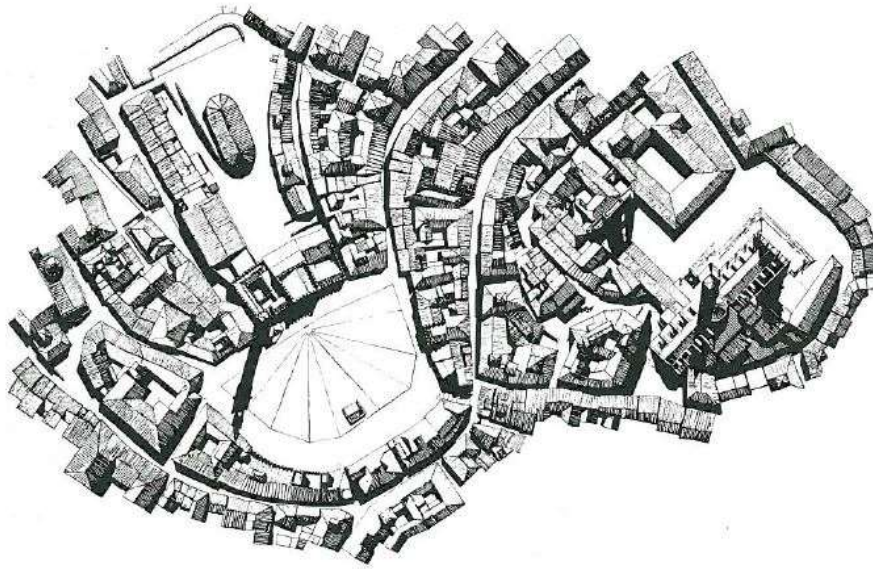
Figure 2.2. Piazza Del Campo, Siena, Italy 14th century. Europe's medieval squares with its orientation, its bowl-formed ideal arrangement. (Source: Gehl, 1987)

The two basic forms of the traditional cities have been described by Gallion and Eisner (1950) are the walled and the open city. Within these two categories the organization varies as per the character of the society. The traditional urban fabric is comprised of two variants, organic and determined. The urban factors like the natural features and factors like climate conditions, location etc. determined the urban form of the traditional city's urban fabric.

2.1.2.   Modern planning:

The modernist planned cities in this research refer to the ***deliberately created urban fabric by designers at one moment, its pattern determined once and for all by some overseeing authority;*** (Kostof, 1991). The transitions form the incrementally grown urban fabric to planned static urban structure dates back to Renaissance. (Gehl, J. 1987, p.43). It was between the fifteenth and sixteenth century when the visual aspect of the city and the building gained prime significance. The idea was to give the city an orderly and rational form, making it a

symbol of creative and philosophical formations. Palmanova's design by Scamozzi gave all streets the same width of 14 meters regardless of the purpose and placement of the city plan to achieve a perfect image of the city.
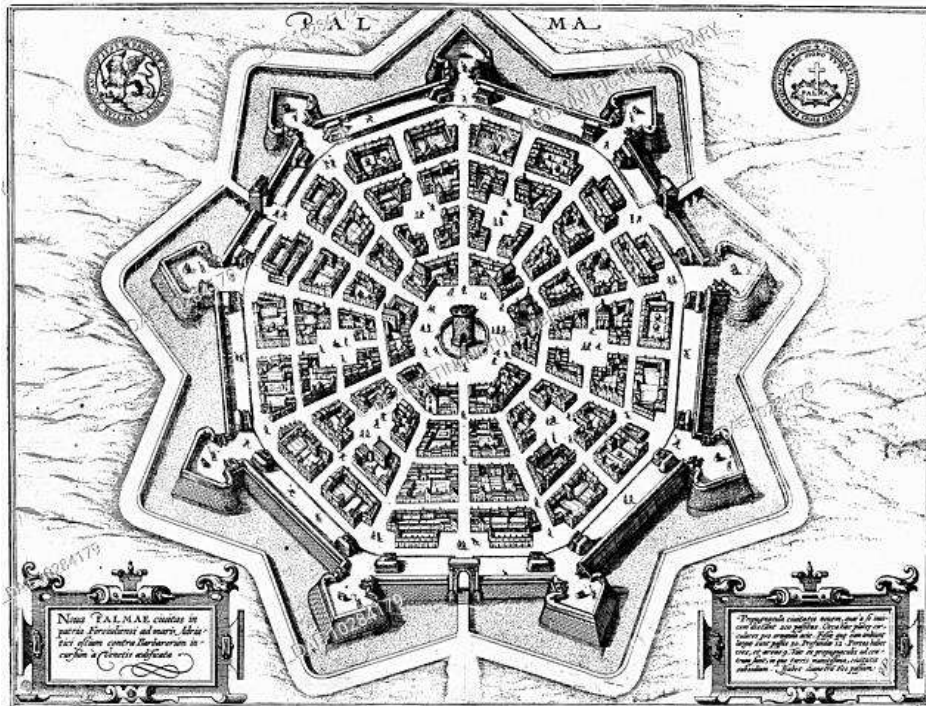
Figure 2.3. The city of Palmanova, Italy 1593. An innovative and essential feature of Renaissance architecture was the theoretical elaboration of the form to be given to the city. (Source: Gehl, 1987)

With the emergence of the industrial revolution in the nineteenth century, modernism gained importance. Especially when buildings became more functional in organization and building tended to become, in itself, more of an object, detaching and isolating from its context. (Trancik, 1986, p.8). The city in the modernist era was viewed as a manifestation of the power of man on earth and this made the previous understanding of cities to be drastically changed in terms of their spatial, temporal and kinetic relationship within. In the *1930s came functionalism* (Gehl, 1987, p.45) it focused on physical functionality of the city or building and viewed it as a machine. It was at this time modernism gained immense popularity as well had design enhancement. The functionalism laid

emphasis on the factors like sunlight, fresh air, views to all and it was at this time the urban squares were eradicated from the urban fabric at the cost of wide open streets. Functionalism envisions the city as a collection of activities: live, work, leisure and the traffic systems that serve them.
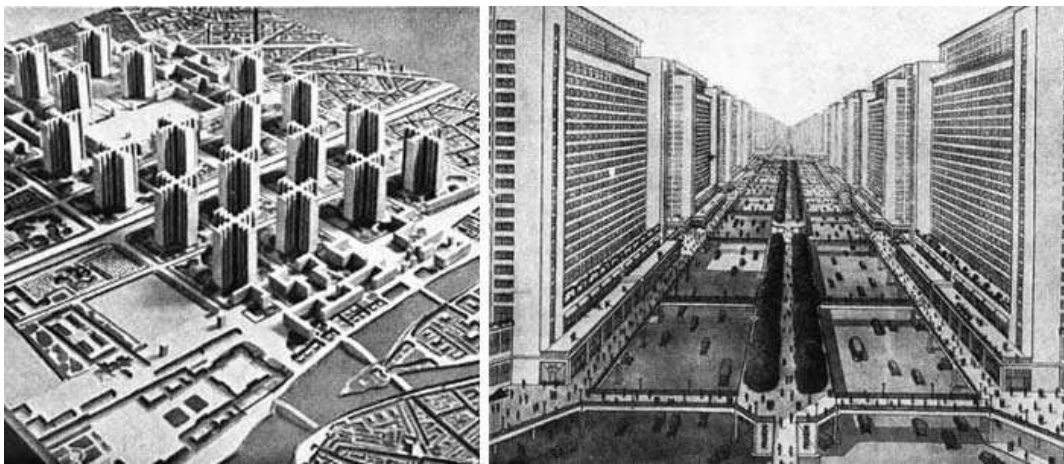
Figure 2.4 Le Corbusier plan Radiant City model modern compact communities that provide abundant open space for their residents living in high-rise buildings. (Source: URL:1)

Modern cities were built from scratch, especially after the late nineteenth century with its glorious technological advancements. The concept of a modern city was also a reaction against the way cities had evolved during the nineteenth century. Barnett described the process adopted by modern urban planning, he states that the traditional urban organization which consisted of streets, squares were abandoned for a park-like free standing building setup. It was believed that to renew the cities was the only best option to advance in the industrial era. (Barnett, 1986).

The cities as a responsibility to the technological advancements of the industrial revolution required new infrastructure to accommodate the motor cars, industrial setup and housing for the high influx of immigrant workers. The traditional urban fabric of the old town was unable to accommodate the advancements of the industrial revolution and was already under stress of the growing population and unsanitary conditions giving birth to diseases. Thus, the idea of completely

ignoring the old town's urban fabric and building new urban fabrics as a fresh start became even stronger. Le Corbusier quotes ***"a curved street is a donkey track, a straight street, and a road for men"***; this image fixation on modernism and its desire to achieve order strengthened the ideas of *Tabula* rasa the context less approach deeming the existing urban fabric unfit. Modernism was born with the spirit of new progression and was considered a savior, especially after the Second World War crises; and viewed as the only solution to the previous failure to meet basic needs.
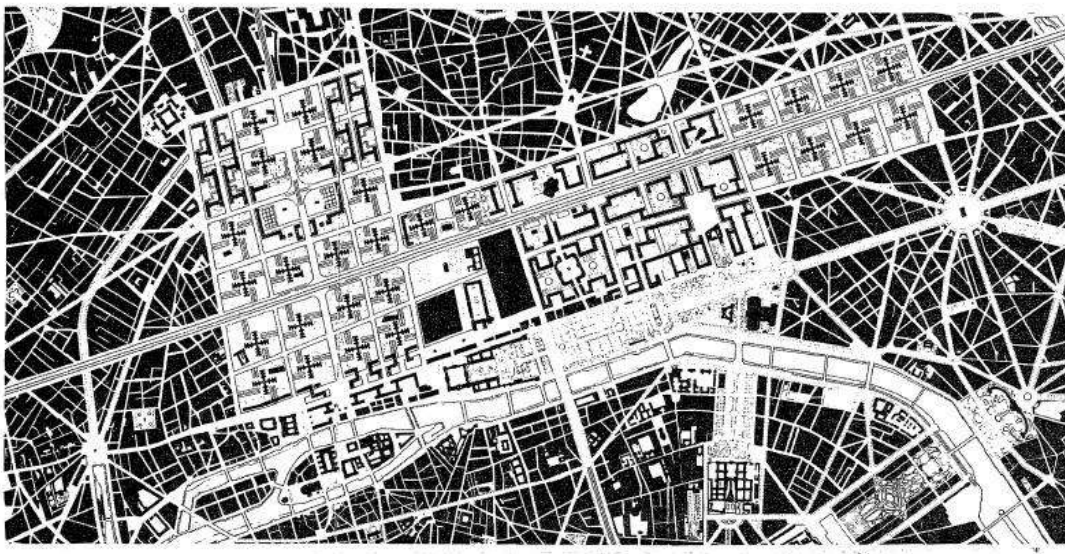
Figure 2.5 Le Corbusier plan Voisin. Paris, 1925. Designed but never built-The contrast between the traditional urban fabric's density and linearity and rigidity of Modernism. (Source: Stuart ·E. Cohen and Steven W. Hurtt- Trancik, R. 1986, p.28)

Modernist urban planning was ***committed not to improving existing cities but to replacing them*** (Ryan, 2017) as it opted for the modernization of the city, the functionality, the order, the zoning and established hierarchy. Modernist architects were entitled to more than just designing buildings; they were searching for utopia which according to them couldn't exist in the past. Modernism from the very start had the foundations of dominance over the old urban fabric to eradicate the past and start fresh for a new beginning. The flaws of the society of the present can

only be improved through modernism. And in order to achieve modernism our only hope is architecture and planning that provided functional solutions to our problems. *(Corbusier, 1967, p.143).* Le Corbusier believed in divorcing the traditional urban settings and only then can one think radically. Fig 2.5 le Corbusier's plan Voisin 1925 is a demonstration of his concept, he designed to cut off the traditional preexisting urban fabric of Paris through an imposing rigid gridiron network. The traditional urban network structure was not only disregarded but the modern urban fabric was completely isolated for the sake of the monumental glory because the modern city was viewed as a world in itself.

The modernism was in search for *a utopia*; the result of this high expectations involved resulted in detachment from the traditional preexisting urban fabric. Traditional cities which were considered haphazard and chaotic as compared to the modern planning that admired linear rigidity. Thus, modern planning aimed at creating new towns from scratch ignoring the context and eradicating everything in their way. These all factors contributed to the ideological belief of modernism which created sharp contrast with the traditional urban fabric. This laid the foundations of the colliding space between them which will be further elaborated.

2.1.3.   The Dichotomy between the Modern planning and the Traditional urban fabric:

The concept of urban tissue suggests a notion of ***interweaving and connections between parts, with a capacity for adaptation*** (Samuel et all., 2004, p. 158). In general, all cities and their tissues are constituted by a set of elements of urban form which comprises of streets, street blocks, plots and buildings. Through the manifestation of dialogue between the city's linkages consisting of path, nodes, streets, junctions and the urban mass in form of the building environment, parks etc. Yet, in each city, these streets, urban blocks and parks are combined in a unique specific way resulting in different types of urban tissue and offer their cities

a unique character. It is this difference in urban network structure and organization of build fabric that sets apart one planning ideology from the other, like the traditional and the modernist urban fabric each can be differentiated by analysis of its network flow and the organization of the urban blocks.

Figure 2.6. The Piazza Navona Rome- the street and squares connections with the overall urban fabric (Left). 2.6. B Houston Texas- the isolation of high-rise buildings. (Right) (Source: URL 2)

In the nineteenth century, modernist planning was functional in the organization and was set in isolation from the context whereas; in contrast, planning in the seventeenth and eighteenth centuries was concerned with the total composition and organization of the urban fabric. This has been explained in fig. 2.6. A contrast of *the Piazza Navona District of Rome* streets and squares are derived from the adjacent building, giving orientation and continuousness which results in stronger connections with the adjacent urban tissue. In Houston, Texas on the other hand the urban form consists of isolated buildings detached parking lots and roadways. Segregated residential blocks and unidentifiable urban hub is a typical configuration of most American cities. (Trancik, 1986, pp.9-10)

The modernist planning since focuses on functionality, it places each unit according to its usage in a hieratical manner this results in generation of a fixed, inflexible system in the living city. The rigidity of the modernist urban fabric of the nineteenth and twentieth centuries as compared to the traditional fabric marked high contrast as shown in fig2.3 a comparison of Le Corbusier's Plan Ville Radieuse with traditional block patterns.
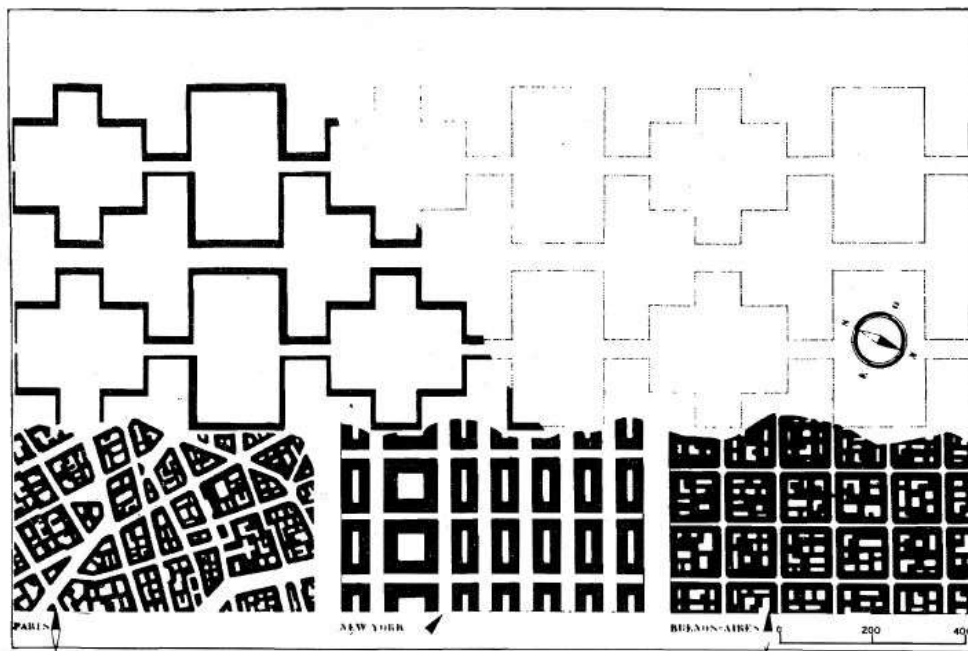
Figure 2.7 Le Corbusier. The figure-ground diagram on the Ville Radieuse is compared to traditional block patterns of Paris, New York, and Buenos Aires. The difference between the traditional density of evolved cities and the free-flowing spatial structure of the modernism is demonstrated. (Source: Foundation Le Corbusier SPADEM & Trancik, R. 1986, p.20)

With the above discussion we established the dominating attitude of the modern urban planning and its isolation from the traditional urban fabric. The consequences of this was not only the traditional cities suffering from such a disregard at the hands of the modern urban planning but what was alarming was the urban fabric gradually lost their distinct spatial qualities over time. As shown in figure 2.8 Martina Franca Apulia where the traditional urban fabric can be marked by its chaotic nature and the traditional planning by its rigidity but what is important here

is the space between the two contrasting urban entities. The space neither belonged to the traditional nor to the new modern rather did it develop a character of its own. It can be further notices that how the traditional urban fabric has been encapsulated by the modern planning as to dominated and take full control over it. Trancik, R. refers to such degradation of the traditional urban fabric as ***"lost spaces- the abandoned, leftover, undesirable, no man's land"*** (1986, p.3). he defines this lost space as vague urban character, without any fixed boundaries and most importantly these lost spaces are characterized by their inability to connect elements in a coherent and overall disintegrated urban fabric quality. Due to these problems these lost abandoned spaces offer urban opportunity for the designers to redevelop and to reintegrate in the urban fabric. Trancik also mentions the five main contributors to the problem in the urban fabric of these lost spaces; and two of them are ***the dependency on the automobile vehicles and the attitude of modern movement architects toward open spaces*** *(ibid, p.4).*

Figure 2.8. Martina Franca, Apulia, Southern Italy. The difference between the traditional spontaneously derived urban fabric and the modernist planning. (Source: Gehl, J. 1987, p.40)

The modern movement in architecture with its monumental high-rise scape of isolated urban blocks ignored the importance of the streets, squares, gardens and outdoor spaces. This has been further explained by Steve Peterson (1980) states that the modern space is in effect with the anti-space. The volumes stand-out and are differentiated due to the presence of deliberately designed voids. He believes

that this leads to erosion of traditional streets, squares and the relationship a traditional city makes with its surroundings. Fig. 2.9A&B depicts the urban structure of a traditional planned city in comparison to a modernist city highlighting the fragmentary quality of modernism and the orientation and street quality of traditional urban fabric.
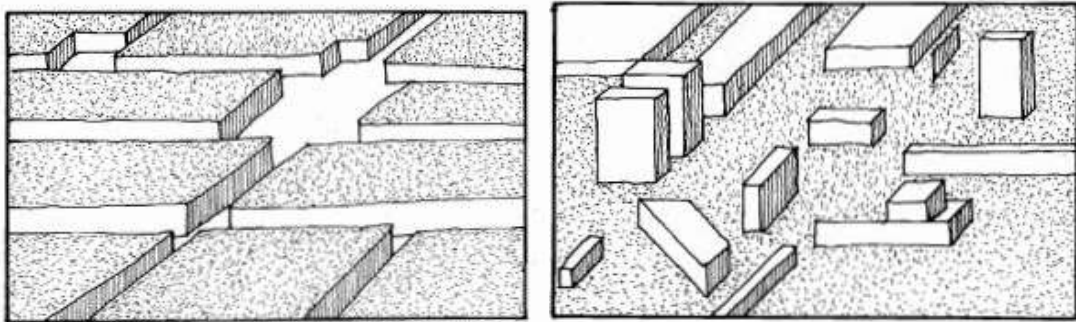
Figure 2.9.A. The traditional city layout: connection, creating workable links is created through the enclosed space (Left). 2.9.B the fragmentary structure of modern city layout:(Right)(Source: Trancik, R. 1986, p. 19)

The difference between the modern and the traditional urban fabric is not just limited to the theoretical ideology or the visual difference rather the both exhibit different urban structure. Alexander, C. (1965) explains the urban quality of the traditional cities in terms of overlapping complex connections which he named the *semi lattice* whereas he states; that the modernist urban planning forms have a simple hierarchical connection termed as a *tree*. The traditional cities irrespective of their visual impact are called traditional due to their urban morphological characteristics; their connections within the city. Fig.2.10a shows the plan of Greater London, although the visual impact is of an inorganic urban pattern when analyzed in detail it is Modernist in planning approach due to its network connections. Semi lattice characteristics of the traditional urban fabric can form multiple connections and systems within, whereas the modernist urban planning *the complexity of the semi lattice is replaced by the simpler tree form.* (Alexander, 1965, p.19). The modern planning compartmentalized everything in a hierarchical

manner; the urban structure resulted in a tree like form. For example to get to point 5, one has to pass from 1, 2, 3 points etc. but in a traditional city due to its semi lattice structure things are inter-connected in loops.
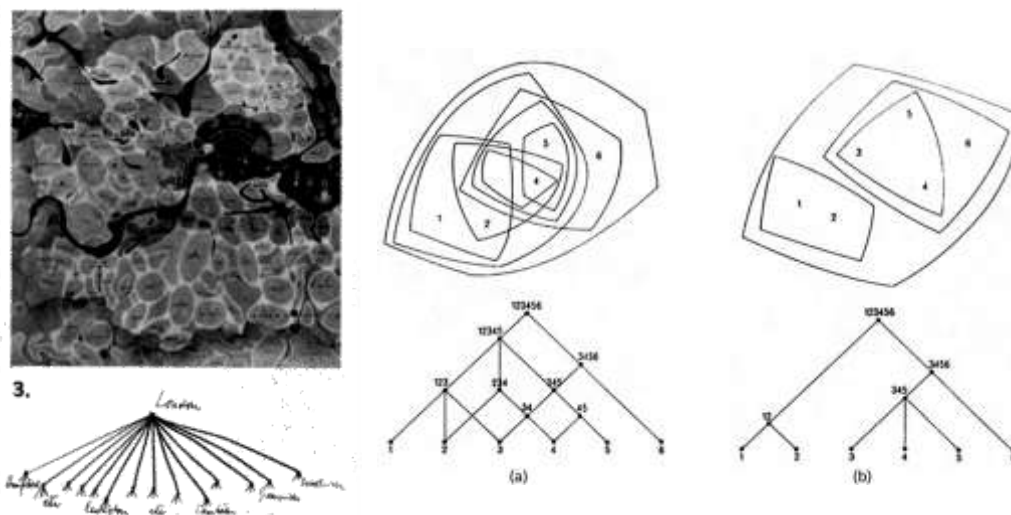
Figure 2.10.A. Greater London plan 1943: (Left). 2.10. B. Depicts the connections and links of the semi lattice (traditional city) tree structure (modernist planning) (Right) (Source: Alexander, 1965)

2.1.4. The Coexistence of the Modern the Traditional- from the perspective of Colin Rowe and Fred Koetter:

The distinction between modern planned cities and the traditional urban fabric has been elaborated from various perspectives by urban theorists like the semi lattice characteristics of the traditional urban fabric that can form multiple connections and systems within, whereas the modernist urban planning **.**

Colin Rowe and Fred Koetter in their book, Collage city (1975) although made a strong protest against the *'total design'* tactic of modernist urbanism and built a strong theoretical foundation for the pluralist idea of urban design. But their remarkable work is recognizing the modern planning and the traditional preexisting urban fabric as a ***dialogue […] between opposites or sets of opposites to examine***

the similarities and differences (Schnoor, 2011. p, 6). The comparison of the opposites or contrasting elements highlighted a tension between the organized (modernist planning) and the fortuitous (traditional urban fabric)*.* He explains this difference in urban order in terms of *"solid and voids dialect"* and states that; the solid and void representation of planned cities is completely different from traditional city fabric rather they are inverse of each other. The modernist planning has large voids as compared to the solids whereas the traditional fabric is inverse having more solids than the voids. However, this difference is what makes the whole urban tissue connect as one. The weakness of one urban fabric becomes the strength of the other.
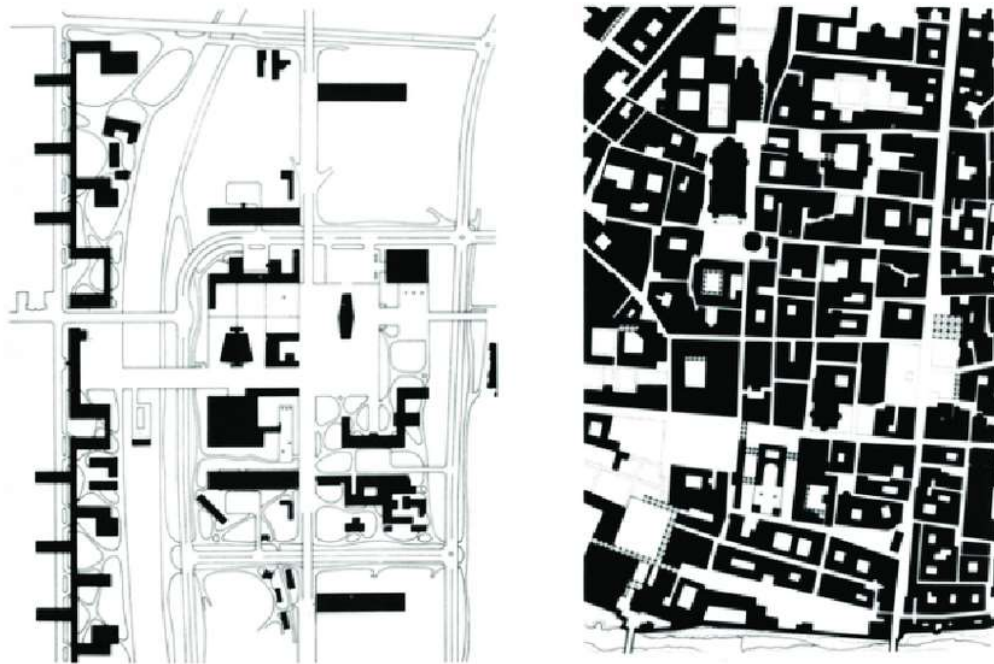
Figure 2.11. Modern city versus traditional city: Le Corbusier's project for St. Dié and the historical city center of Parma. Figure-ground plan (Source Rowe, Koetter, 1975).

As shown in fig 2.11. Rowe through his Studio exercises bases on viewing the city fabric in terms of *plain figure- ground mapping helped him and his students to envision the interaction between conflicting urban entities and offered*

opportunity for innovative solutions. The solid and void urban dialogue offered an exchange in which both entities retain their individualism but are also constantly enhanced by their reciprocity. ***The dialect of the solids and the voids offers the opportunity for a joint existence of the overly planned (modern planning) and the genuinely unplanned (traditional urban fabric).*** (Rowe & Koetter, 1978, p.83). Lee (2007) gives a more critical explanation of design strategy; a ***compositional strategy*** was suggested by Rowe in his work utilizes odd juxtaposition to interact composite buildings within the urban context. (p.142). Lee further explains that the use of 'figuring-ground' is based on a typological guideline. In the formation of the joint urban fabric; this approach of ***juxtaposition aims to ensure coherence and liberty in the holistic urban picture.***

Today cities are elusive ***"no wall shape the city today, no pattern… define the growth or divide a metropolitan area in a city"*** (Barnett, 1987, p. 185). The traditional *finite city* was transformed due to the unprecedented technical and socio-economic forces the industrial revolution brought. It started with the nineteenth-century modernist cities which were different from their predecessors in terms of scale and the overall city form. As the utility and effectiveness of city walls reduced significantly and with it modes of war changed. With the emergence of industrial setups and ease of transportation through public rail in 1825, the boundaries of the city extended. This pattern was observed in Athens in 1800 the city walls were eliminated, for Vienna Ringstrasse was built in the place of city walls in 1857 and many others. To accommodate the immigrants and work force, lead to the transformation of old neighborhoods into slums, and also to jerry-built new houses and tenements whose main purpose was to provide as cheaply as possible the maximum amount of rudimentary shelter within walking distance of the centers of production. Thus, the entire city setup was governed by the newly emerging industrial revolution whose pressure, the traditional urban fabric was unable to accommodate. The modernist individual buildings setup in park-like context was favored upon the old chaotic urban forms of the traditional city,

similarly streets and squares were also discarded like useless elements of the past. ***The idea of modern city planning was to completely renew the city and base it strictly on functionalism while keeping minimum urban features from the past and that too just for historic value.*** *(Barnett, 1987, p. 189).*

There was a need to expand cities by letting go of the old urban setups since the traditional fabric was already under pressure of high density, the concept of developing new settlements, new town extensions were explored that could house the industrial functions for better efficiency and productiveness.   In 1920, Lefebvre argues to ***"developed a new conception of space"*** (p. 124). Roger Keil (2018) shared the thoughts of Lefebvre's emphasis and believed that ***the suburbs of the old existing towns might provide an opportunity for the radical ideas to be implemented.*** New towns could be designed away from the old disorderly urban fabric. ***The urban periphery was the best option for implementation of the modern ideas of new urban form.*** As the new modern extensions could feed onto the old existing urban fabric and later overpower and replicate themselves onto the traditional town. This was the reason why urban peripheries modification can be noticed in almost all extension plans globally in the early modernism nineteenth century like Edinburgh etc. Later when modernism gain power in the twentieth century, the extensions were converted to complete new cities from the scratch build in close vicinity to old towns. This was the case for many modernist capital cities, like Islamabad.

This urban expansion of the new towns or cities in the periphery resulted in ***"transition zones"*** between the old preexisting city fabric and the new urban planned areas. This was not limited to the old town's urban fringes only, but also sometimes the patches of the old urban fabric came in-between the grand picturesque planning of modernist vision. The transition zone can be observed in the case of Edinburgh, sector 45, Barcelona and many other cases which will be discussed in detail and will be elaborated in this thesis further. These transition

zones, the shared spaces as shown in fig. 2.12 for Edinburgh case, acts as *buffers between the two polar opposite urban orders, the old city fabric and the new town development are referred to in this thesis as the space of collision.*

Figure 2.12. 20th century Ariel view of Edinburgh. The image shows the modern planning on the left with the traditional old town on the right (Source: Dailyrecord.)

To ***functions independently as well as coherently*** in the shared spaces between the two, the modern and the traditional urban fabrics are separated by buffer spaces in the form of green areas, public buildings and monumental square. The old and the new urban fabrics were ***carefully connected as well as separated to maintain harmony.*** The space of collision exhibits this unique relationship between the traditional urban fabric and modern urban planning. *Another important reason for*

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the existence of these shared buffers were because the modernist periphery was never designed to form any connections except for the very necessary ones with the old traditional urban fabric the shared space- the space of collision created and acted as boarders between the new and the old urban fabric. The planning of the father of modernism Le Corbusier for Chandigarh in 1953 showed the dominance of modernist planning by encapsulating the existing urban fabric displayed in fig.2.13. The plan originally involves several pre-existing traditional settlements within the body of the planned urban form one of them is ***Sector-45***, ***the biggest village in the area, which resists the controlled environment.*** This setting hints at the possibility of co-existence of both the planned order and the traditional typologies. But in this case its highly controlled.

Figure 2.13. The settlement of Burial in the strictly modernist regularized urban setting of Chandigarh. (Source: Vincent Laforet)

2.1.1. Recognizing the space of urban collision:

Till the mid of nineteenth century, the new town developments remained as extensions to the old preexisting urban fabric but as modernism prospered the idea of new modernist planned cities gained importance so did the concept of eradicating the old in search of a new modern utopia. The isolating concept of modern planning from the existing; started causing issue of urban integration in the holist urban fabric. This matter amplified in the last two decades of the twentieth century when cities rapidly transformed through large-scale developments. Sometimes the rapid expansion of an existing city was planned outwards like in case of Barcelona; but sometimes it occurs within the fabric of the existing city through the re-use of urban space in case of Vienna which will be discussed in detail in following paragraph. There are also cases like in Chandigarh sector 45, the existing traditional urban fabric was sandwiched between the new modern planning. The rigidity of the modern grid remained undisturbed. In conclusion the modern urban planning adjacent to the existing urban fabric altered the peripheral boarders of old towns and resulted in large scale patchwork of urban areas. This gave rise to absence of hierarchy and formed minimum linkages with one another. This whole urban mess gave no choice but to be linked through a high-speed road network. *(Yang, 2018).*

After World War II, the space of the periphery moved into the city or the boarders setting apart the old traditional and the new modern urban fabric started to diminish due to rapid urbanization and this led the urban planners, architects and sociologists, to be critical of modernist urban experiments in the periphery of the old town and found it inappropriate. To resolve the problems of the periphery and the *"peripheral virus" (Lapunzina, 1995)* that had affected the city- it was necessary to frame out a codes of the city to the periphery. A hybrid spatial continuation space was resulted in the process of searching for a resolution between the overly planned and the unplanned urban fabric. This hybrid spatial

continuum lacked a coherent urban language, hierarchy of form, and often times it was just a display of adjusted urban blocks with no cohesiveness to either urban form. *Lapunzina's research laid foundation for the space of urban collision which previously existed as large voids in the urban fabric and was now filled with urban forms of unique quality.* ***This unique spatial form of the shared space; which doesn't belong to the traditional urban fabric nor is like the modernist urban planning is a hybrid of both urban orders.*** This hybrid spatial continuum between the traditional and the modern can be observed easily due to its unique urban layout and the urban grain and it is the urban collision space.

Figure 2.14. The Barcelona urban fabric the old and the new. The space between the two urban models can also be seen when the modern cells are altered in shape and size to fit in the overall urban setting. (Source: Vincent Laforet edited by Author)

Barcelona extension plan by Cerda as shown in fig. 2.14 Is an example of a transitional zone between the modernist and the traditional urban fabric in the form of *an amalgam block type that doesn't belong to either the traditional urban fabric or the modernist urban planning.* This unique hybrid urban continuum in case of Barcelona altered the rigid modern urban unit to adjust to the existing traditional urban fabric. *This shared space between the modern and the traditional represented a ground for the coexistence of both urban orders. And it is this place that is the space of collision between the modern and the traditional urban fabric.*

2.1.2.   The field of urban collision as a design opportunity:

In the late twentieth century, many writers started to criticize the concept of clear area boundary and proposed various alterative ideas. For example, Alexander (1977: 88-90) suggested the idea of a *'boundary zone'*, in other words collective activities, a wide strips of public spaces with public facilities and commercial shared by several neighborhoods. He called this boundary zones which consisting of newly developed areas in the periphery of old towns. *If these are thin boundaries they cannot keep the areas separate* (2002, p.54).

In our case of urban collision acts as a boundary between the planned urban areas and the traditional urban fabric, analyzing it in terms of *porous board condition* is helpful in grasping the idea of the kind of connections that could be established between them.

Other ideas, such as Krier's urban quarter (1977, 1998), the Urban Village movement (Aldous, 1992; Neal, 2003) and the New Urbanists' models (Calthorpe, 1994, 2001), also made the emphasis on *the overlapped, joined and accessible boundaries*. In this context when the boundaries come inside the urban fabric or in our case *the urban collision space forms an urban identity of its own due to the different in urban grain and pattern*; Kevin Lynch (1961) suggested a concept for

his district blocks that might help solve the puzzle here. He says the district blocks need not be a unified same urban pattern with a solid boundary; rather one must explore the ***Juxtaposition in terms of lines or links*** such as mediating nodes, streets, small patches. These links help join and heighten the character of each district and bring them together in a coherent manner. (ibid, pp. 104 4-105). This Lynch called the sequential continuity.

This thesis research analyzes the shared area between the contrasting urban orders, the modern and the traditional to highlight the design opportunity it offers in urban fabric. The modern urban planning has its own advantage and disadvantage similarly the traditional urban fabric has its own pros and cons, however the shared space between these two represent a chance to achieve what modern planning couldn't or what traditional urban fabric could have done. As Colin Rowe defines it as the solid and void dialogue the field of urban collision gives a perfect space for analyzing the two contrasting urban orders. This juxtaposition aims to ensure coherence and liberty in the holistic urban picture. The hybridity of the space of collision makes it unique urban phenomena that can be exploited in terms of urban integration through design.

2.2. The urban collision between the Traditional and the Modern in context of urbanism- A historical overview:

The above discussion gives a detail theoretical outlook on the contrasting urban orders- the modern planning and the traditional urban fabric and highlights the field of urban collision. It also briefly defined a general pattern of its formation and the general role it performs between the two urban orders. It has been established and discussed in the above paragraphs that the field of urban collision offers design opportunity for the holistic urban fabric; to not only observe the contrasting urban orders but also offers opportunity to develop a hybrid design framework acting as a

bridge between the two the modern and the traditional urbanism. The space of urban collision has its own characteristics that can be distinguished from the rest Ariel views of the urban pattern. The shared space stands out due to its position between the two contrasting urban orders, as it exhibits a hybrid urban grain and pattern that distinguished it from the rest. Moving forward from here the space of collision will now be analyzed critically through historical overview of world cities that accommodate such a close spatial encounter- urban collision between the contrasting modern planning and the traditional existing urban fabric. This will further gives a detail insight of the phenomena of urban collision and more importantly it will discuss specific to each case the characteristics of this field of urban collision in detail.

The case studies are divided into two categories the first category deals with the early modern period of planning in which the case of Edinburgh's new extension plan will be discussed along with, Athens, the Vienna extension plan, and the extension of Barcelona. The second category of case studies deals with the pure modern urban planning; which includes the master plan of Algeria- plan Obus by Le Corbusier and the master plan of Cairo. Each of these cases will be explored in detail to uncover the need and the requirements fulfilled by the new modern urban planning and its implications on the preexisting traditional urban fabric. The space of urban collision will be identified and briefly discussed in terms of its unique characteristics in each case.

2.2.1.   Edinburgh's New Town- extension plan 1767:

In the eighteenth century, the city of Edinburgh lay within its walls on a mountain ridge; there was already a pressing need to expand due to overcrowded, cramped, and insanitary conditions. The city was only a mile from end to end, full of narrow passageways and tenement buildings. Due to geographical and defensive constraints, the city had grown upwards rather than extending outwards. It was

bounded on the north by a loch and by the city wall and town gates to the south. The Old Town is the historic heart of Edinburgh As shown in fig.2.15; is interwoven with the narrative of Scotland's past. A unique quality of the Old Town is the clarity of its historical plan form against the background of a spectacular landscape. It became part of the UNESCO World Heritage site in 1995. Edinburgh still is the center of political, financial, and legal in Scotland. It was called one of the *"big four"* by R.J. Morris. Edinburgh's wealth did not originate in the service sector and this was the reason the middle and upper-class population in Edinburgh held importance. The city's economy was relatively stable, its major source of employment being several small consumer industries that relied on the purchasing power from the upper classes. It was due to the dependency of Edinburgh on its high rank officials and elite class that it was in dire need for new residential area meant for the upper class.
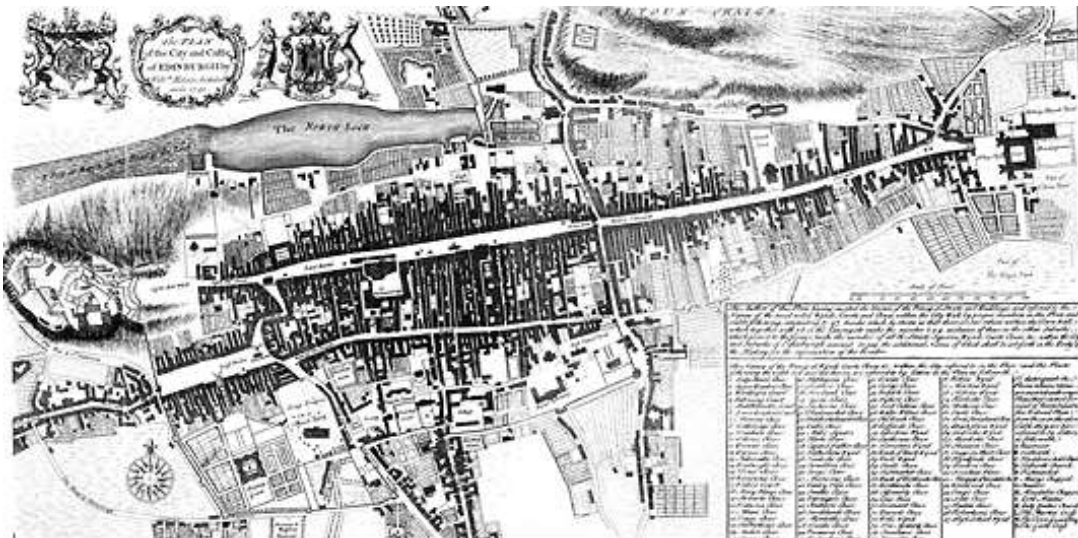
Figure 2.15. The city of Edinburgh in 1742. The city was essentially made up of one street known as "The Royal Mile". (Source: The History of Edinburgh, 1779)

The traditional urban fabric of Edinburgh was becoming inefficient and congested. Edinburgh was facing many problems due to its choked narrow passageways and only one main road- The High street. The growth of the city within the medieval

walls continued until 1750, Edinburgh had become an over populated area with buildings reaching six to eight stories which made the narrow streets choked. Exacerbating the problem, the Industrial Revolution, initiating the shift from agriculture to an industrial-based economy, brought about the large-scale migration from the countryside to the city and contributed to the need for Edinburgh's expansion. There were marshlands to the south, while to its immediate north was the North Loch – a foul lake flooded in the 15th century to bolster the city's defenses, but for 300 years a repository for sewage and household waste.. It was all these factors like political and economic stability and Edinburgh's reliance on its middle and upper class that became the motivational force behind the new extension plan. With the new extension plan Edinburgh also aimed at attracting me families to the area to enhance the economy of the city more.
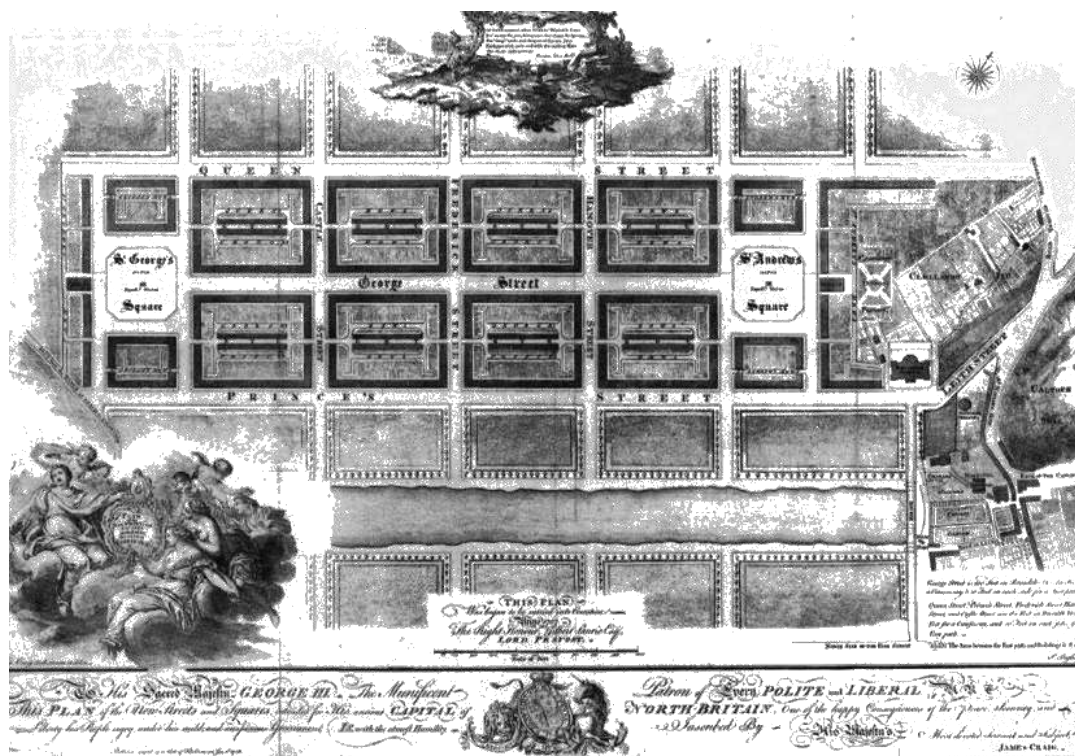
Figure 2.16. The new town of Edinburgh- Plan of the New Streets and Squares intended for the City of James Craig, Arch. dated 1768 (Source: The History of Edinburgh, Edinburgh 1779,p. 233)

The building of New Towns or revitalization of the existing ones was common in Europe in the eighteenth and nineteenth centuries. The improvising of Edinburgh began in 1752 and a proposal was passed for the extension of the city boundary. In acquiring land to the north of the existing town core, a substantially-scaled expansion was initiated with *the separating valley drained and bridged*. In 1767 architect James Craig's by winning the competition for the 'new town' proposed the master plan of the Edinburgh extension as shown in fig. 2.14. the central idea with which Craig started the master plan for the new town of Edinburgh was a supporting social hierarchy and civic grandeur through grandeur streets and axial linking squares, monuments and views *(Campbell, 2016)*. The master plan consisted of principal George Street surrounded on both sides by four blocks that terminated at both ends in an open place with a church. The new town border on both sides by Queen Street and Prince's streets was deliberately left un-built. The eight main blocks were divided into sixteen through narrower service streets. This set the street hierarchy in the new plan.

Figure 2.17 The old and the new town of Edinburgh. The new town at the top is enclosed by two streets, Prince's Street and Queen's street and George Street passes from the center of the new town Edinburgh. (Source: The History of Edinburgh, 1779, p. 233)

A remarkable juxtaposition of two distinct articulated urban planning phenomena that the plan of Edinburgh showcased - the traditional old settlement and the early modernist planning of the new town as shown in fig. 2.17. The new town was rigidly structured by following a gridiron plan comprises of three wide hierarchical road network. Even the color of the new town was set to white sandstone while the old town mostly remained in dark granite. *(Campbell, 2016.)*

Figure 2.18 The satellite image of Edinburgh. (Source: Google earth, 2022)

The disparity between the traditional medieval Old Town and the planned Georgian New Town of Edinburgh set the contrasting two in separations as well as carefully connected to form a whole is a marvel. It is due to the functions assigned to the peripheral area between the old and the new urban planning. The shared area is kept neutral incorporating functions like public buildings and museum which can be utilized by both urban forms simultaneously. The space between the old and the new planning was designed in true sense to act as a collective space with shared functions and amenities. The Edinburgh castle and the large green area between the traditional urban fabric and the modern planning provide a natural buffer.

2.2.2. Athens's New city- capital city plan 1833:

Athens is the oldest documented city in the world and it held an important position in the history due to its strategic location. The city of Athens was believed to be first inhabited in the Neolithic period and by the first millennium BC it grew covering total areas of 2km into a metropolis of Ancient Greece. The Acropolis (High City) was situated just south of the center of this walled area. The commercial and social center- the Agora lay about 400 m north of the Acropolis as shown in fig. 2.19. Till 1800 Athens was enclosed in city walls. After independence of Greece in 1830, Athens was selected as the capital. It is the most dominant city state as it held key position in the south-east of Europe of Greece due to its economic conditions and history.
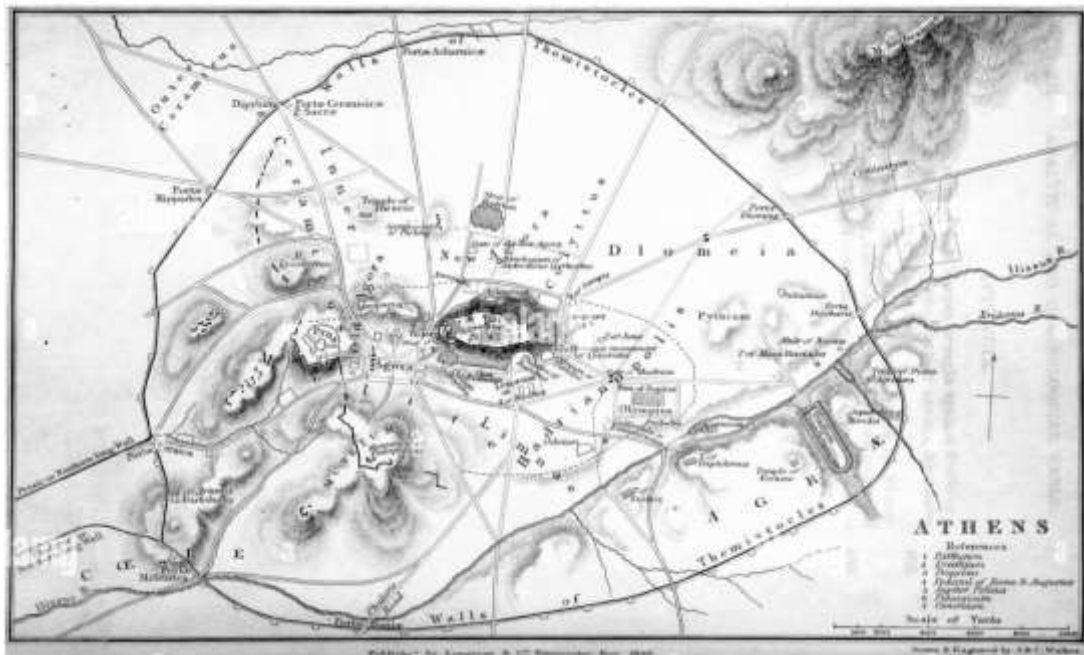
Figure 2.19 The traditional city plan of Athens in 1800. Showing the wall of city and location of Agora, Acropolis in the center of the city. (Source: Thirlwall, 1846, p3.026)

Soon after Athens became the capital, the population increased and the city was in dire need for new urban planning. In 1833 by Kleanthis and Schaubert neo-classic

architects designed the master plan which laid the foundations for Athens. The new master plan aimed at building a new city to the north and stretching it to east and west the urban development proposed a basic isosceles triangle whose median would be heading north from the Acropolis. These axes correspond to important gates of the town. *The vision of the planners was to make Athens through designing its network of streets and squares a symmetrical, classically and geometrically composed city.*

Figure 2.20 Klenze's master plan for Athens 1834. The three central axes can be seen passing through the traditional city. (Source: Thirlwall, 1846, p3.026)

This master plan was revised by architect Leo Von Klenze in 1834 as shown in fig.2.20. *He kept the overall composition of the plan same but reduced the grandeur of the plan* (Venetas, 2000). Klenze's plan also intervened into the traditional urban fabric much like Haussmann's Paris renovation, the traditional urban fabric was opened up through widening and connecting to the principal

street. Klenze instead of putting out a plethora of new road network opted for adaptation to the existing pathways with controlled widening and a re-alignment. ***European Romanticism and Neoclassicism discovers its natural place in Athens functionally and morphologically*** (Skayannis, 2012, p.4).

Figure 2.21 The satellite image of Athens (Source: Googleearth, 2022)

The shared space between the old urban fabric of Athens and the new modern planning- a trivium acted as the center of the New Athens city. Few streets from the new urban planning penetrated into the traditional old city of Athens. The shared space acts as a strip around the old town incorporating public functions like banks, city square and parks.

2.2.3. Vienna's Ringstrasse- urban reuse plan 1860:

Vienna—the medieval town, goes back to Roman times. Vindobona, the future Vienna, was one of the Roman Empire's many border towns, *described as a minor garrison town.* (Mollik et. all, 1980). Vienna lost its urban functions during the early Middle Ages, and thus also a large part of its population, after the collapse of

the Roman Empire. From the fifteenth century onwards Vienna was almost uninterruptedly the seat of the German Emperors.

Figure 2.22 The plan of Vienna 1851. Showing the vacant space of the wall of Vienna (Source: web Iconographic Encyclopedia of Science)

The city in 1683, created a defensive and empty ring around the old city walls known as the *bastions and glacis*. The former Roman towns began to expand a new, a process generally completed by the building of a new wall around the extended urban area. By the time the town had reacquired its surrounding wall, the urban area was about four times as large as it had been under the Romans. The Viennese city walls were structures that served to fortify the city. Over the centuries they were repeatedly expanded and modernized but demolished in the years 1858–1864 as shown in fig.2.22. Because by the late 18th century the fortifications had become obsolete and all walls surrounding the city were

demolished due to the expansion needed for Vienna and the raising industrial setup and its demands couldn't be fulfilled in the narrow congested planning.

The strength of Vienna's position as the 'capital city' of the Holy Roman Empire and the Habsburg hereditary domains increased steadily. There was thus a pressing need for the town to expand, a need which could not be satisfied by extensions because of the building prohibition around the ramparts. Instead, this resulted in more intensive land inside the walls and a relatively rapid process of redevelopment.

The suburbs also began to grow along the exit roads beyond the prohibited building zone. The availability of land, the lower land values, and perhaps above all freedom from the town toll, all added to the considerable attractions of the suburbs. The suburbs attained a de facto status and become Greater Vienna. Vienna city consists of a core, the medieval town, surrounded by three concentric rings: the Ringstrasse district, the inner suburban zone and the outer suburbs. These four urban regions are clearly defined concerning one another, as well as having distinct street networks and different characteristics of the building. The historic urban fabric of the Centre of Vienna is thus informed by this ongoing interchange, which has caused the urban landscape to evolve and grow over time, reflected in the new, emerging skyline outside the buffer zone.

During the second half of the eighteenth century, there had been some general discussion about the 'embellishment' of Vienna, and this immediately triggered the idea of building on the land beyond the ramparts. The 19th century was a period of great change in Europe. Just as the Industrial Revolution transformed the Continent's mode of production and its patterns of work, it also greatly accelerated the urbanization of the West. Individual cities grew rapidly as large numbers of immigrants from rural areas came in search of industrial jobs, and society was transformed as urban rather than rural life became the lifestyle of the majority. In

Vienna, the early eighteenth century was a period of lively building activity on both sides of the *glacis,* the un-built band surrounding the town. The centric ring city; is known for its marvelous town extension by demolishing the ring walls and expanding the city. This remained the core of the city and the next century's new neighborhoods were built on the outskirts of the city to accommodate the rising bourgeoisie. The inner core of Vienna became congested and over populated. This led to the fortified core urban fabric of Vienna to be surrounded by a distinctive character townscape consisting of the suburbs, palaces, parks, agriculture villages and vineyards. (Hall, 1997, p.193).
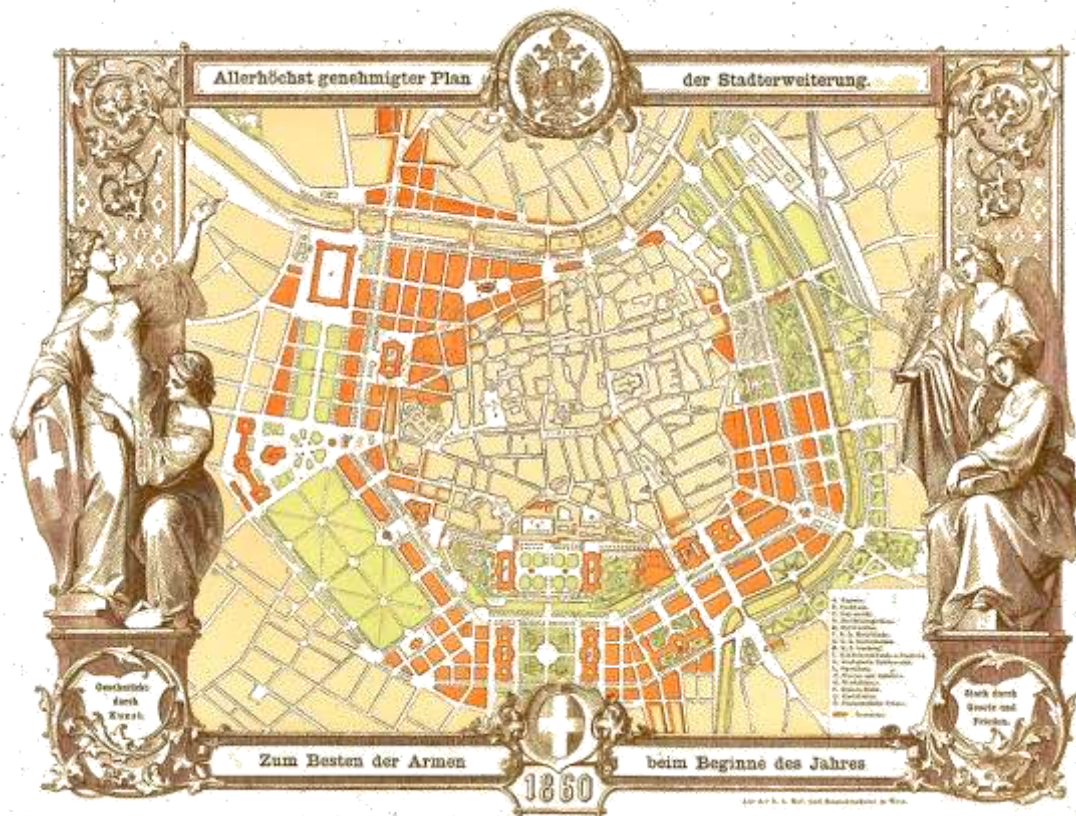
Figure 2.23. The Ringstrasse plan 1860 urban block vs. open space arrangements (Source: Monumental-Plan der Haupt- und Residenzstadt Wien, 2017)

In 1858 the Vienna design completion was announced and the salient features were the approval of the demolition of the old fortifications to design a new system between the inner city and the suburbs and the design of a ring road of the

boulevard type along with several public buildings. The announcement of the competition included: a large area for military exercises; the location of two military quarters north-west and south-east; the arrangement of the space as a park, public buildings, museums, an Opera house in front of the Royal Palace in the south of the Ring; in order to better integration in the context. 80 competitors participated and three projects were awarded. Along with Architect Lohr, a commission was composed of ministerial officials and was given the task of elaborating a definitive proposal, which was approved in 1859- *The Grundplan* as shown in fig.2.23.

Figure 2.24. The urban reuse plan of Vienna expansion-The Ringstrasse (Source: Monumental-Plan der Haupt- und Residenzstadt Wien, 2017)

The Grundplan's central element as shown in fig 2.23; was a very wide Circular tree-lined avenue, public transport lines and heavy cargo lines were separated. Along the public line, there are monumental spaces and buildings with different shapes and styles, isolated or grouped in sequences or by explicit symmetries, between connected to them by open spaces whose trees and ground arrangements are carefully designed and constituted. During the construction of Ringstrasse whole streets in the vicinity and the old city center were rebuilt and old houses

were torn down. The facades of the houses were uplifted. The comparison of before and after can be seen in fig.2.24.

Figure 2.25 The satellite image of Vienna (Source: Googleearth, 2022)

The Ringstrasse allocated 4/5 of the Glacis land to monuments, park spaces and public buildings and to reserve only 1/5 for private buildings (whose contributions will be used to finance part of the public operation), the focus was to enhance the urban fabric of Vienna and convert it into an imperial capital. *As the creation of the Ringstrasse meant the loss of the glacis which served as the green space for protecting the inner city as well as a breathing space*, to retain the green it was planted with trees at the end of the eighteenth century and was a popular place of recreation for the Viennese as shown in fig. 2.25. The construction of *the Ringstrasse (1859-1872)* was considered the best-known urban planning action of reusing the space and making it dedicated to public use my incorporating recreational functions in the 19th century. (P. Sica, 1977). This huge construction project was funded by the auction to private individuals; of the plots of land generated once the old fortifications had been leveled (amounting to a total of 2.4 million square meters).

2.2.4. Paris' Hausmanien – urban renovation plan 1853:

Paris was originally founded in the 3rd century; as Parisii-a small village has the best location of bordering the valley of Siene with a converging river and with every passing generation it grew in size and strategic importance. It grew from a medieval city to a modern city, although the transition was not always smooth as presented in fig.2.26.
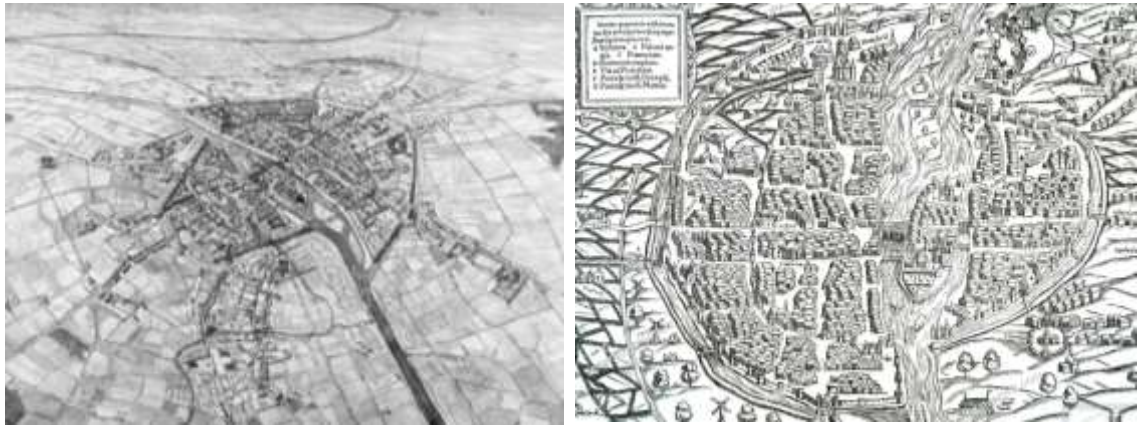
Figure 2.26. Paris in 1530(Left) – illustration by Jean Claudegolvin the vintage plan of Paris 1530(Right). (Source: Agefotostock)

From the twelve century onwards Paris (as shown in fig.2.26 and fig2.27) was becoming a great city and a hub of nobility, artisans, craftsmen, clergy, merchants, royal officials, vine growers and students from all around the world. This is the reason why Paris developed a reputation of a center of commerce and culture and became one of the world's most attractive cities. Paris was the center of commerce in France.

During the middle Ages, Paris was the largest city in Europe, an important religious and commercial center, and the birthplace of the Gothic style of architecture. Important buildings of the Europe were considered best to be built in Paris, like the University of Paris was one of the first in Europe built in 13 century. Paris was also enclosed by walls built like many old cities. In the seventeenth

century the walls were torn down the area was converted into tree-bordered promenade. This is the origin of Grand Boulevard (Gallois, 1923, p.359). The last wall of Paris was built in the mid-nineteenth century until Haussmann razed it. The three main parts of historical Paris are defined by the Seine. At its center the seat of government and the church it was denoted as the nucleus of ancient Paris. The left bank was the place for the intellectuals. The right bank incorporated functions related to economics.
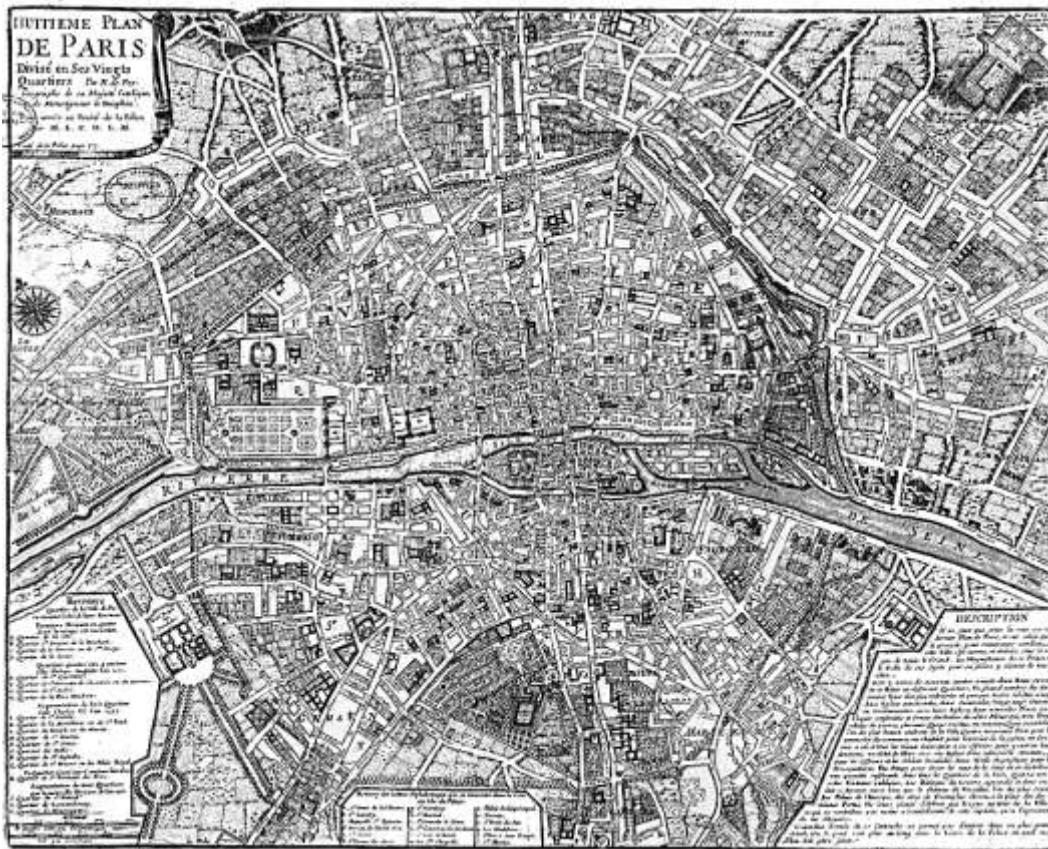
Figure 2.27. The Medieval urban lines of Paris. The Pre Hausmannien urban tissue of Paris city. (Source: URL:3)

The French capital was overcrowded, clogged, dirty and riddled with disease. Paris which was the context of tragic plagues and was also stressed with cholera, typhoid, and another illness due to the nonexistence of a sewerage system. Even

with all these problems, Paris held great importance in every time; the 18th century Paris was the centre of the intellectual ferment known as the Enlightenment, and the main stage of the French Revolution from 1789, followed by the 19th century, Napoleon who gave the city military glory and remarkable monuments..

Paris due to its popularity and increased population needed an uplift. It became an ideal site for urban regeneration. In 1852 Napoléon III announced, to put in more effort and make Paris great in terms of improving the living conditions for the working class. Georges-Eugene Haussmann was appointed for this task.
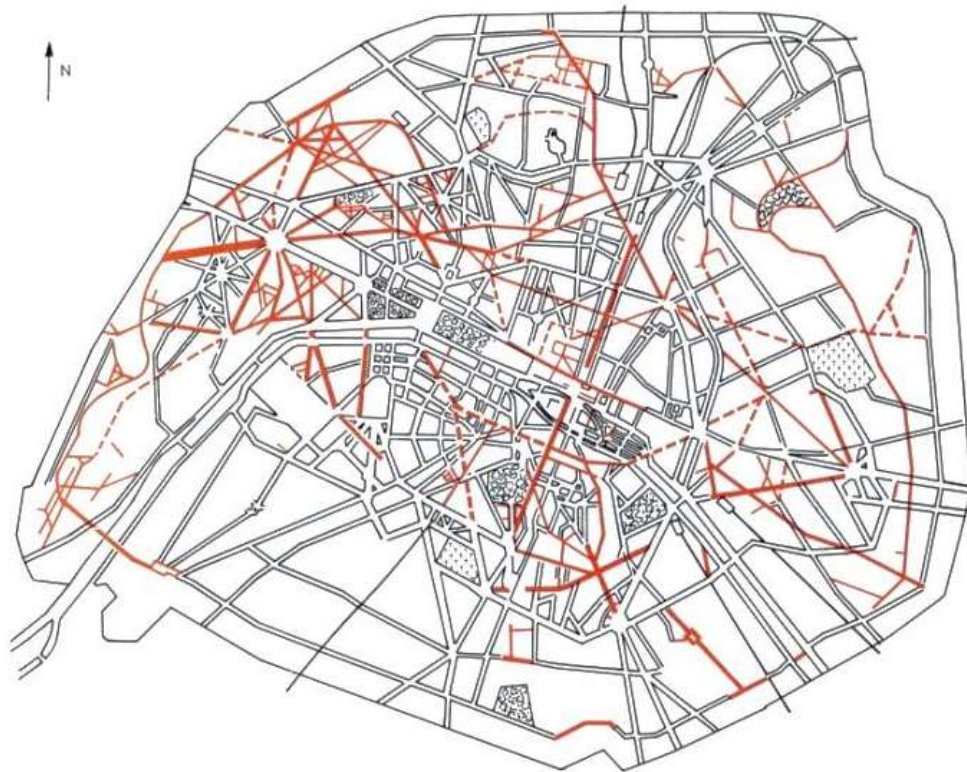
Figure 2.28. The old (black) and the new (red) renovation plan of Paris. The networks of the old town were pierced in triangular and star-shaped boulevards to open up the city and create monumental avenues within the old traditional fabric. (Source: Samuel, et, all. 2004)

Haussmann renovated Paris and made it a ***bourgeois city*** (Samuel, et. all, 2004) which was set in the setting of the boulevard. The poors were forced to evacuate

the center of Paris as the new infrasturucture was laid. The urban blocks were improved with gentrified facades and open interiors adjacent to the new boulevards that helped bring profit. The main priority of the massive renovation was to link all of the districts together in a healthy living by opening up Paris with green spaces and incorporating a sewerage system. Haussmann central concept for renovation of Paris was that he came up with the idea of ***network of pierce's*** (as shown in fig2.28) They acted two ways; firstly they pierce the city and secondly they connect the large monumental establishments such as squares, stations and important public buildings. Thus through the new network structure Haussmann achieved everything asked from by Napoleon. But all this came at the cost of completely overwriting the traditional urban fabric of Paris and building it new, in fragments.
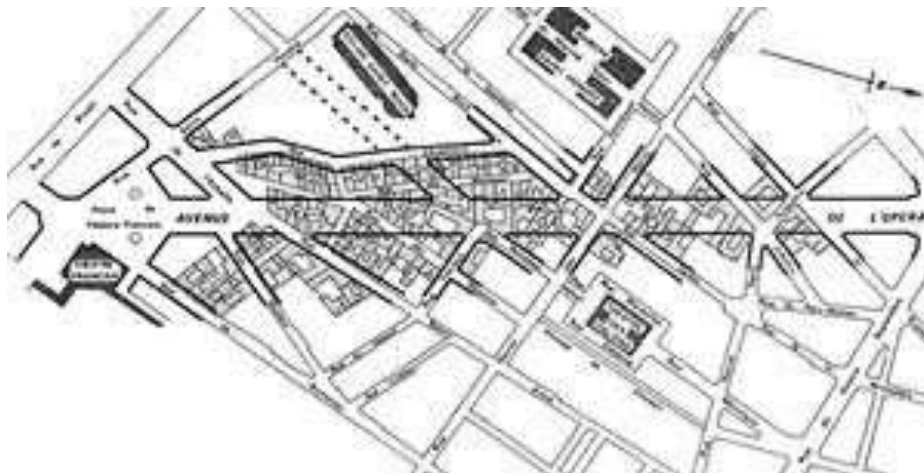
Figure 2.29. The Percees in the new renovation plan of Paris. The imposition of the new networks on the old urban fabric of Paris. The traditional urban fabric was pierced and buildings were destroyed in the way of the monumental boulevards. (Source: Samauel, et all., 2004)

The network of percees cut through the centre of some of the most crowded neighbourhoods in Paris, where the cholera epidemic had been the worst, for example between the rue Saint-Martin and rue Saint-Denis. The hausmanian network and the monumental building around it had three functions, first was to

enhance the monuments by isolating them; the second function was to make visual link, third and most important by widening the streets the light and fresh air could enter the urban fabric for hygenic living. This came at the cost of over shadowing the ientity of the traditional urban districts of Paris. The relationship the new Haussmann renovation made with the traditional city with its great network of perce´es *was correcting the old urban sturcture.* The main crossings were in star patterns that generated major central points of urban exchange and activities, superimposed hierarchical grids, of which each element belonged to a star-shaped network; it hierarchically re divided areas as shown in fig2.28 and fig2.29. The Haussmann blocks produced by cutting the original rectangular plots, made the front facades on the percees network stand out hiding whatever was in the background.

Figure 2.30 The satellite image of Paris (Source: Googleearth, 2022)

The new and old urban fabric of Paris had a relationship of dominance of the new network imposed over the old urban tissue. This redevelopment did not use the existing growth pattern, nor did it develop existing components, but, as if history had been interrupted, it was intended to set up inside the city and regardless of the

existing urban tissues; build an entirely new system. The superimposition of a new network onto the old traditional urban fabric of Paris lead to sudden distruption of urban fabric as the old and the new collided with one another.

2.2.5. Barcelona's superblock- extension plan 1859:

Barcelona is situated on the Iberian Peninsula coast in the northeast, facing the Mediterranean Sea on a plain about 5 km wide by the mountain range and rivers to the southwest and the north. The first human settlements in Barcelona date back to Neolithic times. Barcelona was established as a Roman city dating to earlier than 5000 BC. The city itself was founded by the Romans who set up a colony called Barcino. The colony had some thousand inhabitants and was bounded by a defensive wall, the remains of which can still be seen in the old town. Some archaeologists link the founding of the city to the mythological Hercules. For centuries it was the central port in an extensive Mediterranean trading empire. For over 200 years, Barcelona was under Muslim rule, and, following the Christian reconquering, it became a county of the Carolingian Empire and one of the main residences of the court of the Crown of Aragon. The fruitful medieval period established Barcelona's position as the economic and political center of the Western Mediterranean. The city's Gothic Quarter bears witness to the splendor enjoyed by the city from the 13th to the 15th centuries.

Barcelona grew to be a typical dense medieval city, with narrow streets, locked inside defensive walls as shown in fig.2.31. The city lies on a coastal plain constrained by from one side the Collserola hills and fro othe other by the rivers Llobregat and Besos. These topographic constraints have produced urban congestion and high residential densities. However, in contrast to most similar European cities, it was unable to expand beyond its medieval walls until the middle of the 19th century, because of military restrictions imposed in 1714, after the War of the Spanish Succession. The result was intense overpopulation and densification

of the city, which had 83,000 inhabitants in 1818 and by 1850 the population, was over 2 million square *meters* (Permanyer, 1990). These conditions caused severe problems of outbreak of diseases like cholera, typhoid and Black Death viruses due to overcrowding of urban blocks little to no light entered the houses which led to further deterioration of living conditions.
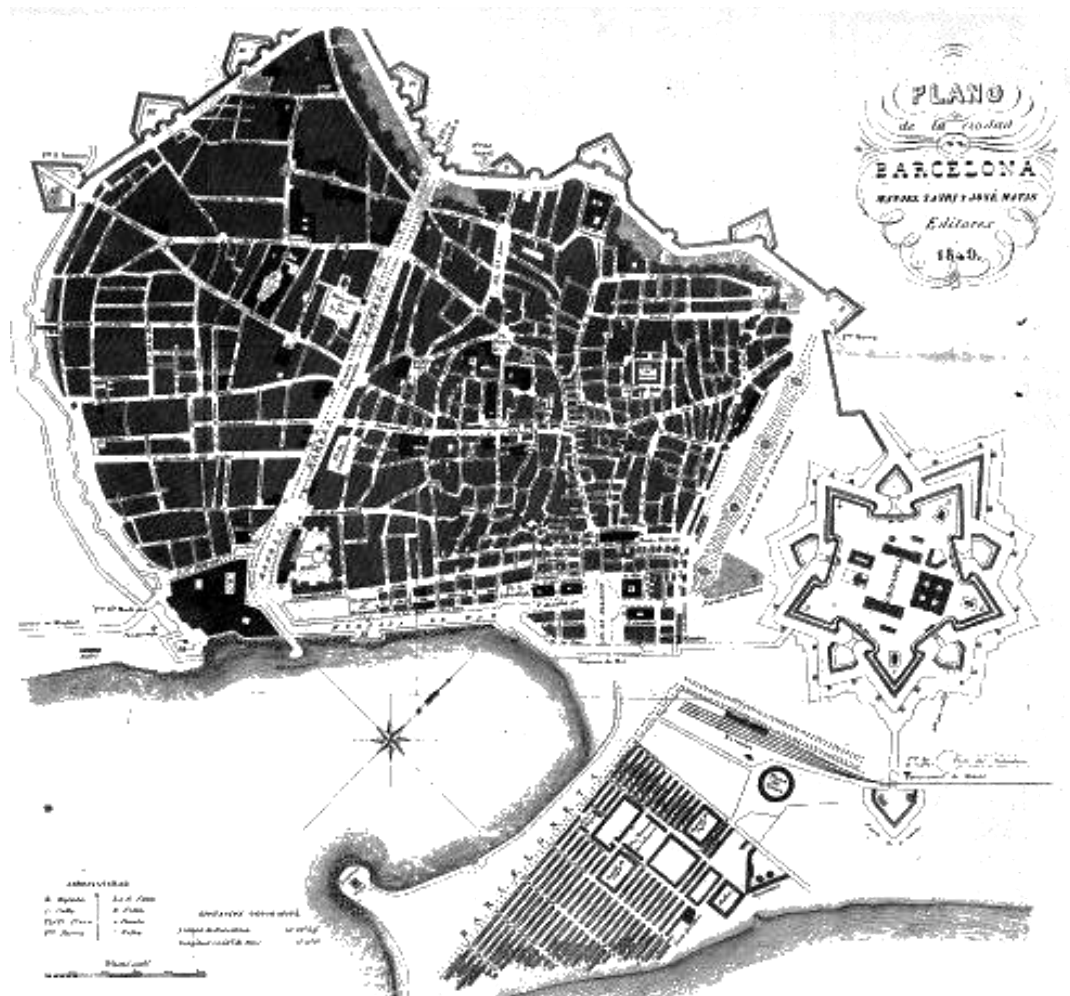
Figure 2.31. The old town of Barcelona in early 1849. (Source: Archivo Historico Municipal de Barcelona)

In 1854 the authorities gave an order to demolish the walls around the city of Barcelona, due to the unhygienic and densely populated conditions of the city. The old city with time converted into an industrial district incorporating large slum areas and resulted in stagnation of urban growth. The posh and elite population of Barcelona moved to the new areas. (Walker & Porraz, 2003). Barcelona's urban fabric couldn't effort to expand due to the civil war and disrobed political situation at that time. Naturally this resulted in housing problems especially with the industrial revolution drawing in tens of thousands of immigrant workers per year. There was a crucial need for expansion for residential and industrial function accommodation as the traditional urban fabric was unable to provide more.
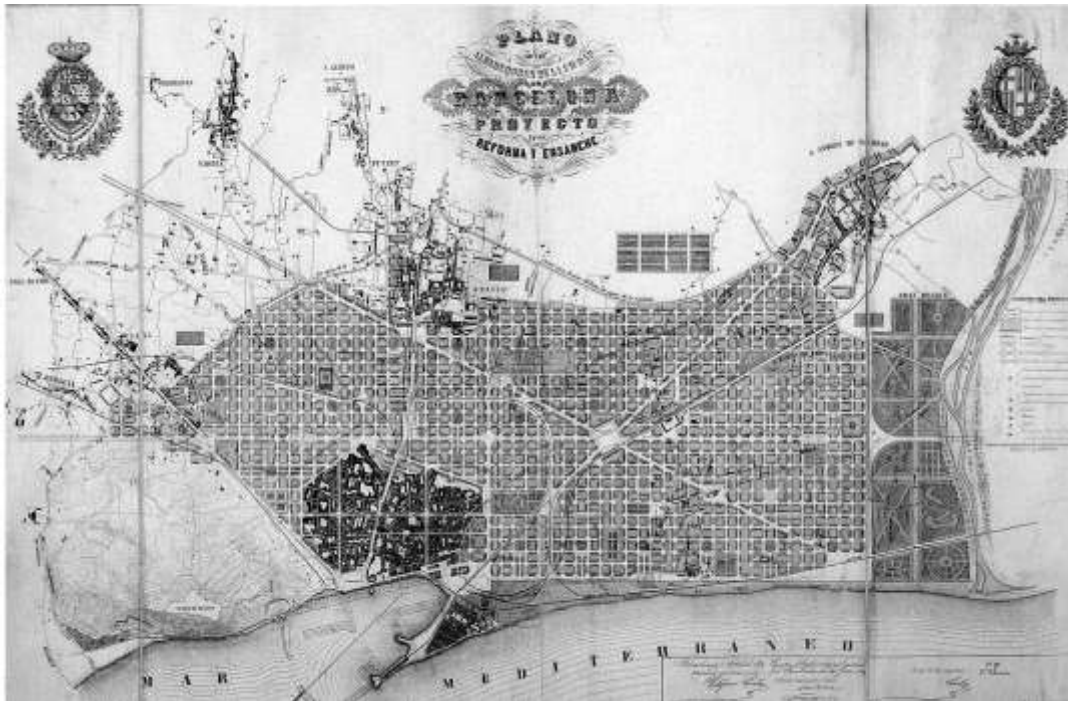
Figure 2.32. Cerda's original extension plan for Barcelona 1859. (Source:Archivo Historico Municipal de Barcelona)

The expansion of the city was undertaken in 1859 on the grid-pattern plan of Ildefons Cerdà a civil engineer by profession. His main aim was to present a revolutionary plan for its time, focused on planning for hygiene and ease of

mobility and transportation. A simple straight network of streets and blocks of houses made up of two buildings on both side and open gardens in the center. As shown in fig.2.32. Cerdà's plan consisted of a grid of streets that would unite the old city with seven peripheral villages (which later became integral Barcelona neighborhoods such as Gràcia and Sarrià). The united area was almost four times the size of the old city with gardens in the center of each street almost like compact garden-city model where rich and poor accessing the same services. The streets were divided into two parts, one for vehicles and one for pedestrians to allow goods and raw materials to be easily transported around the city, a necessity for an industrializing city. In the Plan of Cerda the whole city was ordered, with all elements, housing, industry, markets, social centers etc. given their place, in an adaptation of an underlying idealized model to the geographical realities of the plain. Apart from introducing normative controls (e.g. building height and depth), the plan was also fully comprehensive in its global formalization of the city.

Figure 2.33. The satellite view of Barcelona. (Source:Google Earth, 2022)

Cerda scientifically rejected the old pattern implied by the city. He introduces *Ensanche* in Spanish, or in Catalan, as the district is still known today,

the *Eixample* — a model of orderly, clean, safe, hygienic urban living. The Ensanche was pattern of regular rectilinear blocks; exactly 113.3 by 113.3 meters, for 12,370 square meters, with at least 800 square meters for gardens was to be replicated all the way to the borders of nearby settlements. Notice in fig 2.33 the streets were to be wide enough to allow for the free flow of pedestrians, goods, and commerce. The goal was to combine the advantages of rural living-green space, fresh air and food, community with the advantages of urban living-commerce, culture, free flow of goods and ideas. His revolutionary plan for its time, focused on planning for hygiene and ease of mobility and transportation in a grid like structure. Right-angled network of streets and blocks of houses made up of two buildings on both side and open gardens in the center. To increase mobility and transportation, Cerdà planned for each corner of a block to be cut in a chamfer, or rounded, planned very large street widths of 35m, and included big avenues from 50 to 80m wide at the main ports and gates of the city.

It is worth appreciating two aspects of Cerda's urban planning extension of Barcelona; his holistic view of urban quality as shown in fig.2.33. His blocks were oriented northwest to southeast to maximize daily sun exposure. And second, his plan embodied what is — then and today — a striking egalitarianism. Each block (*manzana*) was to be of almost identical proportions, with buildings of regular height and spacing and a preponderance of green space. Commerce was to take place on the ground floor, the bourgeoisie were to live on the floor above (rather than in mansions at the edge of town), and the workers were slated for the upper floors. In this way, they would all share the same streets and public spaces, exposed to the same hygienic conditions, reducing social distance and inequality

2.2.6.   Algeria's plan Obus-urban dictation plan 1932:

"A city! It is a grip of man upon nature. It is a human operation directed against nature." (Corbusier, 1929).

The above case studies were from early modernist era of urban planning. Le Corbusier's work marks the start of pure modernist work and that is why the ideals of Swiss architect Le Corbusier are fundamental to understanding the ideological believes associated with modernist urban design at the peak of its time. The twentieth century start was the crowning of industrial revolution. Le Corbusier declared architecture as a machine to live in and on the urban scale- a city was supposed to facilitate the working of machine through ensuring efficiency and high productivity. Thus modernism was all the opposite of the traditional existing urban fabric. As modernism followed order with straight lines and planes, it was a dictation by man. In this dictation there was little to no room for already preexisting urban fabric.

Figure 2.34. Design ideas of Le Corbusier demarcating a strict urban boarder for the new planning (Source: Celik, Z. 1992)

Le Corbusier wanted to offer Algeria which was previously a French colony, with a bold plan that would raise Algiers to the level of an international city. He envisioned Algiers as the *"French capital of Africa,"* and the "serve as the head quarter of French in the Africa region. The planner imagined control over masses through design which would reinforce French rule not only in Algeria, but throughout the entire continent. *(Le Corbusier, Poesie sur Algeria).* Thus, Plan Obus was designed with firm political intentions while keeping the colonial context and ideological implications for French policies in Algeria. Plan Obus was loyal to the idea of **La Grande France-** which means everyone must feel he is the citizen of

France and must make France great. This showed Le Corbusier maintained a marked coldness from the local culture in Algiers. (Çelik, Z. 1992, p.66). The architect aimed at forming a corridor that passes through Algeria and connects the capital of France- Paris with the rest of the world as show in in fig.2.35. The sketches of skyscrapers set along a single dictated axis indicate the modern politically intended vision of the capital cities, through the new architecture and urbanism. Modernist architecture was now attached with a colonial mission through Le Corbusier's plan for Algeria. A strong social engineering agenda was also applied in order to set control over masses; setting the living quarters in the long infrastructure urban corridor for the separation of the French from the indigenous people. (ibid, 1992, p.66). The strongest social engineering Modernist agenda in Le Corbusier's urbanism was in reference to *the new man of the machine.*
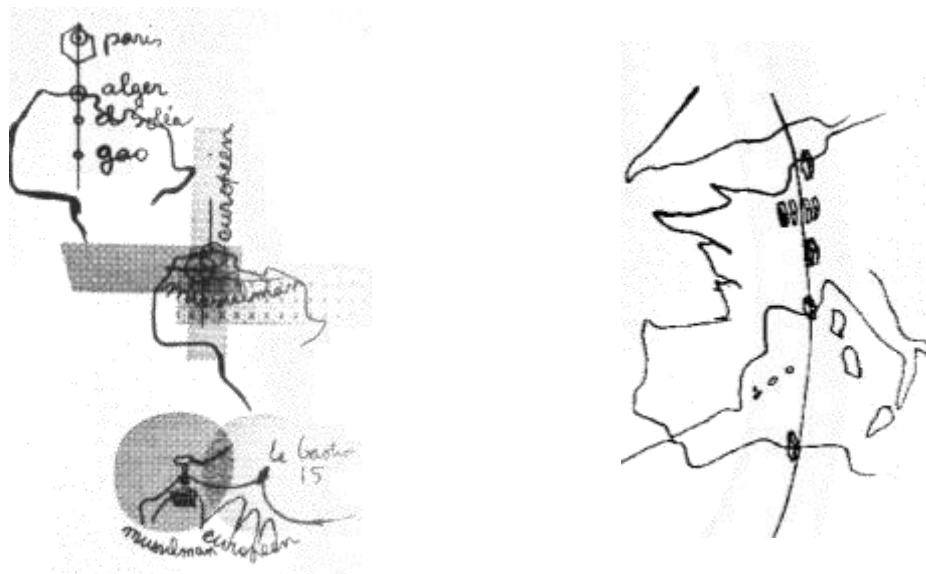
Figure 2.35. The conceptual plan of Plan Obus Le Corbusier, diagrammatic maps showing geographical axis between France and Algiers. (Source: Celik, Z. 1992)

Le Corbusier's Plan Obus- 1932 although was never constructed but it remained a fundamental idea as Le Corbusier spent more than ten years working on it. The plan was a modernist mega structure to be laid directly over the Casbah without consideration of the urban fabric of old town underneath. The elevated highway

and bridges completely ignored the existing city and superimposing a new system based on political intentions and social control. Plan Obus was structure dedicated to the political power of France. Massive linear infrastructure that served as route for motorcars and living quarters for the locals connected Algeria to France and later to the world. Plan Obus objective was a constant command and observation over the locals through encapsulating them in the huge infrastructures elevated above from ground. *(Celik, 1992, p.69).* The architect aimed at separation the locals from their indigenous town for the sake of the Europeans to have segregation between the two as shown in fig2.36.
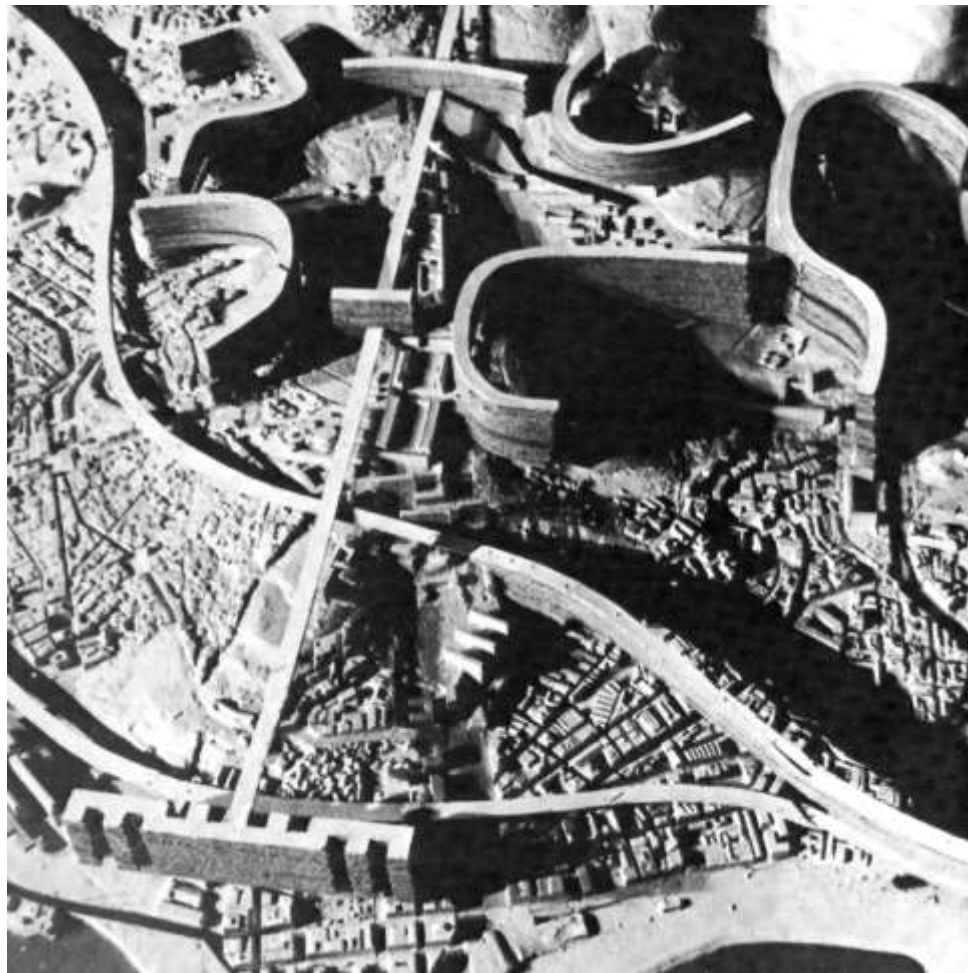
Figure 2.36. The Plan Obus Le Corbusier. Notice how the modernist architect drew the heavy infrastructure of the new city over the traditional old fabric of Algeria (Source: Foundation Le Corbusier)

Plan Obus consisted of three main elements as shown in fig.2.37; a new business district on the Cape of Algiers (at the tip of the Casbah) at a site slated for demolition, a residential area in the heights accessible by a bridge spanning over the Casbah, and, finally, the ultimate expression of his "road town," an elevated highway arcing between suburban cities and containing fourteen residential levels beneath it. These levels were raw space that architect believed would fill in "little by little" with homes for the working class.

Figure 2.37. The main parts-plan Obus, livable highway road (Source: Foundation Le Corbusier)

Le Corbusier vision of this new Casbah took the layered domestic spaces of the medina and stacked them in a manner of scattered deck of cards. Obus, which means shell, is often taken to refer to the spiraling form of the plan, and also reference the infrastructural "shell," within which homes were to be constructed for

the locals. Le Corbusier's superimposition of modern forms: the extensive infrastructure that includes housing — his viaduct city — connecting central Algiers to its suburbs and the curvilinear complex of housing that accesses the waterfront business district all routes evaluated for fast efficient traffic flow as shown in fig.2.36 and fig.2.37. "Circulation" is everything in this project and in itself the solution to a great number of issues within the city. Thus, each building designed by Le Corbusier also served as a road, a call back to the infrastructure of the Roman aqueduct. Architecture became more than just building articulations; it entered into infrastructure domain with a touch of social engineering and serving the agenda of colonial mission to connect France, Algeria's former colonial ruler. This was the time when modern architecture enjoyed immense power and entered to very discipline of life.

2.2.7.   Amsterdam's urban extension plans 1857:

Amsterdam's history goes back to the thirteenth century. The town developed where the River Amstel flowed. Around 1270 a dam was built in the Amstel, the first name given to Amsterdam. The original settlement of Amstel consisted of two streets parallel with the river, (Hall, 1995, p.267).

After the Fall of Antwerp in 1585, Amsterdam- the capital of Netherlands grew rapidly to become one of Europe's largest port cities and was also known as the Venice of the North due to its canals as shown in fig.2.32. Amsterdam flourished on fishing and the Baltic trade, and became an important port. The boom in trade and industry went hand in hand with an explosive growth of Amsterdam's population. Twice during the middle Ages the town was extended, acquiring new streets and moats parallel with the Amstel, which gave medieval Amsterdam its long, thin appearance. Political and economic factors combined during the first half of the seventeenth century to transform Amsterdam into the leading European

trading city, a development which had begun towards the end of the previous century. The Golden Age-17th century marked unprecedented prosperity for Amsterdam.

Figure 2.38. Bird's eye view of Amsterdam. 1538 Oldest surviving map of Amsterdam, showing the city's finished medieval walls, towers and gates. Encircled by the Singel(canal) on the right side, woodcut by Cornelis Anthonisz. (Source: URL: 4)

Amsterdam was originally designed for defense. It is composed of semi-circles that create tiny islands linked by bridges. Amsterdam's city center is very compact. This, coupled with the fact that the city is made of a gently curving and very narrow street system, creates a highly walk able and interesting environment. The bends in the road create a sense of mystery and intrigue and can prove a little confusing until you figure out the names of all the canals. The concept for open space within the region was the idea of the five green fingers. Each finger leads to the heart of the city and allows people to use them as connectors. There are about 30 parks in Amsterdam, ranging from one hectare to 48 hectares. In the number of parks makes Amsterdam a serene oasis even on a busiest day.

Until the end of the 16th century, the city of Amsterdam encompassed the area inside the Singel as shown in fig 2.38. It encircled Amsterdam in the Middle Ages, serving as a moat around the city until 1585, when Amsterdam expanded beyond the Singel. It is now the inner-most canal in Amsterdam's semicircular ring of canals. The city around 1570 counted less than 30.000 inhabitants, in 1620 reached 100,000 inhabitants and the city expanded as shown in fig.2.39 and fig.2.340, the expansion of the city after seventeenth century. The new system of Bastions was planned around the city in a way to not disturb the continuity of the canals. Three large canals were dug in western direction and were connected to one another by transverse canals and streets leading to important nodes in the city center. The canals had at least two practical purposes: to drain the marshy ground, and to provide transport routes for freight which was reloaded on to small boats in the harbor and shipped to the warehouses along the waterways.

Figure 2.39. The extension plan of Amsterdam from 1385- 1857(Source: Amsterdam Municipal Department for the Preservation and Restoration)

With the arrival of industrial revolution in the nineteenth century the population increased from approximately 224,000 to 511,000 and the city needed to extend to accommodate its fast growing population.

Figure 2.40. The extension plan of Amsterdam before the implementation of Kalff's extension (Left). Kalff new extension plan for Amsterdam (right) (Source: Amsterdam Municipal Department for the Preservation and Restoration)

Jan Kalf's plan in **1875** presented the first extension project since the building of three canals as shown in fig. 2.41. Kalf proposed a ring of development around the cluster following, as street layout, the irrigation grid of the preexisting rural plot subdivision. The most important aspect of this plan was that it abandoned the radio centric form and extended orthogonally in two directions *(Hall, 1997)*. J. Kallf's master plan for Amsterdam had the concept of closed city model (Monestiroli, 1997, p. 10) where the urban spaces were defined internally through courtyards, streets etc. The model of the closed city appears to be the result the unchanged fundamental elements of the city being repeated throughout the city while the road layouts and urban blocks organized in a traditional urban setting. It is in the nature of closed city layouts typically followed by classical, medieval, of the Renaissance to form a close relationship between the building blocks and road layouts this

results in a united whole urban fabric. This enhances the esthetic value of the urban fabric to a great degree. And this esthetic value of the city is the reciprocator of the values of community because the city layout was a result of careful composition derived from traditions.
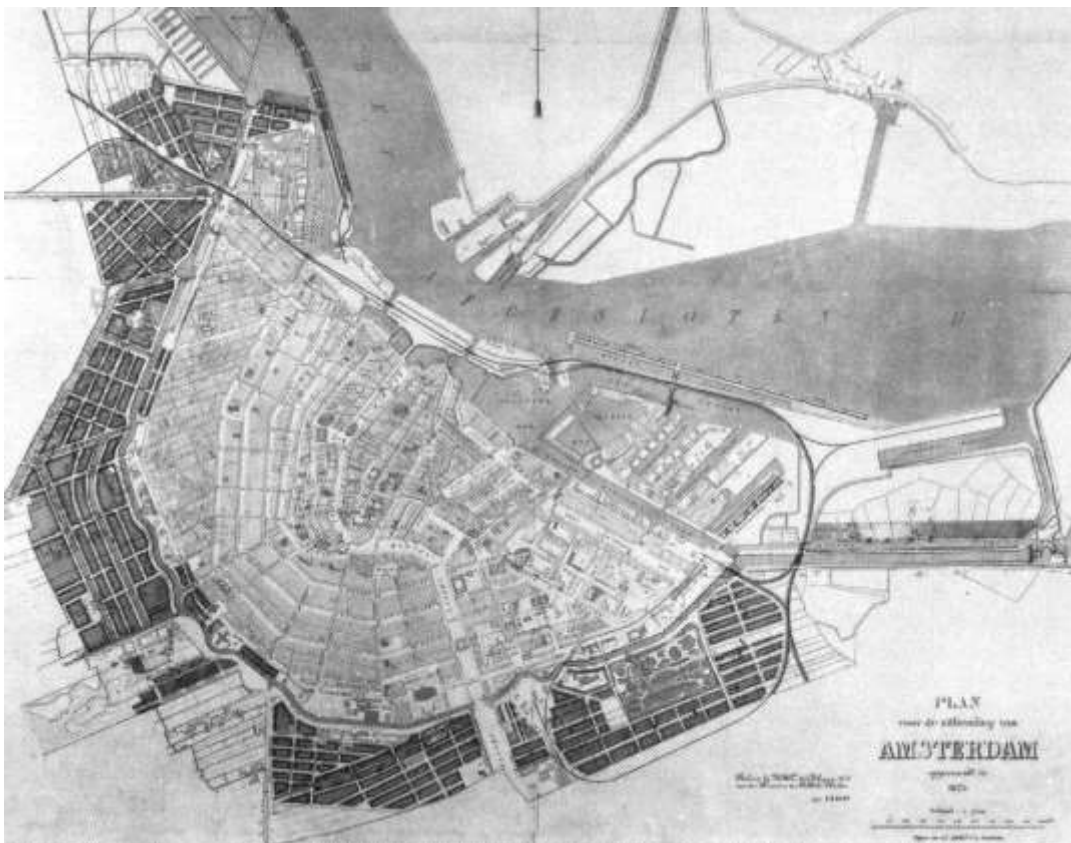
Figure 2.41. The extension plan of Jan Kalf. 1877 (Source: Amsterdam Municipal Department for the Preservation and Restoration)

Jan Kalff's Alcove housing in 1890 helped Amsterdam to take the urban shape of today. These houses were initially built for maximum profitability, housing large population resulting in dense settlement but soon their composition caught the eye of many urban planners. The urban block was not only conceived as an interchangeable unit but developed as a unit for composite organization into the urban tissue. This not only ensured the continuity in the urban tissue but also made other functions of commerce, habitat to be integrated easily and generate diversity.

While the buildings on the streets respected the alignment, the courtyards at the back occupied the whole depth of the plot. Due to the soil conditions of Amsterdam located below sea level, the construction of blocks in large concentration ensured their stability.

Figure 2.42. The extension plan of Van Eesteren 1935 (Source: Hall, 1995)

The extension plan that made Amsterdam most famous modernist case study was presented by Cornelis Van Eesteren chairman of CIAM and a prominent modernist urban planner who devised the general extension plan of Amsterdam from 1929 to 1959. It was not only an extension plan but also presented the renovation of the city center destroyed in World War II. He gave the concept of functional city for general extension plan of Amsterdam, embracing a strict functional separation of housing, work, traffic and leisure. To define this functional support tights road formed by ordered, in districts that integrate organized by superblocks in which residential units could insert these minimum. Complexes room separate pieces are conceived formally as rhythmic and repeated volumetric elements to form a balancing game between residence and complementary services on the basis that structures the whole road. The settlement was fan-shaped, going from west to east and preventing the fusion of the new neighborhoods by using some green areas to divide them as well as garden city concept. Different types of neighborhoods like

the high-rise followed by medium and the low density units along the main canal, which were organized in bands (fingers) that stretched out from the central city. Their linear blocks around a semi-public courtyard were an innovation compared to the earlier perimeter city blocks as shown in fig.2.41 and 2.42.

The major expansion took place in the western part, while the line dividing the old from the new was marked by the new elevated railway ring. The port and the living quarters also expanded in a western direction. Both parts were separated by a wide green belt. The living area was subdivided in neighborhoods that were separated from each other by green belts. The circle line was embedded in a wide green zone, which was seen as a perfect site for high-rise buildings. Inside each component the infrastructures were organized as orthogonal grids, the first providing the connections between one neighborhood and one other and the second for internal viability. The new expansions were characterized by different building typologies and technologies, going from the single double-decker house to the twelve stories tower, and by a large number of open spaces, mainly small parks for free time, and a big park, which was very relevant for the urban development of the entire city. This way the old city became the core of the clusters of four different patterns that are: Amsterdam West - Amsterdam Zuid, Amsterdam Oost and Amsterdam Noord. These four zones are the result of different planning implementations and signify the incremental growth of Amsterdam.

Amsterdam, with its unique urban layout and attractive economic climate, has always been a popular city. It has one of the most compact city centers in Europe, with an extraordinary density of listed buildings, high financial pressure on space, 17 million visitors per year and a population growth of ca. 14.000 new inhabitants per year. Amsterdam represents the exceptional case of urban extensions all interconnected to the original core of the city while maintain the original traditional urban structure. The internal city routes are dedicated majorly to the bicycles and light vehicles. The highway runs on the outer city border limit. The internal city

fabric feels like a big village. This makes Amsterdam extension plan the most popular modernist urban planning.

Figure 2.43. The satellite view of Amsterdam. (Source:Google Earth, 2022)

2.2.8. Ankara's urban development- the new capital city 1927:

Turkey took a fresh start after the end of World War II, Ottoman Empire broke down and this laid the foundation of Turkish Republic in 1923. In order to achieve Mustafa Kemal Atatürk and his fellow statesmen's objectives the newly established state had required assistance, mostly in fields of architecture and planning, as the Kemalist ideology envisioned a modern Turkey that was ahead of the previous traditional urban planning where cities were shaped spontaneously according to Islamic principles and kingship rules, *characterized with narrow, congested streets and compact disordered layouts* (Aktüre, 1989).
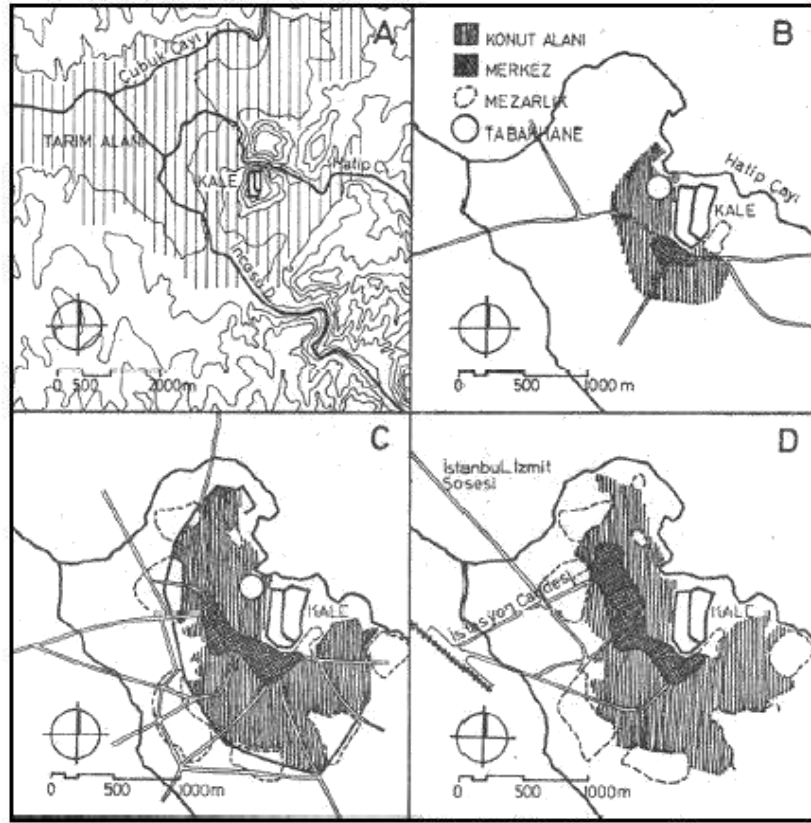
Figure 2.44. The historical evolution of the city of Ankara. A-Location of the city, B-Ankara in 14century and so on. (Source: Aktüre, 1987: 142)

Consequently the Turkish Government had begun to invite foreign experts to give advice and assistance on development issues, and in the following decades approximately forty German, Austrian and Swiss architects came to practice in Turkey (Tümer, 1998). Furthermore, the Turkish Government undertook an international competition in 1927 for the development plan of the newly formed capital city Ankara, in order to constitute a model for the future of the nation and give impulses to many other cities in the country. Amongst the three planners who were invited for the competition (Joseph Brix, Hermann Jansen and Léon Jausseley) *Hermann Jansen was the winner and he was entitled to prepare the master plan of Ankara in 1928* (Tankut,1993).

The city of Ankara lies in the center of Anatolia on the eastern edge of the high Anatolian Plateau as shown in fig.2.44. Ankara was situated in an oval topographic structure surrounded by mountains on three sides and plains on the western side of the city. Ankara is divided into two parts through a naturally flowing water stream called as Ankara cay.
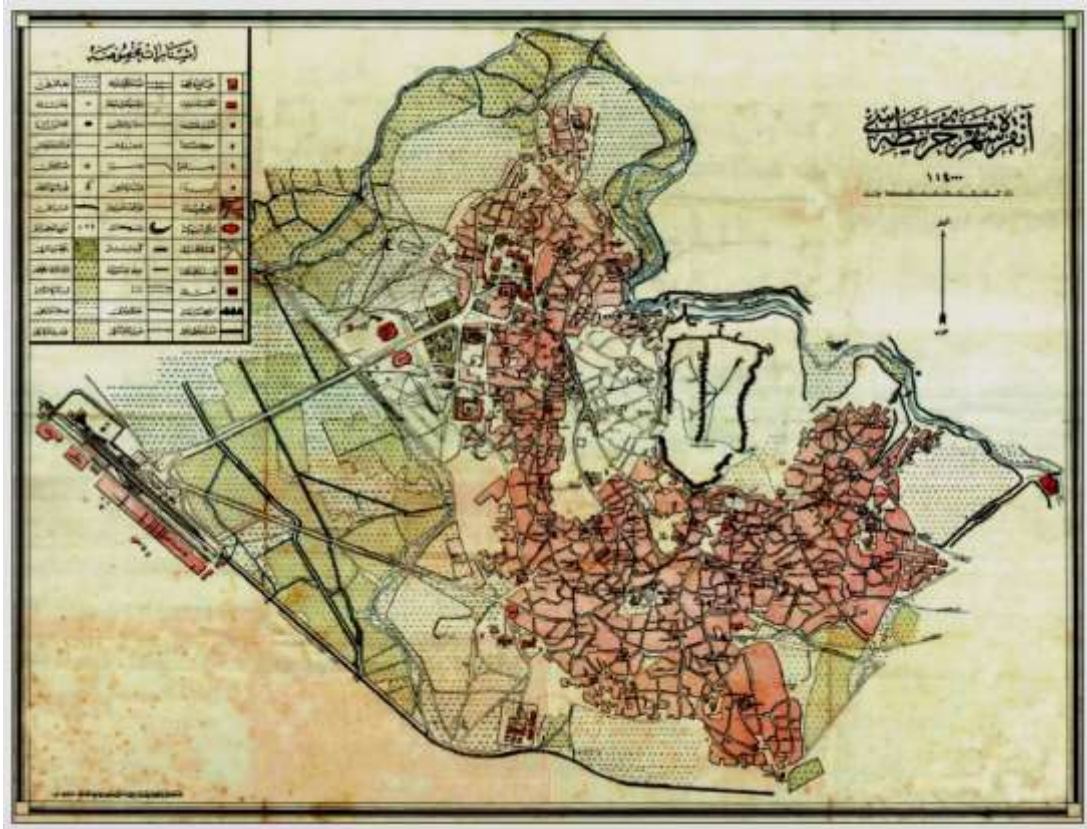
Figure 2.45. 1924 Ankara Municipality map showing the traditional urban fabric of anakra. (Source: Başkent Ankara, Harita Genel Müdürlüğü, 1983, p.2).

Before the First World War, Ankara was a small town with a population less than 30,000. With the collapse of the Ottoman Empire, the democrats arrived in Ankara to follow a War of Independence. A major factor in the Capital city's choice by the republicans was its location at the heart of the Anatolian peninsula. The city served as the center of the nationalist struggle between 1920 and 1923, and was later declared the capital city of the nation-state. By 1923 the city begun drawing

migrants the influx of government officials also increased. To the attempts to enhance the image as the new capital rapid transformation in the city macro form can be observed. The increase in the population caused changes in the intensity in the old city, thus new development areas began to evolve towards the south of the old city as shown in fig.2.45. Thus, the need for a development plan for this rapidly growing city was obvious. The shortage of adequate housing for the newcomers also brought about the need for labor in the construction sector. For the republican cadres who desired to create a modern society, the elite newcomers were expected to become a model for a modern life style. Within this vision, Ankara aimed to be a Modernized Capital a counter part of the Europe.

Figure 2.46. 1925 Locrcher's plan for Ankara, (Source: Bilgi,2010, p.192)

The early episode of the Ankara's urban growth displayed a typical example of modernization with the hand of a determined nationalist government. *Ankara was set in a tabula rasa setting like all modernist capital cities of its time to best accommodate the government functions of the country without any hindrance.* (Vale, 1992). Starting from the early years of new Turkish Republic, a new Ankara

Plan was required to be used for the increasing small scale urban interventions and to be the base map of a development plan soon to be realized by **C.C. Lörcher** as shown in fig 2.46. A local plan was prepared by Lochere, he designated the Administrative city structural to the south of the city. This was the first time when the master plan of the new capital was presented to be away from the old urban fabric of Ankara. (Bademli, 1987:105). The Lorcher Plan was considered inadequate, particularly the Yenisehir district developed with fragmentary and haphazard until 1927.

In 1929 after winning the design competition; **Herman Jansen's** master plan for Ankara brought about a plan that postpones the problems of the old city, handles Yenisehir (New urban fabric) not as a new city but a conglomeration of new districts and diminishes investment needs. (Sahin, 2007). This master plan of Ankara consisted of two significant features; first is the *establishment of zones and their organization, and the second is the formation of neighborhoods for workers.* (Tankut, 1993; Yavuz, 1981; Cengizkan, 2002, 2004; Akcan, 2009). The plan proposed a the new planned expansion in the north-south course with a single route linking north to south, and a secondary route running side by side with the railroad for east-west extension of the new town (Günay, 1988:30) as shown in fig.2.47. This made the planning of the new Capital city to be flexible and be able to expand in various directions while encapsulating and preserving the old urban fabric. The plan emphasized the pedestrian routes and aimed at minimizing the traffic routes. Jansen utilized green belts around the city, and integrated these green belts with the planning through the protection of riverbeds, valleys and hills protecting the topographic, morphological and microclimatic values. This not only enhanced the beauty of Ankara but also this responsive plan for natural values showed the importance of green areas such as 1490 ha green area for the population of 300.000.

Figure 2.47. Hermann Jansen master plan for Ankara. Showing the traditional urban fabric of Ankara (Source: Berlin technical university- Architecture department archives)

The plan reached its target population already in 20 years period thus a new competition is held to produce a new master plan for the city. Uybadin-Yücel won the design competition and his master plan for Ankara was an extension of Jansen plan, which brought an organic internal pattern as the follower of the Garden City

tradition. It emphasized the north-south axis and the limits of development reached to higher altitudes. *A contribution of the plan was the bordering road in the west of the city connecting to other routes as intercity main road network* (Günay, 1988:p.34). Jansen's determination of the new city as the administrative center caused the development jump into the southern part of the city. The old city expanded its central functions, and the major artery, which was proposed towards south axis, gained too much importance with residential and commercial functions in the new city.
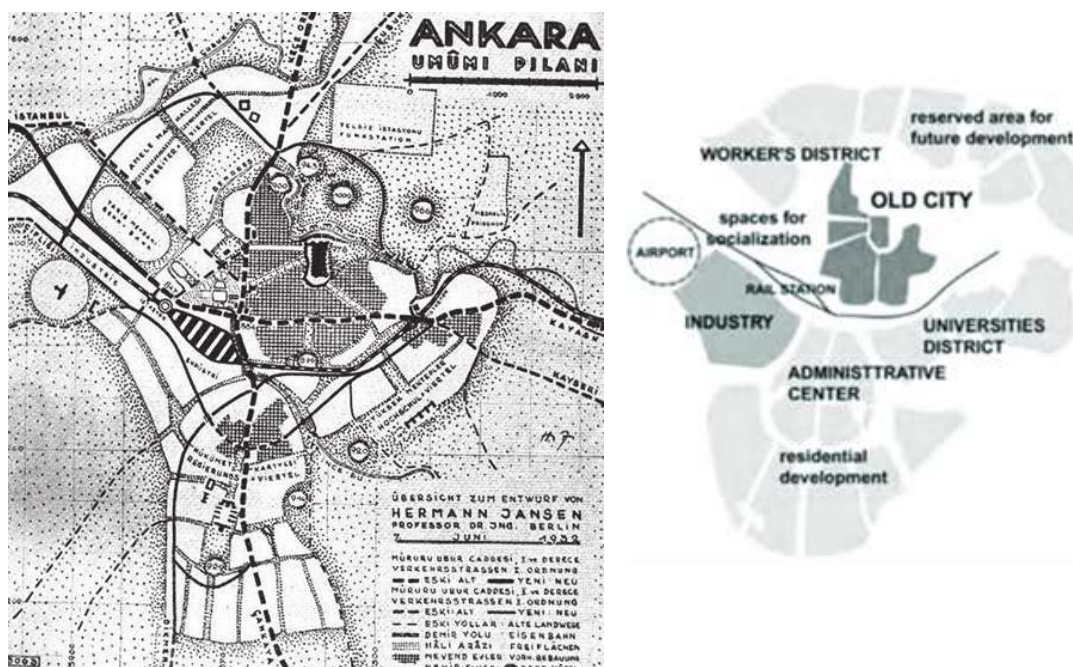
Figure 2.48. Herman Jansen's master plan of Ankara 1929- The old urban fabric has been encircled via roads and ample of green space. The new planning is planned around the old core shows the sensitivity to the context.(Left) The concept diagram showing the relationship of the old urban fabric and the new urban planning (Right)(Source: Berlin technical university- Architecture department archives Şema Keskinok'tan 2010,p. 182)

Although Ankara's current urban fabric as shown in fig.2.49 is the result of various urban planning periods; but Herman Jansen's master plan for Ankara hold great significance as it was the first officially accepted plan of Ankara that dealt with the preexisting urban fabric of old town of Ankara. While modernist planning ideology

aimed to construct a totally new strategy for urban planning which ignored historic urban contexts, Jansen's vision was considered "narrow for the 20th century (Tankut,1993, 67). Hermann Jansen's plan reflected ***"concern for and attention to the historical fabric"*** (Bozdoğan, 2001, 70). Ankara was divided into two parts by Herman Jansen; first part was the old city meant to be preserved as it is and second part was the new city, and these were separated with a green belts. Jansen deal with the historical urban fabric of Ankara with sensitivity, he hoped that the new settlement should be attached to the old city in order to be perceived clearly as an addition, and the buildings and the urban form should be reorganized; scattered development to be preferred over a very large city with ample of green spaces that connected the old and the new city urban fabric. Green belts in the master plan of Ankara were introduced for linking and connecting the old urban fabric with the new planned city, which shaped traffic means for pedestrians. (Tankut, 1993, pp.79-80). The architect also proposed a reserved part in the northern lands of the old city for further future growth.

Figure 2.49. The satellite view of Ankara. (Source:Google Earth, 2022)

2.2.9.   Caro's master plan- capital city development 1980:

The importance of the city of Cairo can be determined by the fact that its foundations were laid in 2000BC by Kind Menes, later the Romans built the Babylon Fortress on the river Nile and afterwards served as the main center of Arab-Islamic civilization. Cairo was an integral link to the spice route and its market streets were popular trading zone connected east to west. In the 12th century Saladin ruled the region, taken over by Mamluks and then the Ottomans. Muhammad Ali pasha is believed to set the foundations of modern Egypt by resisting Napoleon in the 19th century and thus bought many reforms in the country. The first urban master plan of Cairo was formulated in 1956.
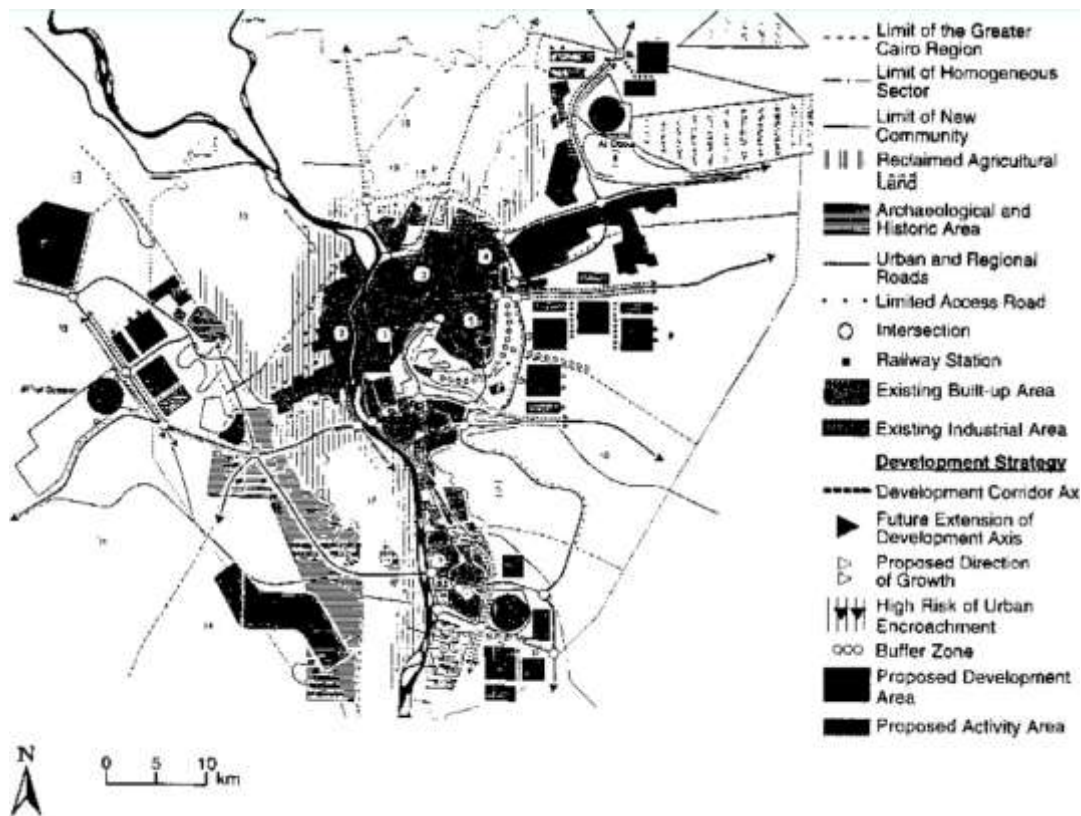
Figure 2.50. The master plan of Cairo from 1973-1983. (Source: United Nations University, 1992)

The master plan of Cairo initially proposed 6 suburban communities which were more or less industrial towns in nature. This plan was revised in 1973 and 1982 which gave the basic direction to the Greater region of Cairo master plan a much clearer understanding. First of all, the ring road as an outer boundary was defined outside the city center to further accommodate the fast growing population of Cairo. 1982 plan propose five corridors for Cairo to be well connected to the adjacent cities and function fully as a capital city of Egypt as shown in fig 2.51 and added 6 more communities making it total of 12 self-sufficient urban communities to accommodate the growing population.
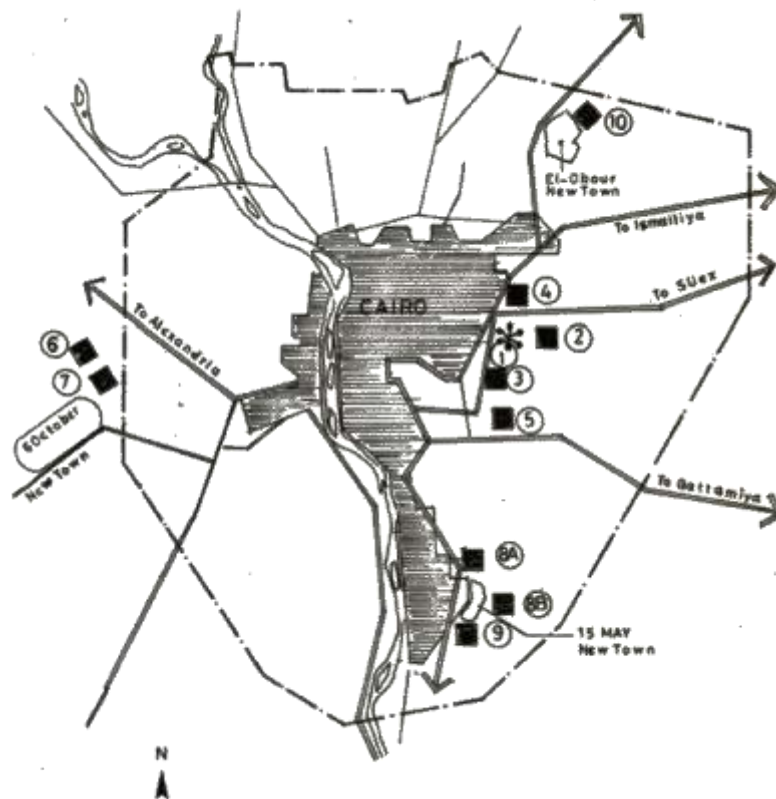
Figure 2.51. The master plan of Cairo and its corridors. (Source: M. Tewfik , 1991)

In 1996 the master plan of Cairo was finally complete along with previous revisions and by that time the population of the city grew to 13million and by the year 2020 it was estimated to grow to 24 million. This time the focus of the plan was to construct new urban centers to accommodate the growing population outside

the ring road of the city. An outer ring road was proposed corresponding to the old ring road as shown in fig. 2.52.

Figure 2.52. The master plan of Cairo 1992 revision (Source: Katahira & Engineers International GCR final report vol.2)

The case of Cairo represents a unique urban example of incremental urban planning. This case study is unlike the previous. The field of urban collision or the shared space between the old urban fabric and the modern urban planning is embedded in patches in the holistic urban fabric of the city of Cairo. A detail morphological analysis is done in the following chapter.

2.3. Concluding remarks:

The case studies described are specifically chosen due to their urban fabric which reveals the relation of the existing traditional urban fabric with the new modernist planning approach to urbanism. The case studies are divided into two parts, the

early modernist and the pure modernist. It is important to note here that the above discussed historical cases of the early modernist period that are New town extension of Edinburgh, Athens urban planning, Vienna extension, Paris renovation and Cerda's Barcelona plan, are all early modernist planned but with a clear intension to become the extensions of the existing old urban fabric. These were designed to be well connected with the old existing town's urban fabric. However it was the pure modernist agenda of the twentieth century especially after World War II; the concepts of a static image fixation of urban fabric and considering modernism as a savior, an only bridge to utopia and deeming the traditions urban fabric unfit for modernization gained popularity. It was this period of mid twentieth century modernism arising out of the rebellious mood with a radical approach that yearned to revitalize the way modern civilization viewed life, art, politics, and science. The modernist urban planning examples in this thesis are; Plan Obus-Algeria by Le Corbusier, which displays the modernist dictation over the existing urban fabric, likewise Amsterdam Jan Kalf's plan changed the radial geometry of the city and went to orthogonal and Ankara which preserved the traditional urban fabric by enclosing it. Although the planning of Amsterdam and Ankara depicts the urban collision between the modern and the traditional to be sensitive in recognizing the existing urban fabric but somehow are unable to incorporate it holistically in the grand master plan. The master plan of Cairo is an unique example of incremental urban extension done in patches of self-sufficient community, hence the space of collision between the old and the new are scattered in the urban fabric.

It is the revelation of the space of urban collision between the modernist planning and the existing traditional urban fabric and the nature of their unique relationship formed in each case; the selected case studies from this chapter will be morphologically mapped out and analyzed in detail in the following chapter.

CHAPTER 3

THE URBAN COLLISSION

This chapter has three parts. It first and foremost defines the term *collision* and establishes a deeper understanding of *the space of collision in urbanism* through various literature reviews and study of the several urban studio works. It deals with the explanation of collision in urbanism.

The second part deals with explain the characteristics and features of the field of collision between the modernist planning and the traditional preexisting urban fabric. This part also built a framework and defines parameters for identifying the space of urban collision in the urban fabric.

The third part of this chapter investigates the space of collision through mapping the selected urban case studies discussed in the previous that is chapter 2 and their detailed morphological analysis to investigating further the relationship formed by the space of urban collision between the modern urban planning and the traditional urban fabric. The morphological investigation is based on the built perspective of figure-ground mapping.

3.1. Urban Collision- a conceptual framework:

The word collision originated from Latin meaning *collīdere to collide, coming together with force.* The dictionary describes it as *two different objects or two*

sides and an occurrence as a result. Collision is considered as a physical phenomenon of proximity of two entities, physics-the branch of science describes it as *"the meeting of particles or of bodies in which each exerts a force upon the other, causing the exchange of energy or momentum."* Collision occurs when the *boundary area between the opposing two entities alters and diminishes in time;* sometimes creating tension in both systems in other words conflict. *Conflict is describes as the tension between two contrasting entities when come in proximity.* It is an incompatibility, a clash of opposing elements.

Urban collision is described as when two contrasting urban entities, in this case modernist planning and the traditional urban fabric are in proximity; their close occurrence is an urban collision. The *"space of collision"* can easily be identified as the space *where two different urban patterns are merged together.* (Jacob, 185 p.73) the break seams or change denotes the changed in urban design. It is these places of change that become *the center of activities, a focal point in the urban fabric.* (ibid)

The lack of the spatial cohesiveness between the two different urban entities is the generator of conflict. It is important to note here that not all urban collisions result in conflict but conflicts do arise in particular situations of urban collisions. Not all contrasting element's collision cause conflict, sometimes the contrasting elements are arranged and integrated that they coherently form one whole system.

It has been established in literature that, the modernist urban planning is in contrast to the traditional urban fabric in terms of its network and flow resulting in different working of both the urban tissue. When these contrasting urban forms extended towards each other due to factors like rapid urbanization over time and diminishes the boundaries between them; it results in *urban collision.* In the context of urban planning conflict can be observed between two contrasting urban entities. Conflict is viewed as contributing to the adaptation of the urban environment to changing

human needs and expectations. ***The conflicts are qualified as urban not because they take place in the city but because they concern the city*** *(Humphreys & Walmsley, 1991)* and these conflicts effect the city's organization, usage, quality of life, environment and services.

This thesis focuses and investigates the nature of urban interaction between the modernist planning and the traditional urban fabric in collision. It aims and defining the typologies of the space of urban collision through morphological analysis.
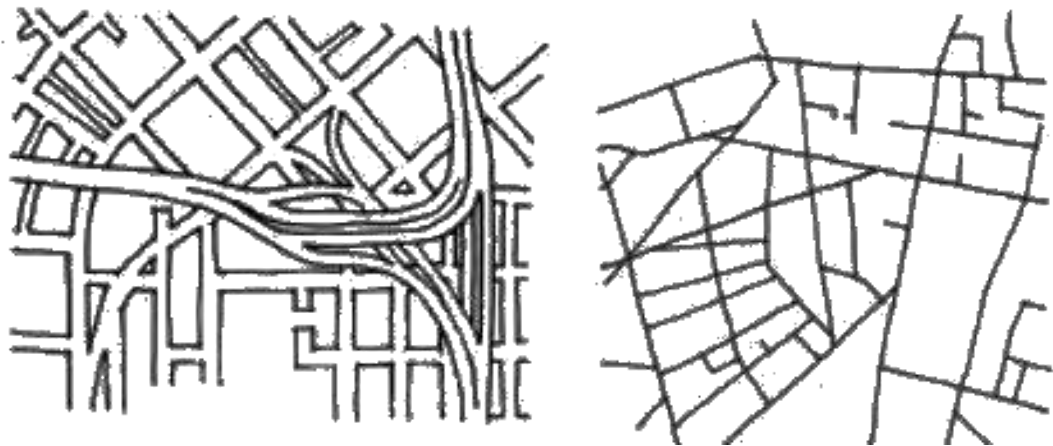
Figure 3. The urban collision of road networks in a modern urban fabric (left). The collision of street layout of the modern planned and the traditional urban network system, notice the fragmentary condition of the network (Right) (Source: Jacob, 1985, p.71)

The traditional urban fabric and the modernist urban fabric are recognized to be poles apart. Many urban theorists viewed this idea from different perspectives. Christopher Alexander (1965) ***divides cities into two distinct categories cities that are formed and evolved over time spontaneously are organic*** (traditional cities) and cities deliberately created by designers are artificial (Modern cities). Alexander's differentiation of cities is deeply embedded with the connections of the physical space in an urban setting. Colin Rowe (1978) describes the difference between planned modernist cities and the traditional urban fabric in terms of figure-ground mapping and states both to be opposites of one another.

A city is unfolded through the study of its network structure and urban blocks; analyzes the underlying spatial organization, tracing a connection between space and society. It is the difference in urban network and organization of build fabric that sets apart traditional and modernist urban fabric. ***In order to evaluate a city, we need to recognize* it in terms of a system consisting of *network and its flow to urban blocks*** (Batty, 2013)*;* in other words through the manifestation of dialogue between the city's connection linkages. A city is unfolded through analysis of the underlying spatial organization, tracing a connection between space and society. ***It is this difference in urban network structure and organization of build fabric that is solids and voids; that sets apart one planning ideology from the other, like traditional and modernist urban fabric each can be distinguished from the other by analysis of its network flow and the urban blocks.*** The differences of urban fabric are translated through hierarchical connection and placement of urban elements such as residential units, markets, recreational parks, administration and governmental buildings which leads to different patterns of human activities, social grouping, class differences, and transcend deep into the working of the city. Since modernist planning follows a top down approach and the traditional city follows bottoms up, the city network structure of both these urban entities are opposite to one another and thus generate foundation for the conflict in collision. The urban fabric of the cities changes recurrently, due to changes in physical, social and economic means is not static. These aspects are interrelated and have a direct impact on the urban fabric (Jacob, 1985, p.99). This can be observed throughout the urban fabric in the form of street patterns, arrangement of building blocks, scale, building facades and land-use.

The space of collision between the modernist planned city and the traditional fabric are directly and indirectly pointed out in urban literature through terms like ***"lost space", "no man's land",*** (Trancik, 1986) ***"seams of a city"*** (Grady Clay) , "*Isolated areas"* (Jacob,1985, p.107) these areas are subjected to rapid changes to the urban fabric. These spaces of urban collision the in-between spaces in urban

fabric make urban designers to pounder whether the new urban elements are breaking the older urban tissue pattern and layout or what sort of future layout will be proposed and most importantly the impacts on the older urban fabric and which becomes more significant in time?
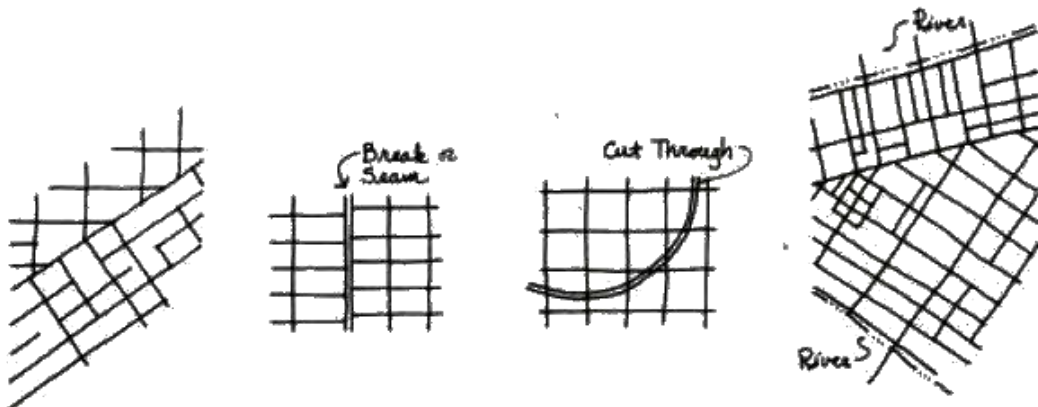
Figure 3.1 The juxtaposition of grid structures (Source: Jacob, 1985, p.73)

Urban collision between the modernist planning and the traditional urban fabric is something that can be observed through various urban parameters. The street pattern are traces for a city's urban fabric history, for example the streets that are narrow, curved, close together and irregular most probably belong to the traditional old urban fabric and the streets curved gently, or gridiron and regular with a set hierarchy belong to the planned urban fabric. (Jacob, 1985, p.71). Similarly the urban blocks also tell their story; their arrangements and scale can also make them differentiate the modern from the traditional. For example the small scale blocks in figure and ground mapping shown as the small grain usually belong to the traditional urban fabric whereas the large scale or the large grain and consistent blocks are of the modernist time period due to their in efficiency. Large blocks mixed with small scale blocks indicate the development in the traditional urban fabric. (ibid, 1985, p.73). When we can observe the traditional set apart from the modern, as an urbanist we can observe the space of urban collision between the two as well, which will be discussed in the following paragraphs?

3.2. Collision as a field condition- A morphological background:

Colin Rowe and Fred Koetter in their book Collage city (1975) made a strong protest against the 'total design' tactic of modernist urbanism and paved the way for evolving a strong theoretical foundation for the pluralist conception of urban design with their article. ***Rowe introduces a dialogue […] between opposites or contrasting set of urban orders to examine and compare the two*** (Schnoor, 2011. p, 6). As shown in fig. 3.2. Rowe envisioned this interaction between conflicting ideas as a creative method capable of innovation, a continuous exchange in which both entities retain their individualism but are constantly enriched by their reciprocity. Rowe emphasized figure ground mapping because the city was viewed as holistically; they polarize space and mass, alternatively emphasizing the shape of each, drawing attention to their reciprocity and, at an urban scale, the structural relations of figure, field, texture, pattern, edge, axis, and so on; also allowing for morphological comparison of cities, building groupings, and other form orders. *Modern cities have ultimately become the inverse versions of traditional cities.* Through the analysis of modernist planned and the traditional urban fabric, according to Rowe, the modernist city is an assembly of solids in a largely untouched setting of void, and the traditional classical cities are an accumulation of voids in a largely untouched solid.

Koetter and Rowe (1984) remark the modernist ***"object fixation,"*** as the contextless architecture. Since modernism deliberately ignored the context in order to start fresh, a new urban strategy for the new model of contemporary *'city without attributes',* as a result of the implementation of tabula rasa. It gave birth to cities like renovated Paris, Singapore, Brasilia, Islamabad and many others which were disconnected from their past history, the context and surrounding urban fabrics. In that sense it was embedded in the ideological perspectives of modernism

to ignore the preexisting urban fabric and remove any linkages if any relating to the old urban tissue. This ideological believe laid the foundations for the collision between the modernist planned and the traditional urban fabric, since it failed to establish any connections with the preexisting. This cause issue like urban fragmentation and urban disintegration between the two urban tissues; especially when cities extended and the peripheral areas started developing.

Figure 3.2 . Wiesbaden, c.1900. Figure-ground plan (Source Rowe, Koetter, 1975).
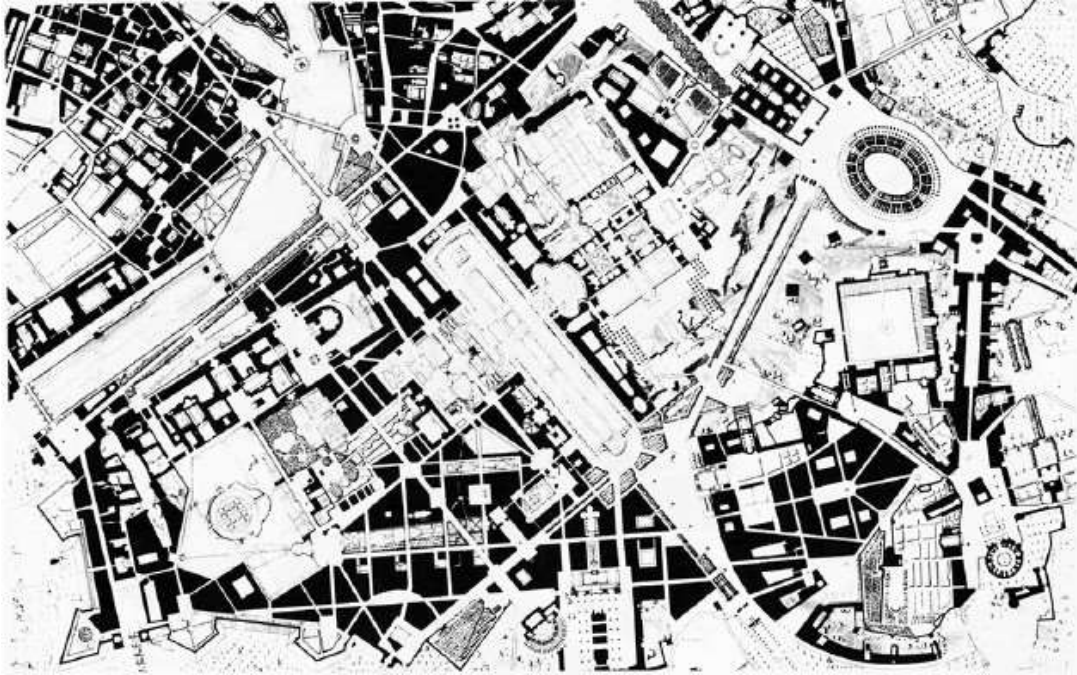
Figure 3.3. The design scheme submitted to the competition, Roma Interrotta, by the team of Rowe in 1978 (Source Rowe, Koetter, 1984, p. 112).

In order to explain in detail the dichotomy of the traditional urban fabric and the modernist planning, Rowe and Koetter (1984) give the reference of Rome in the seventeenth century. For them Rome was a model envisaged *of disastrous urbanism composed of social engineering and total design.* Rowe describes *Rome* as fusion of imposition compositions that resulted from collision of palaces, piazza and villas that resulted in congestion. It was an anthology of closed compositions and ad hoc stuff in between. Rome was a assembling of rational gridded fields in a picturesque setting with confusion happening amongst different urban blocks. Rome although represents the coming together of conflicting scales, different compositions, orientations of urban blocks, it is important to understand that this problem is not only compositional limited to visualization only; it is rather according to Rowe "*the result of a course of dialectic*" (Rowe, 1974). Composition here is taken as a formal structure, an organization and a dialect between the urban elements. At *Roma Interrotta* (*Rome Interrupted*), the

international competition for designing new sections of the historical center of the city, Colin Rowe's design team attempted to recompose the historical Palatine Hill by collaging the compositions of some Roman precedents and, thus, illustrated a possible application of their discourse by design (Graves 1979) shown in fig. 3.3.

Figure 3.4 The Grid collision. Extension of The Buffalo Waterfront studio deploys the figure/ground plan. Rowe Buffalo Waterfront studio, 1965-1966. (Source: Rowe, 1960)

To understand the work of Cornell studio led by Rowe, the project of Buffalo Waterfront is the best example. As it reveals the grid collision and its design extension as shown in fig. 3.4 important design tactics were revealed when having

a closer look, the first was the area of grid collision offers opportunity to be exploited in terms of design strategies for restoration and correction of unresolved and incomplete conditions *(Rowe and Koetter 1978, p. 78-79)*. ***Grid collisions, field extensions*** the main theme in the Rowe studios; the figure/ground plan – The city was views as a *formal gestalt*, the complexities of the city were reduced to black comprises of the solids and the whites denoted the voids delineating mass and space. It is an endless resource and foundation point over the decades. Hurtt observes that the figure/ground strategy of Rowe design Studio was a sign towards an effort to reconcile the traditional which mainly consisted of solids and the modern urban fabric comprises of voids mostly (1982, p.56). It was due to these investigations focusing on the theme of collage and collision that the studio realized the unique connection between the modernist and the traditional urban fabric. ***The figure ground condition between the traditional and the modern urban fabric as typical arrangement and pattern of the traditional city in every way, the inverse of the city of modern architecture.*** Rowe and Koetter *(1978)*
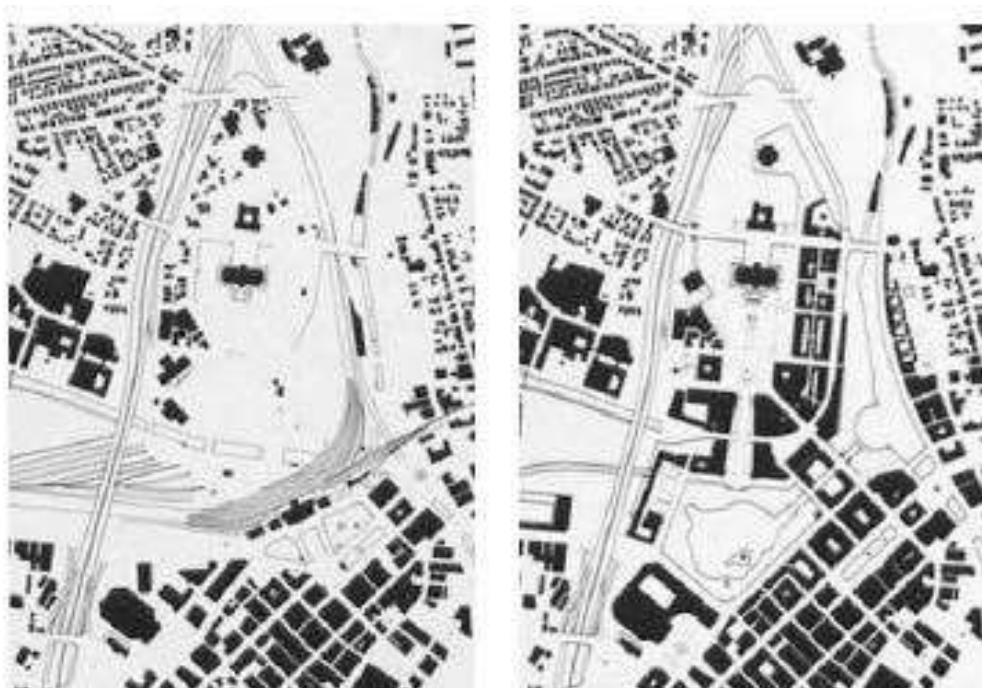
Figure 3.5. Infill and completion, the composite building, open space as figure and ground. Existing plan and proposed plan. (Source: Rowe, Koetter, 1960)

Rowe tried to reflect on the ongoing discussion by analyzing the two radically opposite models for urban fabric that existed at the time; the modernist planning and the traditional urban fabric. In the chapter Collision city, Hurtt (1983) signifies an attempt is made to recognize the city as a dialogue between the political, social and formal values that result in a healthy competition amongst these institutes. It gave a chance to view the modern city simply more than just limited to picturesque. It was Rowe's critical assessment to recognize the shared space as something that offers design opportunity for the urban fabric as whole. ***The placement of collision and collage together for Rowe was to allow a pairing of the traditional and the modern city. (Jasper, 2015, p.5).*** Similarly Koetter and Kim studio also focused on the issue of collision in urban design studies. Their project of *Blackwall Peninsula Projects* pointed out the site of collision as when the grids vary in direction it gives rise to collision of different urban fields. An analysis was conducted for the Vienna Ringstrasse of 1914. (Koetter/Kim associates, 1997)

Figure 3.6. The fields of collision in the Blackwall project on the left, with colliding fields of the Vienna Ringstrasse project on the right. (Source: Koetter/Kim Associates website)

Rowe called for ***a flexible design stance rather than fixation on a static image*** of the city or addressing a specific urban style or ideology of urban planning. The fullness of urban life lies in the presence of diverse yet complimenting spatial configurations and layouts; the beauty lies in the diversity and contrast if it is without conflicting with one another; while replicating themselves independently

and connected to their neighboring sites at the same time. It is this collision of the modernist planning and the traditional urban fabric that have the quality to juxtapose and complete the flaws of each other. Rowe has put this ideas as recognizing the urban fabric not just as one fixed image, rather a collage, or in other words an integrated, united, composed and coherent urbanscape which comprises of different urban elements. At the end of his book he suggests few **stimulants**, as possible **'objects trouves'** in the urbanistic collage. He gives the example of Edinburgh's Prince Street as **"memorable street"** that runs between the new extension town and the old fabric connecting both and separating them from any conflict. This was a new approach to urbanism that has a central of discussion in contemporary urban design studies. This approach recognizes the urban tissue as a complex urban fabric composed of multi layered incremental transformation. The urban elements would react with one another and consolidate the urban form holistically. This approach is a bottom-up design method to tackle coherency and integration in the urban fabric (Çalışkan, et.al. 2020, p.38)

3.2.1. The urban collision revisited- a morphological framework :

For the relevance in this thesis, the reference of the design workshop organized by *The Chamber of City Planners* in Turkey in 2015 and 2016 which aimed at experimental design studies on heterotopia will be discussed. The study formulated patches of urban design fabrics on one board consisting of different urban planning regimes. The original design problem was forming the spatial fabric in fragments, which, in turn, would compose the larger collective context. (Çalışkan et al. 2017). During this design workshop it was observed and pointed that the different types of urban collision and urban conflict arises when there was lack of integration between different urban planning designs belonging to different urban planning regimes as shown in fig.3.7. They all seemed to be confined in boxes of space allocated to them without making connects to the adjacent.
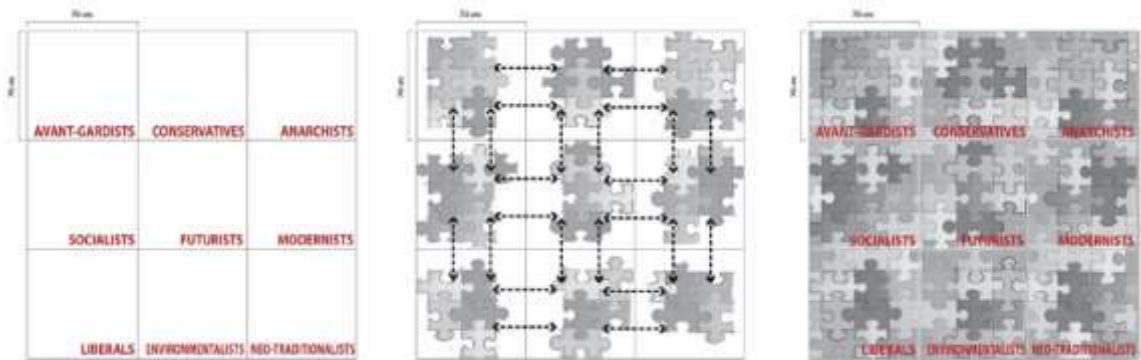
Figure 3.7. The spatial framework compose differently and then link and cohere was created. (Source: Caliskan et al. 2017)

spatial commonalities between the quarters `- - - -`

typological continuities in building setting `..........`

structural integrations between local networks `←--→`
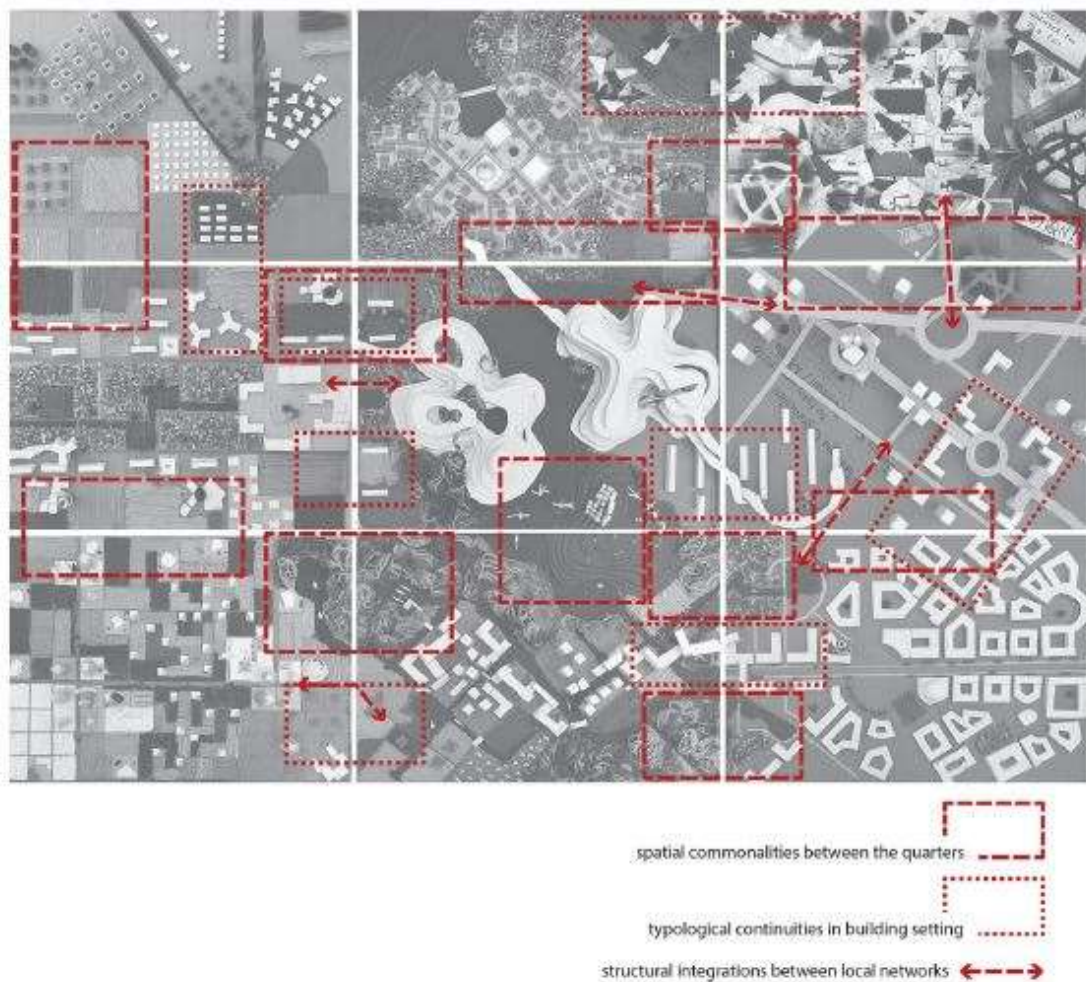
Figure 3.8. The key map showing the three types of strategies introduced during the patterns formation of the heterotopic fabric (Source: Caliskan et al. 2017)

The second part of the workshop is important for this thesis which dealt with strategies to integrate the designed fabric patches of different ideologies as shown in fig. 3.8. This design process revealed different functionalities of the shared space and generated a constructive discussion in the search for the optimal solution for merging different urban blocks. The design workshop led by Çalışkan et al. 2017 presented three types of design strategies of the shared space during the integration of heterotopic fabric. Such morphological quality of the shared urban spaces brings out 'wholeness' through multiple interactions between fragments. In an effort to form connections with the adjacent urban fabric belonging to a different urban planning regime innovative methods were explored.

3.2.2. The morphological framework for recognizing the field of urban collision in the urban fabric:

It is important in order to understand the before mentioned issue of urban collision between the new and the moderns and the traditional urban fabric if we view the city in terms of growing urban tissue. The concept of urban tissue as suggested by Samuels*, et. all (2004)* is an ***"interweaving and of connections between parts, together with a capacity for adaptation"***. A city's urban tissue carries the stamp of the past. In general, all cities and their tissues are constituted by *set of same elements of urban elements in the form of—streets, squares, parks, blocks, plots and buildings*. Yet, in each city these elements are combined in a unique and specific way derived from its context and society which results in originating different types of tissues for each urban setting. These urban tissues give the urban setting their unique character.

Similarly the space of urban collision is an in-between spatial layout which is stuck between the modernist urban planning and the traditional urban fabric. It carries the features of both in a hybrid continuum. To identify the space of collision in an

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urban fabric we need to understand is the space of collision neither belongs to the modernist urban planning nor to the traditional it depicts an in between urban condition. This defines the characteristics and features of the space of urban collision in an urban fabric. Urban scholars like Steven Hurtt (1983) highlight the space of collision as **"*space in which grids of different alignments abut, join, or collide.*"** The space of collision is identified by a fractured silhouette or edge is often seen by each field of urban block, street pattern. There is usually no hierarchy seen amongst the urban elements, absence of integration and no overlap and no composition. The term *"collision"* described by Hurtt is denoted by the ***accidental, fragmented, and disordered quality of most of these places.*** He further adds on that the modernist grid collisions is a typical problem of U.S. cities. The Cornell studio led by Rowe reintegrated the collision spaces between the modernist urban planning and the traditional through designing special joints and urban forms and spaces in order to achieve a composed and coherency between the two adjoining fields. *(ibid, 1983).*

Thus, the space of urban collision can be visually recognized in figure ground mapping. The figure-ground technique saw revival of interests by Colin Rowe (1920-99) where he rejected Modernism idea of a freestanding Architecture and advocated awareness of urban space characteristics defined by existing older buildings which emerged over the years. Figure-ground maps of major cities in the world reveal fascinating relationship between solid buildings and its voids in unique identifiable patterns where no two city maps are alike Colin Rowe and Fred Koetter in their book, Collage city; explains this order of a city in terms of *"solid and voids dialect".* Collision of two different urban patterns offers opportunity of analyzing the two contrasting radically opposite urban models and in-depth. It is when these are juxtaposed only then the qualities of one can be highlighted in comparison to the other**.** The figure ground analysis will be based on analysis and comparison of the grain size of the space of collision with respect to both traditional urban fabric and the modern planning. It will also discuss the

configuration or layout of space of collision in relation to the urban tissue holistically. And lastly the built form analysis will interpret ate the function of the space of collision

Urban Morphology- defines the urban elements upon which the morphological analysis of the space of urban collision is based. Urban morphology is the study of form and shape of settlements and refers to the *"physical condition or surface of something". The combination of streets, plots and buildings seen as a composite, multi-level form is commonly and usefully referred to as urban tissue .*(Kropf, 2017, p.15). Thus, the urban form is based on three physical elements; the street structure, the built pattern and plots. The three theories upon which **Roger Trancik** (1986, pp.97-124) defines the urban spatial problem of the "lost space" are; the figure ground theory, the second is the linkages theory and the third is the place theory. The supporting literature on the urban collision differentiation is the ***urban morphology- the different elements that constitute the physical form of cities.** (*Oliveira. V, 2016) Oliveria, in the book
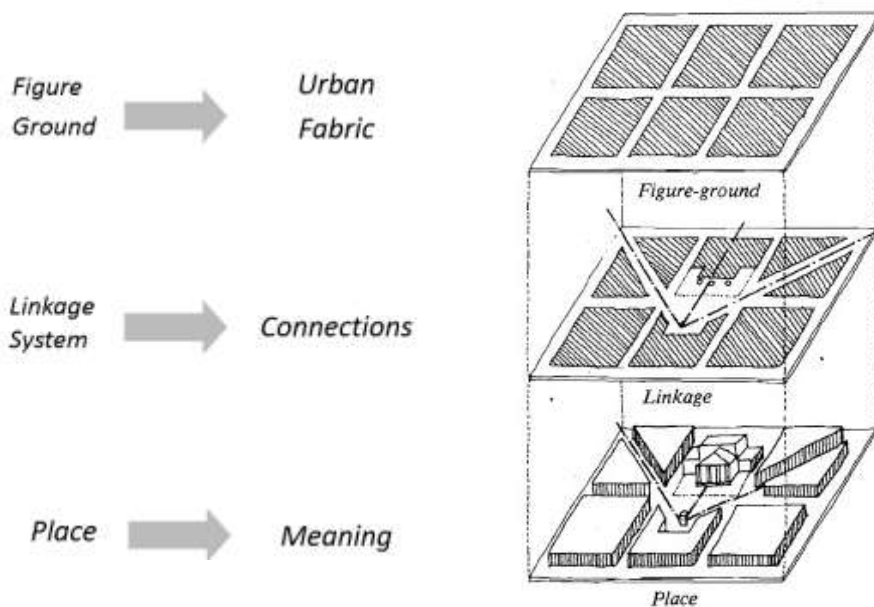
Figure 3.9 Three theories on urban spatial design- the figure-ground, the linkages and the place theory to define the urban fabric and the problem of the lost space. (Source: Trancik, R. 1986, p.98)

For this thesis the scope has been narrowed down and the analysis of the space of collision will be limited to the first aspect of Roger Trancik's urban theory that is the figure-ground analysis of the urban fabric. Although an over view will be discussed for the collision of urban network. The urban morphology of the built form is the first step from Trancik spatial theory. The space of urban collision in the selected case studies will be mapped morphologically on the first parameter of figure-ground built fabric in urban fabric. Figure ground mapping is chosen because it briefly defined as elements of solids or pochés that defines the edges of built forms and voids left by urban open space. It defines the relationship of the built and the unbuilt in an urban fabric. this thesis will analyze the built form collision in urban fabric.

3.2.3. Collision on urban structure:

A city's urban tissue composes of the network structure around the urban blocks. A city's network consists of highways, roads, streets, paths, avenues, boulevards and these are connected through nodes, landmarks and squares. In general, the urban network structure connects the functions in a city and defines their interrelationship in accordance to one another. In other words the dialogue of the urban blocks and its tone is set up by the city's network structure. Three physical roles are assigned to the urban street traditionally, the first is the circulation route, the second is the public space, and lastly the built frontage.

Figure 3.10. The Street pattern evolution from 1920s to 1950s. From traditional network system of streets to Modernist planned grids and further evolving (Source: Marshall, 2005)

Robert Trancik describes the urban network as *Linkage theory;* (1986, p.106). The linkages theory is basically the organization of lines which connect the urban blocks in an urban tissue. These lines relate buildings to the space and establish its relationship in an urban tissue. The linkages are the connections or in simple word its acts as glue uniting all the layers of urban fabric. It is due to the pattern of the linkages the urban fabric is stitched together.

The network of modernism urban planning follows a top-down approach where the main highways are marked and in hierarchical sequence some down to the city connecting roads, then the sectors or districts and finally to the individual blocks. Whereas the traditional urban planning is bottoms-up approach the links are established from the single urban blocks which are then connected to the district streets and then to the city's main roads and to highways. This result in diverse network structure of the modernist urban planning and the traditional city fabric as elaborated in fig.3.10 and 3.11, and it forms the core difference between the two. *Modernism proposes an inverse relationship between movement and urban place.*(Marshall,2005, p.4) as compared to the traditional urban fabric. Due to the difference in urban network structure when these two urban networks, the modern and the traditional are in proximity it often results in conflict.
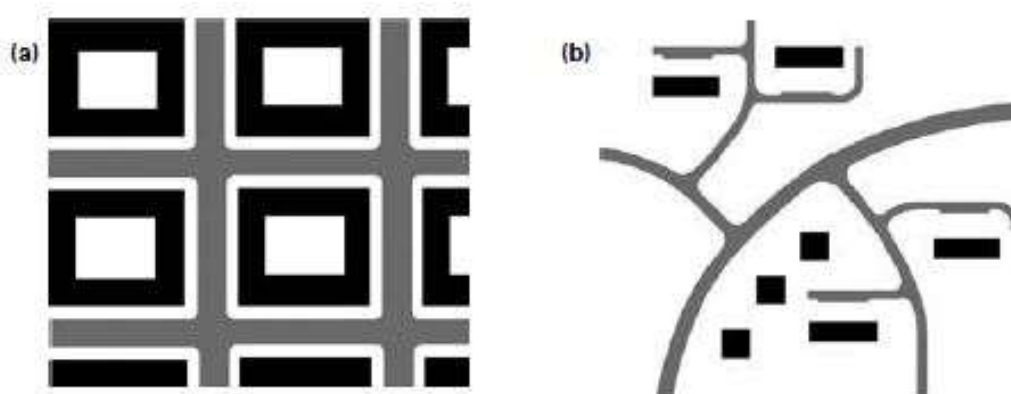
Figure 3.11. Traditional versus modern street layouts. (a) Fit of roads and buildings. (b) Roads and buildings follow their own dedicated forms. (Source: Marshall, 2005)

The collision of modernist urban planning and the traditional urban fabric often results in conflicting urban network structure; due to the fact that modernist planning was deliberately design in isolation to cut off from the context. Three physical roles are assigned to the urban street traditionally, the first is the circulation route, the second is the public space, and lastly the built frontage. However modernism passed a death sentence to these functions of the street as it set up a new urban model that liberated roads and buildings from each other. (Marshall, 2005, p.6). The isolation of the urban blocks from the streets snatched the street life of the urban fabric that was a vital element of the traditional cities.

Visually the urban network form connections but those connections are not elaborated by the use of nodes, landmarks or squares rather they are treated as dead connecting roads with the only view to offer is of the grand modernism planning regime. Street acts and is known as the 'skeleton' of an urban area, in the sense that it is the structure over which elements of the built environment are organized in today's modern days. ***In the urban form, street is an important component and all the city dwellers are utilizing it in the most city spaces*** (Abdul Rahman & Md Sakip, 2015)

3.2.4. Collision in urban fabric:

Figure-ground perception as traced by Wagemans et al. (2012), *germinated in the field of Gestalt psychology, developed by German psychologists Max Wertheimer and Wolfgang Kohler whom studied how people perceive forms in some sense of order in the disorderly world. Gestalt in German means "form" or "shape".*

In architecture and urban space, Arnheim (1974) describes ***'the bounded surface tends to be figure, whereas the surrounding one will be ground'.*** The earliest influence of figure-ground in perceiving urban space can be seen from the Nolli Map of Rome, completed by Giambattista Nolli in 1748. Nolli signified built

spaces with blocks and building shaded in dark shade, while enclosed public spaces as open civic spaces. This transits into black-white or as Solomon (2003) calls it as *'black plans'*, which was widely emulated in the nineteenth-century depictions of urban city maps. As shown in fig. 3.12, figure-ground diagram is a mapping technique used to illustrate the relationship between built and unbuilt space in cities. Land coverage of buildings is envisioned as solid mass **(figure)**, while public spaces formed by streets, parks and plazas are represented as voids **(ground)**. In urban planning, this simple yet powerful graphic tool is used to explore built form patterns and the continuity of open space.
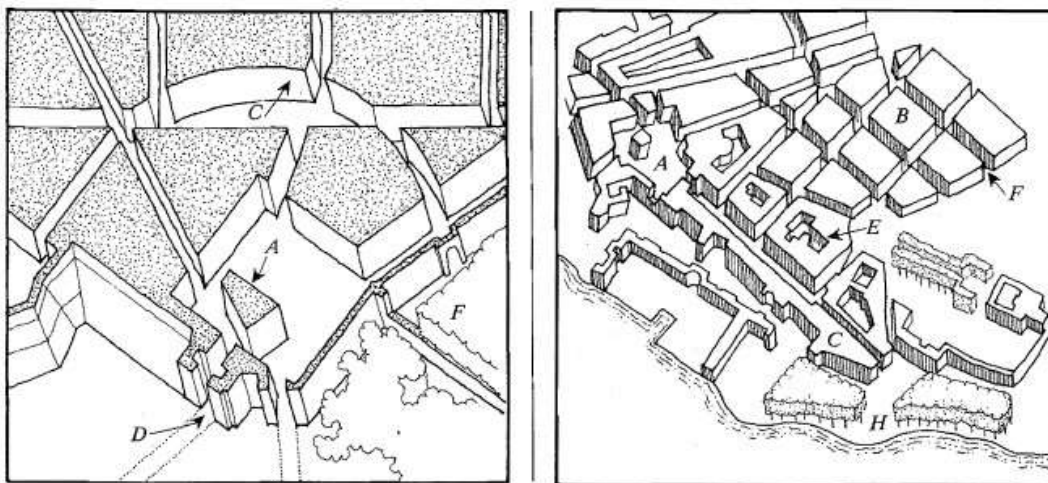
Figure 3.12. The figure- ground mapping and different types of interaction of the urban blocks in figure ground mapping. (Source: Trancik, 1986, p.102)

Figure ground mapping, briefly defined as elements of solids or pochés that defines the edges of built forms and voids left by urban open space. Robert Trancik (1986) The three principal types of urban solids in the traditional city as seen in fig. 3.12 are the public monuments, then we have the urban blocks followed by edge defining buildings. He also elaborated the types of voids in the traditional urban fabric that are the entry foyer area between private and public. The inner block voids in the form of building courtyards, the linear open space system such as river way wetlands which cut the solids of urban fabric and establish edges to create

connections in the larger scale of holistic urban fabric. The literature review of the types of figure ground formation of solids as well as voids will help us establish the kinds of urban solid and voids present. And on the bases of these concept the space of urban collision can be analyzed in detail.

Trancik defines three different formal types of urban space in fig.3.13 as; compositional form, mega form, and group form. Compositional form: it is the individual urban blocks where spatial linkages are implied rather than overt. These are the typical modernist urban planned block formation type. The Mega forms are the linear framework of connected buildings in a hierarchical manner. The Group forms are traditional in nature they are a result of incremental growth of urban structures along communal open spaces and forming linkages naturally and organically evolving the urban forms. Traditional urban fabric is group form.
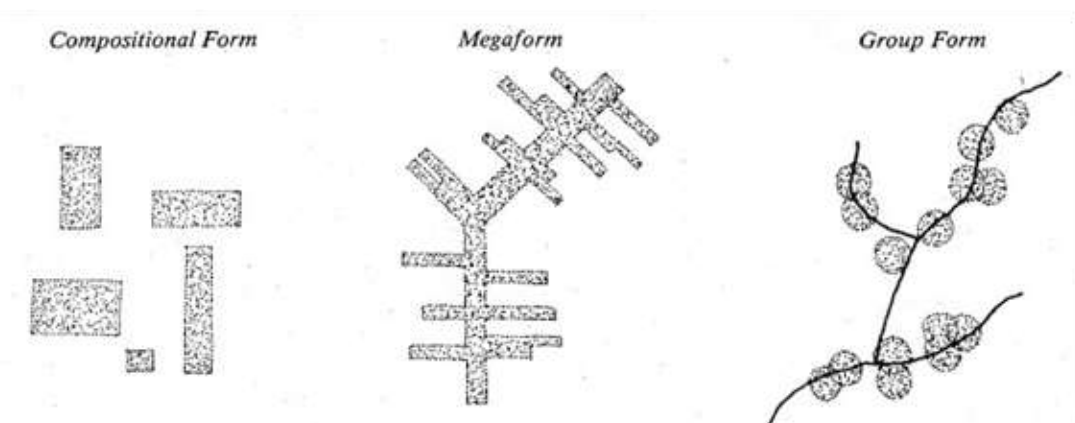
Figure 3.13 The three types of urban Forms. (Source: Trancik,1986, p.107)

3.2.5. Parameters involved in recognizing the space of urban collision in urban fabric:

The field of urban collision in the figure-ground mapping of the built form of urban fabric can be recognized based on the two principles, the grain of urban fabric and the urban composition. The modern urban planning has a discreet urban

composition and generally follows a typical pattern of more voids than solids where as the traditional urban fabric is opposite it follows a more dense urban composition of more solids than voids in an urban fabric. The field of urban collision between these two contrasting urban forms is a hybrid of both.
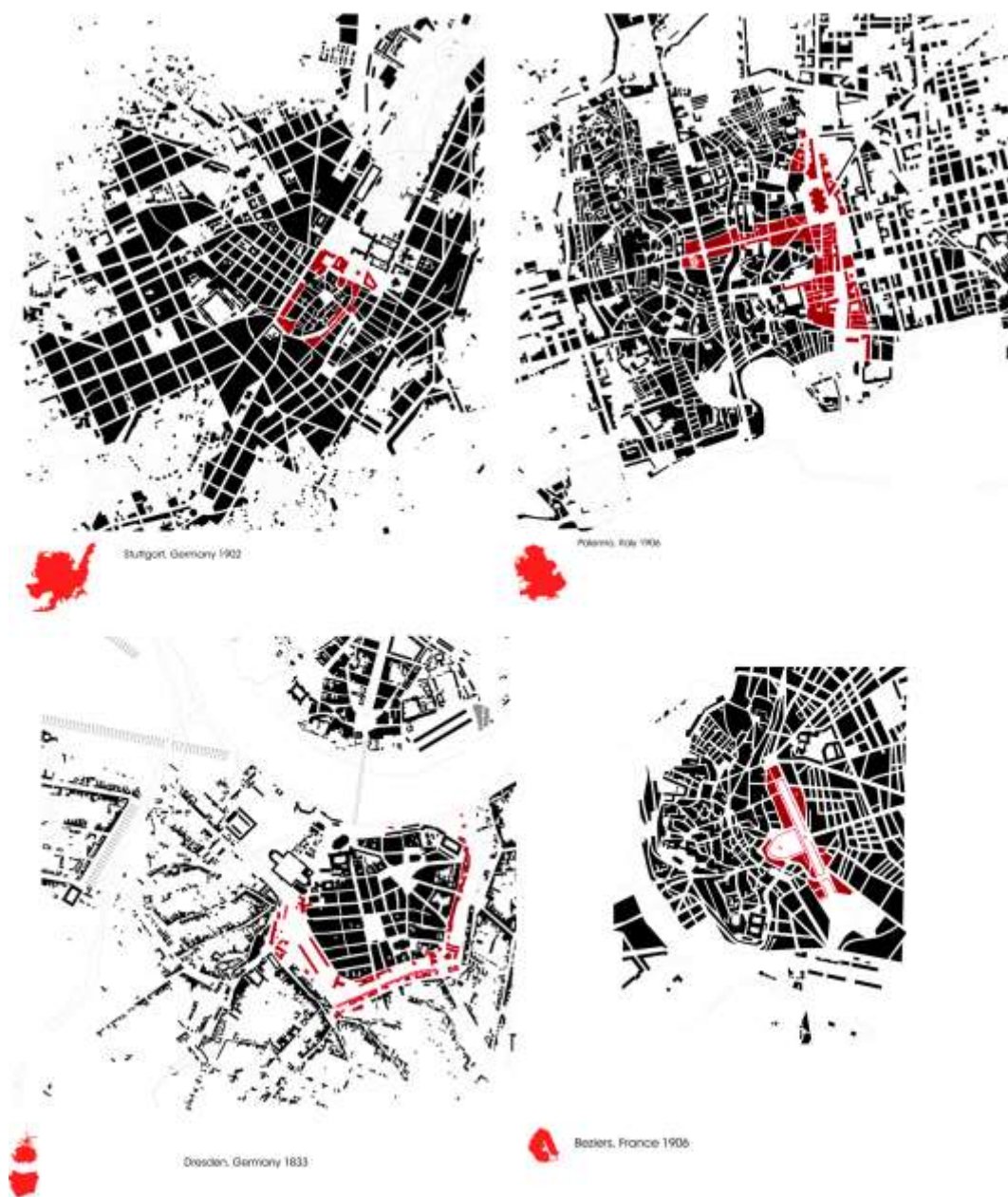
Figure 3.14. Figure-Ground mapping and identification through grain and pattern of the field of urban collision. (Source: Charles P Grave, 2009)

3.2.5.1.   The grain of the urban fabric:

Urban fabric is the physical form of towns and cities. Urban grain refers to the street pattern, block sizes and building pattern within the urban fabric and describes the interrelation between these elements. Urban designers use the term "urban grain" to describe the cellular structure of an urban environment. The balance of open spaces to the built form and the nature of subdividing an area into smaller blocks.
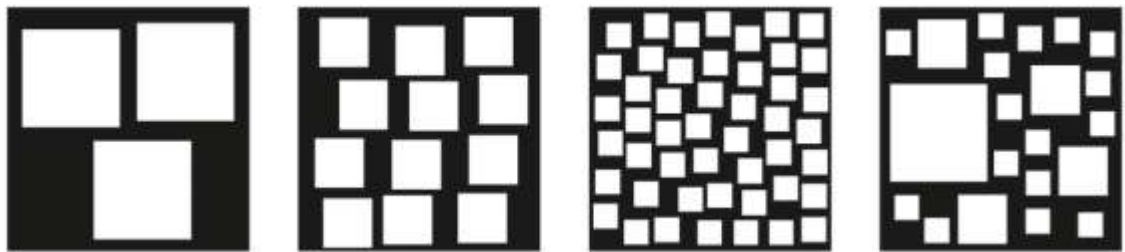
Figure 3.15. Four types of spatial patterns of different compositional grain: from left to right, coarse-grain with large units; coarse-grain with mid-size unit monotony; fine-grain with small-size units (Source: Çalişkan, 2017)

Urban designers refer to fine grain and coarse grain to describe the size of the smallest units, or cells, in the urban organism. Coarse or fine grain can describe phenomena in the built environment at many different scales, from the size of city blocks to the distribution of elements on an individual building's façade. For example a fine grain will constitute a network of small or detailed streetscape. The functions in a fine grain are widely distributed without forming any large clusters. Whereas the coarse grain of urban tissue the functions and urban blocks are usually clustered and segregated much like modernist urban planning approach. Architecture has expressed this relationship in the form of the figure ground drawing.

3.2.5.2.   The urban composition and layout:

It refers to the arrangement and organization of different urban blocks and their functions. The urban composition layouts can be radial, linear, organic, gridiron, geometric. Etc. the urban layout. An urban composition represents a form of the city in which it gets a formal order, so that the shape of any urban ensemble is not linked to a random phenomenon, but to an intervention mastered and understood as such. For the city, the urban composition represents what the architectural composition represents for a building. This concept regarding the composition is common both to the architecture and to the city. The main property of the composition is that it transforms a possibly dispersed ensemble into a whole, resolving the contradictions that arise when the requirements and conditions of the project are numerous. Spatial forms and urban compositions are built over time, longer than that of architectural composition.
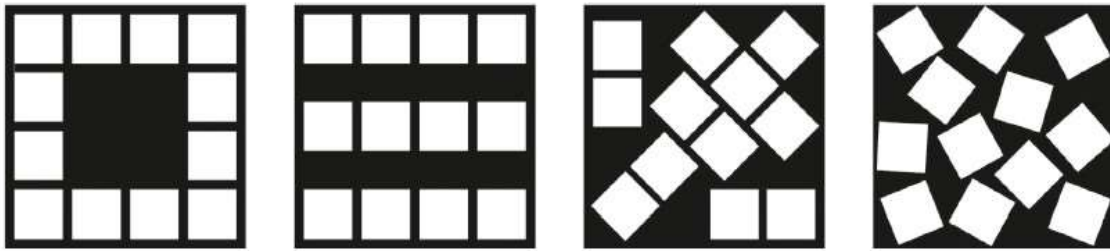
Figure 3.16. Urban pattern- the composition of urban tissue. (Source : Çalişkan, 2017)

3.3. The interpretation of the space of collision through case studies:

In order to analyze the morphological characteristics and devising the typologies to differentiate the urban collision space; the main morphological aspects selected for this thesis is; ***the collision in terms of Figure- ground mapping. The built form recognizes the space as "conjunction of two contrasting configurations***; that are the modernist planned and the traditional network setting. The figure- ground

analysis elaborates this relation between the build space and the open space and gives a holistic perspective of the urban fabric- revealing the coherent relationship between the modernist planning and the traditional urban fabric in the urban collision. It views the city as system of solid and voids and help in analysis of urban space in terms of scale, density and interior exterior relationship.

The cases from the previous chapter are selected from early modern Edinburgh, Athens, Vienna and Barcelona are analyzed and from the modern period the case study of Cairo and its field of urban collision is analyzed in detail.

3.3.1. Figure-ground collision in case of new urban town- Edinburgh:

The analysis for the case of Edinburgh figure ground map highlights the old and the new urban settlement seen in fig.3.17; the first thing that can be observed is the scale. The scale is completely changed by through spotting the size of the grain for the modern urban fabric and the traditional. The new town's blocks are much larger urban grain size while the traditional city is medium to fine grains. This finesse of the urban grain represents the congested quality of the old town which has been balanced in the new town planning, through generous green spaces on both sides of the new plan seen as voids. The block orientation has been kept the same respecting the traditional existing urban structure. The new town was built on a modernist vision keeping the facades fixed propositions and geometrically aligned to the street for devolving a picturesque face. The urban blocks of the old settlement of Edinburgh were thin and six to eight stories high; connected by narrow streets extending from a single main road of the city called the high street. The new urban blocks in the new town planned by Craig were kept three stories and were wider; they linked to the main street and opened green courtyard spaces in center. However connections from the old to the new have been kept to bare minimum.

Figure 3.17 The figure- ground mapping comparison of new town of Edinburgh and the old traditional fabric of Edinburgh. (Source: base map by Graves, 2009. Edited by Author)

The space of collision marked as red in fig3.17 serves the function of train station, public buildings, museums and record hall. The connection between the modern and the traditional in case of Edinburgh has been controlled by keeping the connecting link limited to two to three sides and due to the neutral public use functions assignment to the block in the area of urban collision the space becomes

a point of intermediation. The large void present in-between is due to the topography constraints as well as due to Edinburgh castle green area. This serves as a natural buffer between the modern planning and the traditional urban fabric.

3.3.2. The figure- ground collision in case of Athens:

The Master plan of Athens aimed at preserving the old city fabric and divided the new urban planning's main axis as isosceles triangle around which rectangular plots are set. Minor adjustments were made to the curve of the traditional urban fabric. The space of urban collision between the new urban planning and the old fabric of Athens penetrates deep into the traditional urban fabric. It is due to the fact that the traditional urban fabric has been opened up by following the new axis defined by the modern planning. It can be an advantage for the traditional urban fabric that during the new planning it was not left behind but in introducing new axis into the old city the urban fabric although was well integrated to the new planning but lost the originality of the old city .

Buildings around this new axis have been modified and rebuilt to implement a fixed image of the city. The area around the belt of urban collision is the important government buildings of Athens much like Vienna. But in case of Athens it also forms a focal point through extending a central axis into the traditional urban fabric making the connection between the traditional and the modern stronger. The only critique on the urban collision belt formed between the old and the new planning was the lack of open space or green urban parks. It can be noticed that the traditional urban fabric is very congested and the new master planning of Athens also didn't leave much open spaces in the plan. The shared space was proposed for public use but could have been amplified with provision of more green areas as breathing space for both the urban fabrics.

Figure 3.18. The figure- ground mapping Athens (Source: basemap Graves, 2009. Edited by Author)

3.3.3. Figure-ground collision in case of urban expansion- Vienna:

The figure ground mapping of Vienna seen in fig. 3.19, it can be observed through the solid to void ratio- the congested nature of the urban fabric. It was due to the fact that both sides; the Vienna core and the suburbs were flooded with immigrants

as Vienna became the focal point of Europe. When the inner core of Vienna is compared to the outer; it can be seen in fig.3.19 that the size of grain has been almost same as compared to the traditional urban fabric and the suburbs. The site of urban collision between the Vienna core and the suburb is the area of Ringstrasse which runs between the two.

Figure 3.19. The figure- ground mapping of Vienna- the Ringstrasse (Source: base map by Graves, 2009. Edited by Author)

The Ringstrasse served its best function for opening up the congested urban fabric by incorporating the voids in shape of urban green space. The Ringstrasse was designed to be a creational area for the elites of Vienna. It mostly contained voids in the form of gardens and important public building like museums as well as the government office like the parliament building, mint, museum and park is situated around it. It is worth noticing the thick urban grain in the area of Ringstrasse which represents the public buildings, governmental offices. This further amplifies the monumental status of the Ringstrasse when compared to the rest of the size of urban grain which is almost same for the entire urban fabric of Vienna.

The porous nature of the Ringstrasse can be observed in fig. 3.19. The pathways from the central core pass straight from Ringstrasse to the then suburbs. This indicates the quality of urban collision space not a rigid boarder but a porous band encapsulating the traditional urban core of Vienna.

3.3.4. Figure-ground collision in case of grid extension-Barcelona:

The figure ground mapping of Barcelona reveals the relationship of the traditional urban fabric and the new urban planning constituting the grid extension. It is worth noticing in the figure- ground analysis fig 3.20, which although Cerda proposed rigid blocks on rigid grid but the urban planner was sensitive towards the traditional urban fabric. The urban collision blocks marked as red around the old town are altered in their shape to adjust and not to hamper the old preexisting urban fabric. These blocks serve as mediating agents between the modern planning and the traditional urban fabric, they create an in-between urban language. The urban collision space creates a hybrid boarder conditions between the old existing urban fabric and the new modern designed.

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Figure 3.20. The figure- ground mapping of Barcelona (Source: base map by Graves, 2009. Edited by Author)

As shown in fig.3.20. Cerda also worked on opening up the congested traditional urban fabric of old town of Barcelona and linking it with the modern planning. A central main artery passes through the traditional core of the city along which major historical buildings; monuments are located without disrupting the

traditional urban fabric. The central axis of the traditional urban fabric and the new planning are aligned with one another and Central Square has been created to make it a focal point. This was a major traditional urban fabric uplifting technique implemented sensitively by Cerda. The traditional urban fabric has not been blocked or encapsulated rather it was opened up and each street and pathway was connected and integrated with the new planning of Cerda. Unlike the pure modernist urban planning approach; Cerda designed the grid to work as an extension to the old city's core not to cut off the old urban fabric rather becomes a part of it.

While connecting the traditional urban fabric to the new planning, the urban grain size of the new planning has been derived from the traditional urban fabric. The scale is not much different from the old urban fabric. The solid to void ratio in the traditional urban fabric can be observed to be congested in nature whereas the solid to void ratio has been standardized in the new planning by Cerda as per his functionalist concept of fresh air, sunlight and equal facilities for all. The urban collision band around the traditional urban fabric of Barcelona is a unique example of integrated modern planning with the traditional urban fabric.

3.3.5. The figure- ground collision in case of Cairo:

The first civilization of Cairo is believed to be started around BC 30, with the fortress of Babylon and it is known today as "Old Cairo" in the southern part of the city. Modern urban growth in Cairo dates back to 1830s, French occupied Egypt. Cairo comprises of two ports and a citadel which functioned as the government seat in the past. It was during the reign of Ismail (1863–79) that the city was radically transformed. The new urban planning of Cairo was inspired by Haussmann's renovation of Paris. This resulted in a European-style city to the west of the medieval core. It focused on grid-iron streets. The modernized urban master plan of Cairo was formulated in 1956. This plan suggested six communities which

were industrial towns in nature, Hilwan new town and in the south and Nasr City are already built. The plan that provided the directions for today's Cairo was the master plan of 1980 assisted by France. The most noticeable feature is the ring road that encircles the urban center. This ring road design not only acts as the major transportation artery but also intended to demarcate the outer boundary for urbanization. This Master Plan proposed 5 Urban Corridors that connects Cairo with external cities. . The western part is reserved as industrial zone and has already developed. The master plan also proposed sixteen homogeneous communities in Cairo due to the spike in urban population the homogeneous communities were arranged in the form of demarcated sectors around the radial road network. The incremental urban growth over the period of 2000year makes Cairo an interesting study as each area corresponds to a specific time period in the history.

Cairo followed the footsteps of Paris as a regeneration of traditional urban fabric. The incremental growth of Cairo over the past years added pieces to the urban fabric. This made the space of urban collision to be scattered in the urban fabric sometimes between the modernist and the traditional sometimes in the traditional alone for creating open new space and landmarks. The traditional congested urban fabric of Cairo was revitalized through introducing new urban patching into the old fabric. It can be notices in fig. 3.20 the space of urban collision marked as red also acts as focal points for the urban tissue through introducing the star-shaped boulevards. These spaces of urban collision acted as parks, universities, governmental buildings and market places for public use placed at key locations to stand out in the urban fabric of Cairo. This was an smart strategy without bring much changes into the traditional urban fabric.
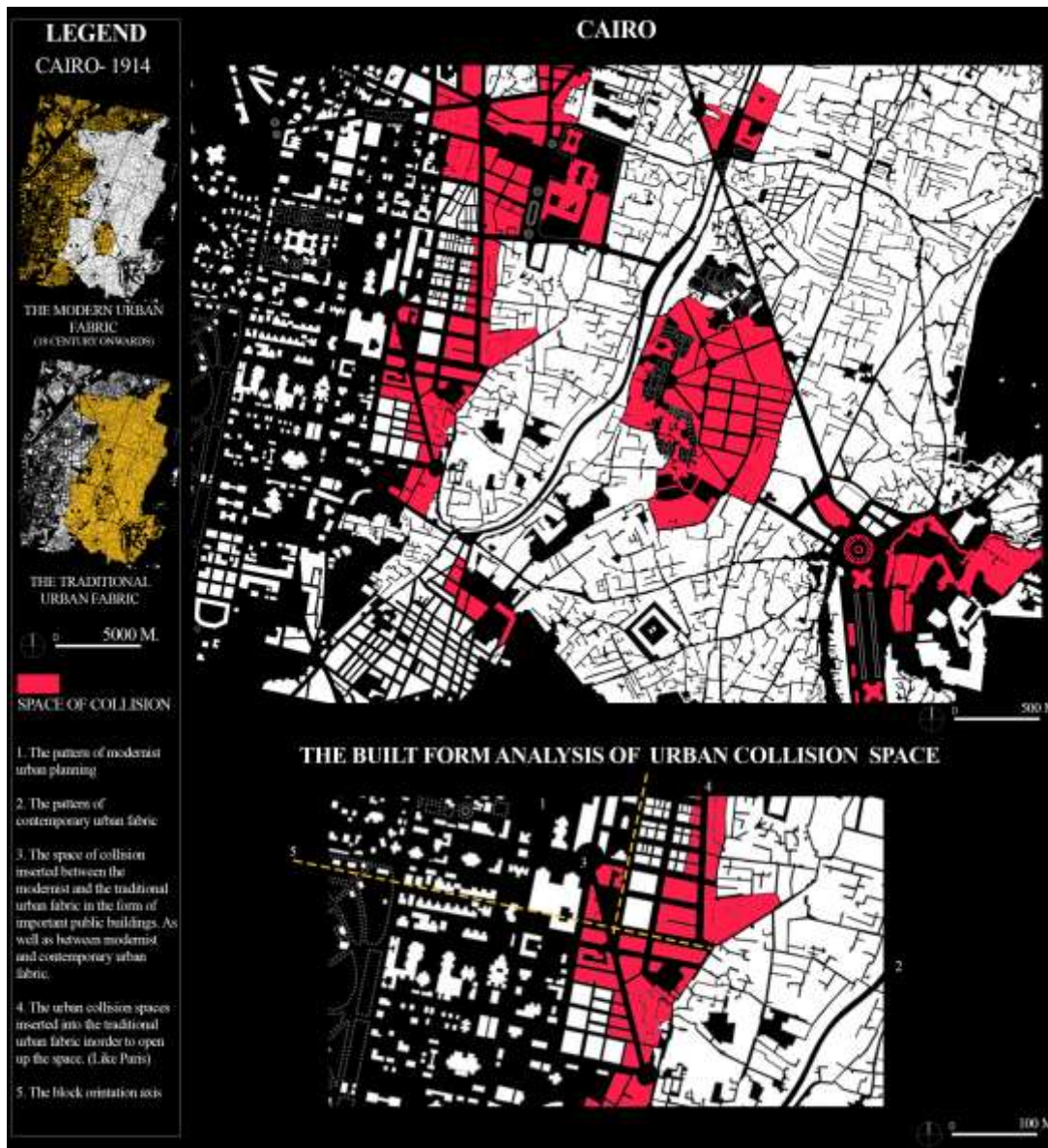
Figure 3.21. The figure- ground mapping Cairo (Source: basemap Graves, 2009. Edited by Author)

3.4. Concluding remarks:

Spatial quality, in general, is the product of complex interactions among the components of an urban form (Çalışkan, et, al. 2017, p.124). The quality of urban space depends on the quality of morphological interactions within the urban fabric.

This relational perspective leads us to suggest that the notion of coherence is the most basic condition of spatial quality within the urban fabric. (ibid, 2017). This biological understanding of coherence is mainly conditioned by the actual functional efficiency of organic systems in which all the organs of the body systematically contribute to the wellbeing of the whole (Marshall, 2009, p. 132). The shared space between the two different urban orders become important due to its function of creating coherency between the two contrasting urban forms. Thus, the conditions of differentiation of urban collision space are based on the function it performs while integrating the urban fabrics.

THE PRIMARY FUNCTIONS OF THE SPACE OF URBAN COLLISION IN BUILT FORM

INTER-PENETRATION   ADJACENCY   SCATTERING & PATCHED   INTERMEDIATING
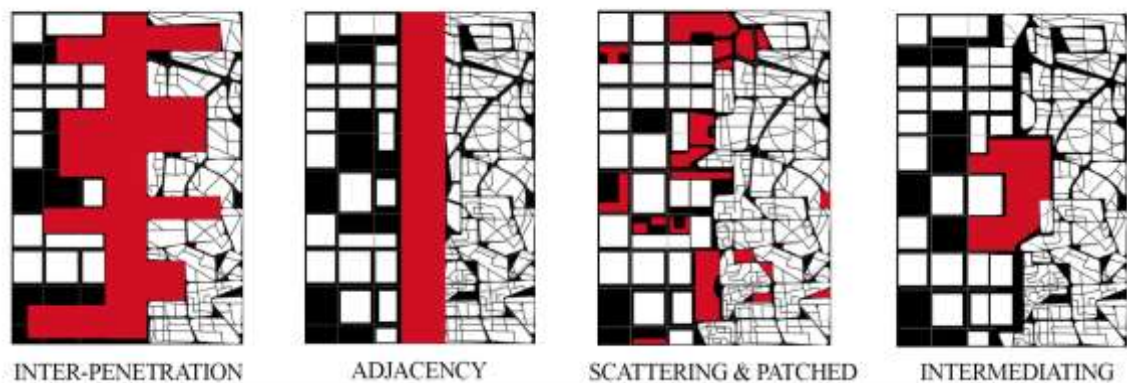
Figure 3.22. The key functions of the space of urban collision while integrating the traditional and the modernist urban fabric. (Source: Caliskan, 2017, revisited and edited by Author)

The typologies of the space of urban collision are formulated from the critical literature reviews, an in-depth understanding of the historical case studies conducted in chapter 2 as well as the urban design workshop led by Caliskan et al. in 2017. The design operations of the urban collision space ensure a coherent relational and integrative spatial pattern between the modernist and the traditional urban fabric. The five main functions of the shared space of urban collision have been observed between the modernist and the traditional urban fabric.

The first typology of the space of urban collision is the *inter-penetration* function. This refers to the extension of the boundary surfaces to blur the split-up line and increase the connection effect between the separate areas for desired coherence as argued by Salingaros (2000). The second function of the space of urban collision is *Adjacency* this represents a belt of hybrid blocks or a typology of its own running along the shared boundaries of the traditional and the modernist urban fabric. The uniformity of the space of collision the adjacency quality although has one drawback which is that it limits the old traditional urban fabric. The collision band encapsulates and controls the traditional fabric to expand any further. But in other terms it also preserves the old historical fabric. *Scattering and patching,* on another hand, denotes the spread of urban collision elements (i.e. buildings, ensembles) distributed into both the adjacent. The last typology of urban collision is the *intermediating* type that means allowing some amalgam or fusion of both the urban fabrics acting as mediating interface. This is usually present as a single focal point between the modernist and the traditional urban fabric.

These conditions of differentiation of urban collision in an actual urban setting can be observed in singularity as well as in combinations. The mapping of the historical collision cases of urban planning revealed that the collision space between the modernist urban planning and the traditional urban fabric performs the five functions. These five functions can also be named as the design operations of the space of urban collision and can be observed in the following case studies fig. 3.23.
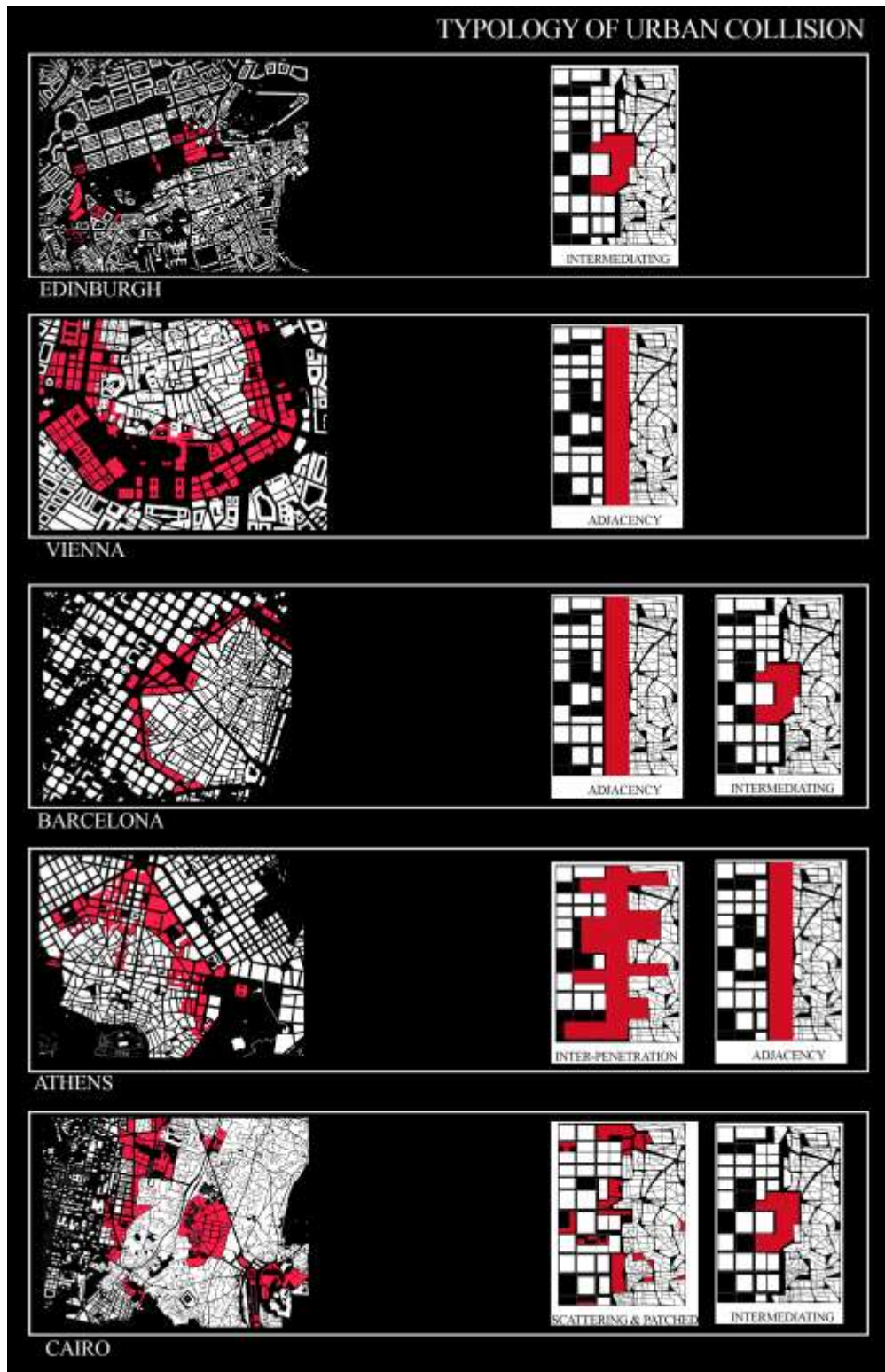
Figure 3.23. The figure- ground mapping along with the design operation of the space of urban collision. (Source: Edited by Author)

Edinburgh is a case of *intermediating* along with *distanced* typology of urban collision space. The urban collision marked as red, in fig3.23 the form is a hybrid built form consisting of public use buildings and metro train station whereas ample green space has been left between and maintained as green area between the old town and the new urban planning. Intermediating function of urban collision space form a connection between the modern and the traditional urban fabric by incorporating elements or urban form features borrowed from the two diverse orders. It forms a hybrid of the urban orders and the mediating point becomes a focal point.

The urban collision in case of Vienna represents the coupling of *adjacency* along with *distanced* function of the space of urban collision. The incorporation of deliberately designed voids and the thick boarder running along the traditional urban fabric denotes the unique character of urban collision in Vienna. The Adjacency property of urban collision denotes the strict formation of a band in-between the modern and the traditional urban fabric.

The urban collision of Barcelona is an ideal example of the space of urban collision functioning as *adjacency* and *intermediating*. The hybrid continuum of collision space runs at the shared boundaries of both modernist new urban planning and traditional urban fabric. The rigid modern blocks as design by Cerda are modified and altered to form a band around the traditional urban fabric of Barcelona. The blocks present in the urban collision space form a typology of their own as they don't belong to the modern urban fabric or to the traditional city rather they exhibit their own unique urban form which.

The case of Athens represent the unique case of urban collision typology of *inters-penetration* and Adjacency. The urban tissue of traditional urban fabric and the modernist urban planning is penetrated by the space of collision. The collision space acts like a band around the traditional urban fabric and the modernist. In case

of Athens it can be observed that the space of collision also acts as a mediator for changing the urban pattern orientation.

The last case of Cairo, the space of urban collision performs the function of *scattering* and *intermediating.* The space of urban collision are scattered and well distributed in the traditional urban fabric. The aim was to open up the traditional congested city. The urban collision space serves as public buildings and parks. The intermediating nature of urban collision space not only helps connects the traditional urban fabric to the modern but also creates focal points in the congested traditional urban fabric.

The space of urban collision and its four main typologies based on functionality not only help to access the quality of urban collision but also access the performance of the space in terms of those functions. These carefully selected examples of Vienna, Barcelona, Athens, Edinburgh and Cairo are model case works of how urban collision spaces when are well integrated into the urban fabric can perform; bring the modern and the traditional urban fabric together for coexistence. The above cases have the space of urban collision in their ideal form and performance as designed by their respective urban designer and established a set dialogue between the modern and the traditional urban fabric. The intention of the planners are revealed and the relationship they kept with the existing traditional urban fabric is highlighted by the analysis of the space of urban collision. For the next chapter the urban collision space of Islamabad will be discussed.

CHAPTER 4

THE URBAN COLLISION IN CASE OF ISLAMABAD AND RAWALPINDI

Chapter 4 is divided into two parts. The first part of this chapter starts with the introduction to the context-*Islamabad and Rawalpindi*, *the twin cities of Pakistan*; investigating in detail the collision between the modernist urban planning and the preexisting traditional urban fabric. This part sheds light on the background narrative of the political situation of Pakistan at the time of creation of the new capital city and further discusses the design legacy of the Greek architect and planner Constantinos Apostolou Doxiadis. Both of these are crucial to understand the background narrative of creation of the new capital. Doxiadis' core concepts and vision for the master plan of Islamabad and Rawalpindi are described in detail. It is followed by a comprehensive exploration of what parts of the original master plan by Doxiadis were implemented and what design portions and concepts of the grand plan for the twin cities were overlooked. These factors along with other issue became the root causes of conflict in the formation of urban collision between Islamabad and Rawalpindi.

The second part consists of detailed analysis of the collision space between the modernist Islamabad and the traditional Rawalpindi with the help of chronological mapping the origin and the fragmentary urban quality of the collision space will be assessed. The urban collision is also discussed from the point of view of Doxiadis

the original master planner of Islamabad and Rawalpindi. The typology of urban collision in case of Islamabad and Rawalpindi will be discussed to establish a detailed understanding of the collision space between the twin cities. A critical analysis will be made regarding the effects of urban collision in case of Islamabad and Rawalpindi. This part will highlight the formation of urban collision in time through progressive mapping technique and its implications.

4.1. Introduction to the context-Pakistan:

Situated in South Asia and blessed with seasons and topographies as diverse as its culture, folks and languages. From the Karakoram mountain ranges, down to the fertile Indus River plain and at the ending point to southward dry Cholistan dessert and finally into the Arabian Sea. Pakistan has been blessed with all varieties as shown in fig.4. Pakistan has had been the site of several ancient civilizations, including the 8,500 year old Neolithic site of the Indus Valley Civilization of the Bronze Age, the most widespread of the civilizations of the Old World. The territory that encompasses the modern state of Pakistan was the land of multiple empires and dynasties, including of Alexander the Great; the Umayyad Caliphate, the Hindu Shahi, the Ghaznavids, and the very recent the Delhi Sultanate, the Mughals in 1800, the Sikh Empire, and most recently, the British Indian Empire from 1858. Till Pakistan got its independence in 1947.

As the repercussion of the Second World War and the world saw a boost of decolonization, British government left in 1947. The subcontinent was partitioned into two states of India and Pakistan. Decolonization greatly affected the plan of capitals cities, their organization and structure and lead to creation of; *"entirely new cities after 1960"* (Vale, 2006, p. 26). The newly independent nations took the urban planning of their capital city as an opportunity to showcase their rule and power both nationally and internationally. As the capital city was the sitting place

of the government; the newly established governments needed to boast strengthen and power to the neighboring nations for security concerns. Thus, elaborated monumentally designed new capital cities became the trend as well as the need of the time. (Lefebvre, 1991)

Figure.4. The physical feature map of Pakistan showing the land topographic conditions and location of Islamabad and Karachi. (Source: URL 6)

In the twentieth century as the World order changed radically, which resulted in the proliferation of new capital cities, mostly due to the split of old empires (Austria-Hungary and the Ottoman Empire at the end of the Second World War, the Soviet Union in 1991. Political leaders pursued to build grand monumental capitals cities. Similarly in the subcontinent due to its division into two Pakistan and India, this display of power became more competitive in nature. In many Asian capitals the Western design of central axis of power gained importance. Daschle (2013) in his book on capitals discusses how the newly developed states founded in South gave architectural and urban form their ideologies. Some of the most prominent states were, Fatehpur Sikri by Emperor Akbar (1569), Jaipur by the Maharaja of Jaipur

(1727) and New Delhi by the British (1911). The latest addition from this context was Chandigarh in India (1949). This new development of provincial capital states projected India as an advance modern nation as the new capital Chandigarh was a marvel designed by the father of modernism Le Corbusier. In the limelight of these new provincial stated rest remained as historic examples of a sovereign nature. The newly independent state of Pakistan also endeavored to achieve the same through setting the foundation stone of its new capital city Islamabad in 1960.

4.1.1. The necessity of the new capital city for Pakistan 1960:

Right after the independent of Pakistan, Karachi became the capital city in 1947 as it was a small port city that conducted country's exports and imports. Karachi which was initially inhabited by 400,000 people till the time of partition expanded overnight, into a metropolis of millions. This resulted in a large flux of immigrants and refugees into the capital of Pakistan- Karachi. This hinted to several problems for the seat of governments to be closely associated with immigrants and lead to security issues. Due to its overpopulation the task of creating a functional modern space solely dedicated to the government functions became the top concern for the government officials of that time. The first plan was created by Lt. Col. G. Swayne Thomas who was Australian town planner and worked closely with the Sindh government as a consultant. The plan proposed an *administrative satellite city* located twenty to thirty miles east of the existing city of Karachi. The plan proposed a city with residential areas and official buildings for the civil servants, with a close resemblance to the colonial period. The key objection raised for this plan was the isolation of the government from the rest of the population of Capital city Karachi. So in 1952 a second plan was proposed and this time the consultant was a Swedish firm by Merz Rendel Vatten. The plan proposed the federal government district in the middle of Karachi, as an extension to an existing business axis.

The Central Administrative Area

University Area
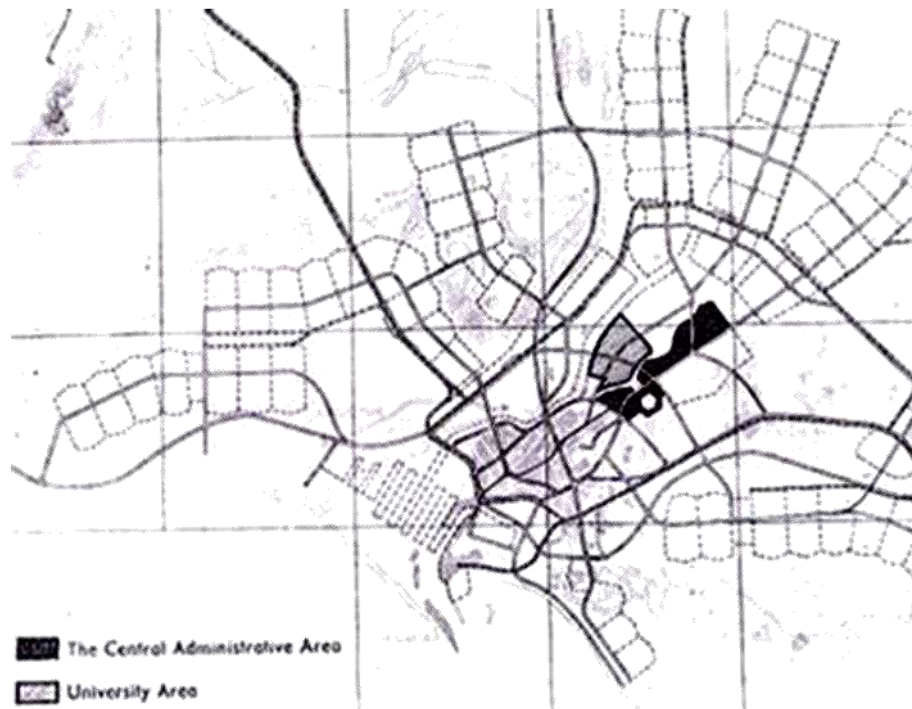
Figure.4.1 Merz Rendel Vatten proposal for the capital city of Karachi (Source: Greater Karachi Plan 1952, report by Ostnas & Lindstrom)

The report of the plan stated that, the concept behind the Merz's plan for Karachi was to develop a central shared axis that connects the newly built capital with the existing businesses all arranged around common core. (Ostnas & Lindstrom, 1967, p. 2). The finger-shaped neighborhoods were reserved for the residential use and were distributed throughout the city for the government servants. The finger like shape denoted the distribution of the residential area of government officials spreading through the city of Karachi while being connected to the core of the capital. As fig 4.1 highlighted the capital, residential districts and the university. The universities were given a spate prime location as they denote the advancement of science and technology. The plan by Merz R. Vatten could not get approved and received criticism on the bases of its extravagant central plaza, a single central core that would be inefficient in case of high influx of population and most importantly the costly infrastructure that spread into the city of Karachi..

4.1.2. The Political situation at the time of creation of new capital city:

It is important to give a brief account of the political situation of Pakistan at the time of the conceptualization and creation of the new capital city. With the first Prime Minister Liaquat Ali khan assassinated in 1951, Pakistan entered into turbulent political conditions. The assassinations of the prime minister lead to series of contentious politics. Amidst this turmoil, General Ayub Khan came into power on 7 October 1958 which was followed by the first military coup in Pakistan.

Under the dictatorship of General Ayub Khan, like much other advancement in development of the country's structure, the foremost concern of the leader was urban reconstruction of the country (Daechsel, 2015, p.2). Within weeks after the coup d'état in October 1958, the administration was ordered to clear the metropolis Karachi of hundreds of thousands of slum dwellers and resettle them in the satellite town of Korangi. The social projects of this time were backed by UN and exemplary housing development like Orangi pilot project was completed. The exemplary slum clearance and aspiring urban reconstruction projects gave Pakistan worldwide fame. It was indeed an ambitious display of executive power and projects like this earned Ayub a privileged place in history. Muzaffar (2012) states that the legitimacy of Ayub's government depended on the settling of the refugees and modernization and the only tool that paved this channel of authority, custodianship and centralized power was architecture and urban planning.

4.1.3. The new capital city of Pakistan:

It was soon after these developments that General Ayub Khan by presenting his concerns for the capital city questioned the placement of the capital in Karachi as it began to over populate with business center, industrial hub and the coastal port.

Internationally, this was the same time when many new countries repositioned their capitals city as a symbol to consolidate power in the territory. This spatial change in Foucauldian terms was viewed as to preserve and display authority of the sovereign power. Schatz (2003) highlights the relocations of capital cities in post-colonial context as building a narrative for the new modern nation. In 1959 General Ayub Khan formed a committee named as 'Federal Capital Commission' (FCC) to recommend another location for the capital. The committee comprised of ten sub-committees with almost one hundred Pakistani specialists from the departments of economics, statistics, planning and development. FCC was chaired by General Yahya Khan. C. A. Doxiadis in the recent years was working on social housing projects in Pakistan as a consultant and over observer from the UN. The committee and General Ayub Khan were familiar with his work. In March 1959 C. A. Doxiadis was appointed by the president as a consultant firm of FCC to investigate the problem further, from a professional angle and suggest the best suited site for the new capital for Pakistan.

4.1.4. The principals determining the new location of the capital city:

Many features were considered while shifting the capital's position; factors like location, security, proximity and productiveness of land, neighboring areas, all played a vital role in deciding the site of the new capital city. The main motivation behind shifting the capital city from Karachi to a completely new developed city for the specific purpose of serving as a capital was not just based on merely geographic concerns of the site; the factors were rather deep rooted. As Pakistan was facing political hurdles and security concerns in its initial days, to keep a strong hold on the political realm *Pakistan needed a space specifically designed to function as a capital city which Karachi being a traditional city was not able to fulfill.* CDA Archives Islamabad has preserved the original report submitted by the FFC (1959) to the Pakistan's government which clearly mentions *Karachi as*

'unplanned and grotesque' and due to several factors like congestion and overpopulation it couldn't be converted to a city of 'aesthetic beauty'.
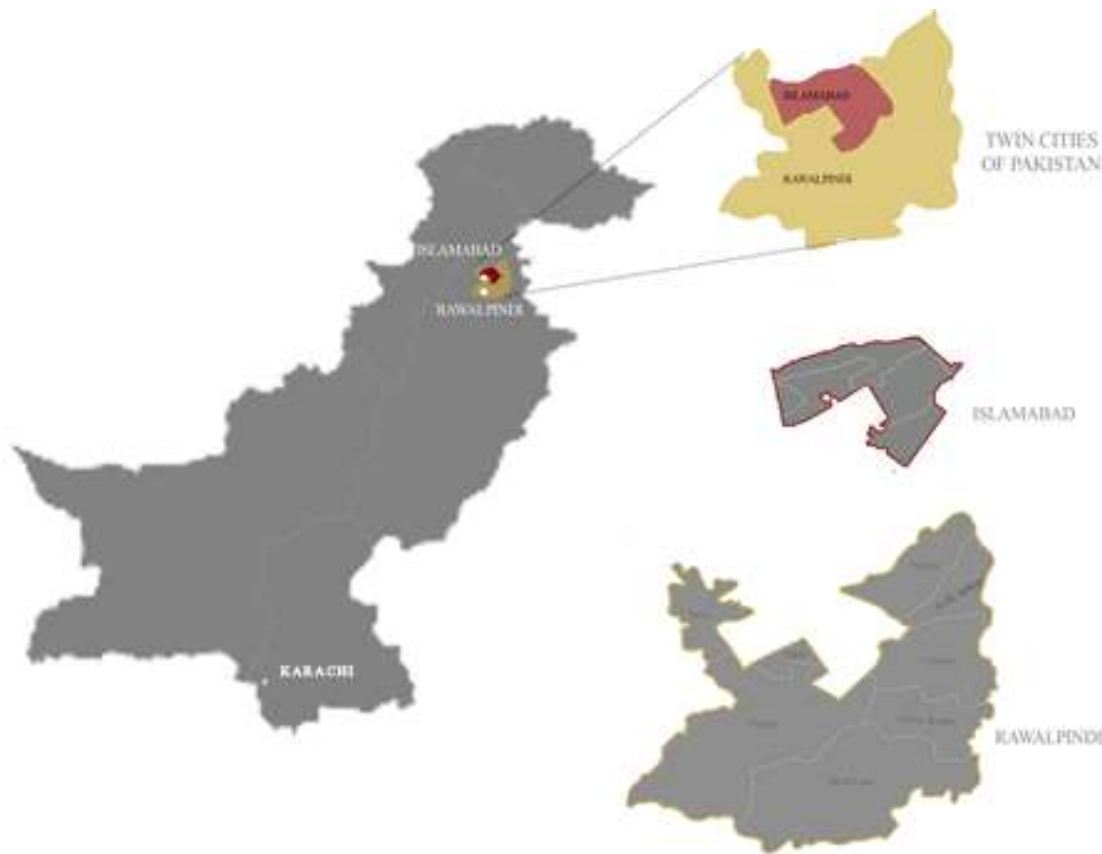
Figure.4.2 The location of Islamabad, Rawalpindi and Karachi on the map of Pakistan. (Source: Google maps edited by Author)

Doxiadis after careful considerations of all the parameters decided upon the new location on February 24, 1960 came up with the site of the new Capital city of Pakistan and the FFC agreed upon the name of the new capital - ISLAMABAD meaning the city of Islam (Mahsud, 2006, p.250). Pakistan wanted to keep the capital city in the center for defense purposes as Karachi the port city was lacking the defense boundaries as well as the army headquarter. The new location of the capital city Islamabad was 20km apart from the general headquarter of Army. Another important reason for developing from scratch a modernist capital city was;

Pakistan wanted to enter in the race of new capital city development for a showoff power as India went for Chandigarh, Brasilia-Brazil, Ankara-Turkey and many other capital cities in the same timeline were all built from scratch in limited time period. This indeed proved fruitful for Pakistan to enter international limelight; as Islamabad was considered as the *crowning achievement* (Daechsel, 2015) amidst all the urban reconstruction projects ongoing in the country. Doxiadis based the site selection process on his theory of Ekistics and utilized his ideas of ***'Dynapolis'*** and ***'Ecumenopolis'*** and envisioned a ***'city of future'***.

The selected site of Islamabad was set adjacent to the old preexisting city of Rawalpindi as shown in fig. 4.3. Rawalpindi is located on the Pothohar Plateau with the neighboring town of Taxila – a UNESCO World Heritage Site known for its ancient Buddhist heritage. Rawalpindi positioned on the Trans- Asian Highway functioned as an important traditional regional center, connecting the Middle East with the Indian subcontinent a continental overland and extending further Far East. The importance of Rawalpindi in the subcontinent can be evaluated by the fact that since the time of British Raj, Rawalpindi served as the largest garrison town which was then converted to Pakistan Army headquarters of Pakistan in 1947. For centuries Rawalpindi served as an administrative center under various regimes like the Mughals, Sikhs, and the British. It was the due to the ideal location of Rawalpindi that served as defending forces at the northern frontier. By locating the new capital near Rawalpindi solved the key concerns by the President General Ayub khan who wished wish to isolate the capital from the existing urban centers of the country while keeping it close to the military center.; in order to segregate, control and capitalize the country's federal center and "legitimize his rule to a global audience" (Kalia, 2012, p. 67). The FFC original report from the CDA archives clearly mentions that the physical features around Rawalpindi helped in ***"zoning various population groups"*** and ***"while imposing natural restrictions on growth"*** (DOX-PA 8, 1959, pp. 14–20).
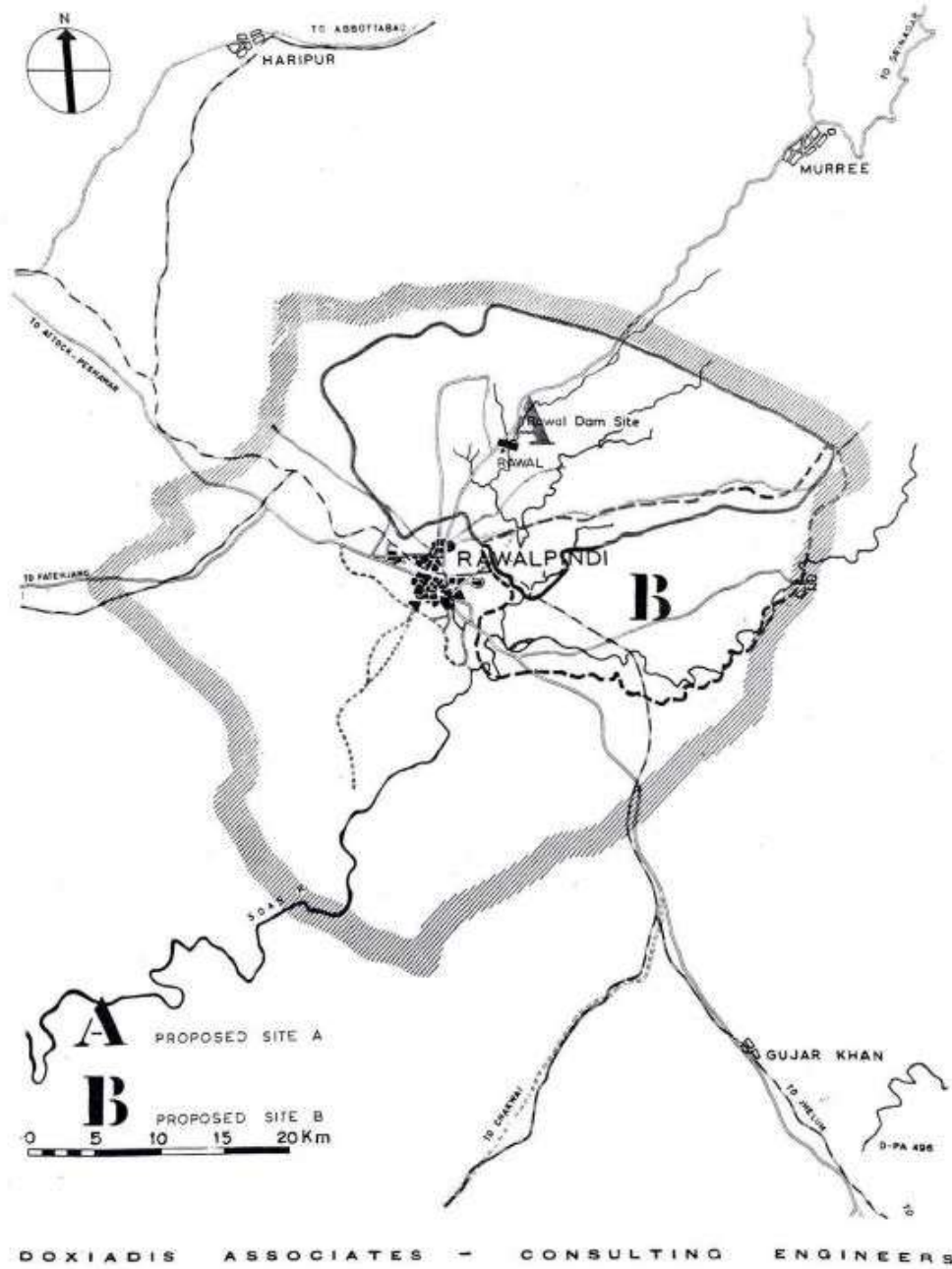
Figure.4.3 The Proposed site for the Capital (1960) (Source: CDA Achieves Islamabad, Document: DOX-PA 22; p. 23)

4.2. Constantinos Apostolou Doxiadis' design legacy and his ideas for the master plan for Islamabad:

In 1939 three articles published by Constantinos Doxiadis made him a prominent figure in the international realm of architects and urban planners. These articles were guide in terms of site planning and building forms that focused on protection and safeguard of Greek resident population from air attacks of the ongoing World War II. It was this time when the first seeds of Doxiadis concept of the city for future using the principles of the modern urbanism was sowed. In the 1960s Doxiadis' popularity was at the peak when he addressed the US Congress on the future of American cities and in more than 40 countries Doxiadis Associates was implementing large projects in housing, urban and regional development.

In 1954 the Harvard Advisory Group of experts were tasked with drafting Pakistan's First Five Year Plan and it was this time when Doxiadis first came in Pakistan as a member of the group. They carried out major slum clearance and urban rehabilitation scheme for 'Korangi Project'. This earned Doxiadis the limelight in the eyes of General Ayub Khan that he was awarded with a major grand project of the capital city of Pakistan.

The term *Ekistics,* or *"the science of human settlements,"* was coined by Doxiadis in 1942. It was a new approach that aimed at structuring an inclusive physical environment for the entire world. The term Ekistics was derived by Doxiadis from *oikos*, meaning the ancient word meaning *a house, a dwelling or habitat*. He aimed for creating a new type of human habitat which was based on economics, social sciences, political and administrative sciences technology in a coherent manner (Doxiadis, 1963, p. 96). For an Ekistical society the five elements that played a primary role were nature, man, society, shell and network. These five elements together made the two boarder of human settlement the container and the content. (Doxiadis and Papaioannou, 1974). The prime importance was given to the

functional needs of men; these include functional spaces for work and business, residential units, social needs for gatherings, interactions or privacy. The function and its interrelations through connection in an urban setting were the prime focal point in case of Ekistics. (Doxiadis, 1962, p.14). He used analogies between the natural systems and human settlements to demonstrate the similarities between the two as shown in fig. 4.4*.*
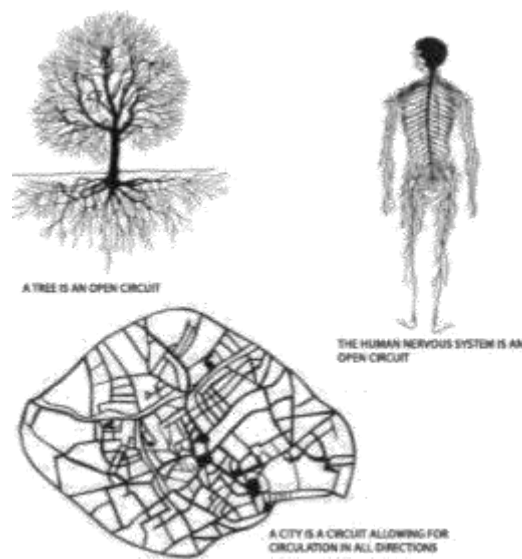
Figure.4.4 The human settlement and biological analogy. The tree and the human nervous system both are open circuit systems similar to a city allowing for circulation in all directions. (Source: Constantinos A. Doxiadis Archives, Athens)

Another important aspect of Doxiadis' urban planning theory was his recognition of cities as ever changing urban entities. ***"Settlements are processes, systems in a continuous state of flux…"*** *(Doxiadis and Papaioannou, 1974, p.7).* The idea that size and scale of the city cannot be fixed made the creation of new settlements embedded in it is the trajectory of change with time which introduced dynamic design feature in the urban planning which was uncommon for the modernist who laid control over everything in an urban setting.

4.2.1. Doxiadis' stance on preexisting urban fabric:

The city growth was the focal point in the theory of Ekistics drawn up by Doxiadis because like all modernist planners he also believed that the current human settlements no longer satisfy the current human needs. In the introduction of his book "Ekistics: an introduction to the science of human settlements" in 1968, he considered an imbalance between elements such as transportation, zoning and communication, density. Therefore to guide the future urban development Doxiadis stressed upon the science of human settlement- Ekistics. This is worthy of noticing that Doxiadis like all Modernist urban planners of his time deemed upon the existing urban fabric and was in search of utopia which Doxiadis named as Entopia. ***"A practicable concept between the unbuildable utopia and the existing dystopia"*** (Pak, 2014). Entopia was meant to function as a reality. It vowed to accommodate modernization, industrialization and developmentalism. Doxiadis urbanism was a mixture of rationality and which he termed as **'anthropocentric**
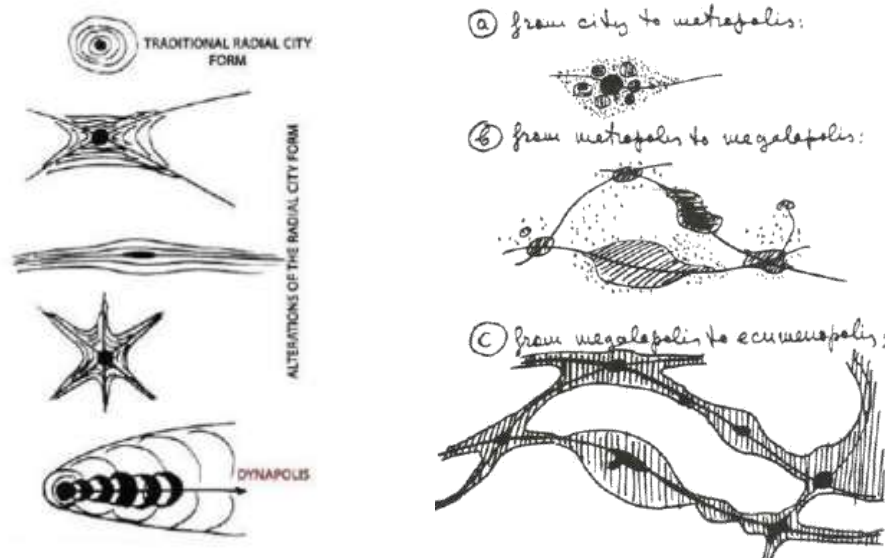
Entopia'.

Figure.4.5 The expansion of the city in the past and in the future modeled as dynapolis-Traditional city fabric exerting pressure on the core of the city results in inability to expand whereas the

Dynapolis core is designed to freely expand. (Left) Sketch by Doxiadis- Ecumenopolis (Right) (Source: CDA Archives, Islamabad DOX-PA 72)

Doxiadis proposed 'Dynapolis' a *'four-dimensional city'*. The traditional city according to Doxiadis were in practice three- dimensional whereas the city of the future based on dynapolis are four- dimensional. This ensures the free flow growth of the modern city as per the expansion of the city with time. The center of the city which previously stayed static and rather over crowded with time in case of dynapolis could multiply with time (Doxiadis, 1963, p. 6). This four dimensional city Doxiadis represented through his concept of dynapolis as shown in fig 4.5. The incremental population growth starts from city to metropolis and then shifts to mega polis and eventually leads to Ecumenopolis. *Ecumenopolis* invented in 1967 by Doxiadis to represent the idea of future urban areas that would eventually fuse and as per the urbanization and population growth trend the world will be a single continuous city. It was a conceptual framework of utopia for Doxiadis – the modern world order and in his utopia there was also no place for the traditional urban fabric of old existing towns and cities.

4.2.2. Islamabad and its relation with the preexisting urban fabric:

The elements of ekistics as proposed by Doxiadis that are *Nature, Man, Society, Shells and Networks* for designing the new settlement will be discussed with their relation to the existing urban fabric in following paragraph. In order to understand settlements we must look at their manifest spatial morphology, that is the principal spatial patterns associated with human activities and behavior. The spatial pattern is actually defined as the functional blocks and the structure system; that joins the prior to the later.

For the case of Islamabad, the first and the most important step took by Doxiadis was selecting the location of the new Capital city. For him the most reasonable solution for Pakistan that will guarantee success of the new capital was to locate

the new capital with the existing settlement. As seen in fig 4.6 (Left). Doxiadis kept an optimal distance from the preexisting settlement of Rawalpindi as it hinder the projection of the chaotic urban fabric of Rawalpindi but at the same time the *making the best use of the existing settlement and its networks for the creation of the new one."* (Doxiadis, 2005, p.119). Doxiadis envisioned the growth similar to the growth of a new animal. As the ekistics theory used analogies and drew comparison with the living organisms and human settlements. At first the new settlement will feed on the network of the old city's preexisting urban network *"guided and supplied by the parent organism"* (Doxiadis, 2005, p.119) until the
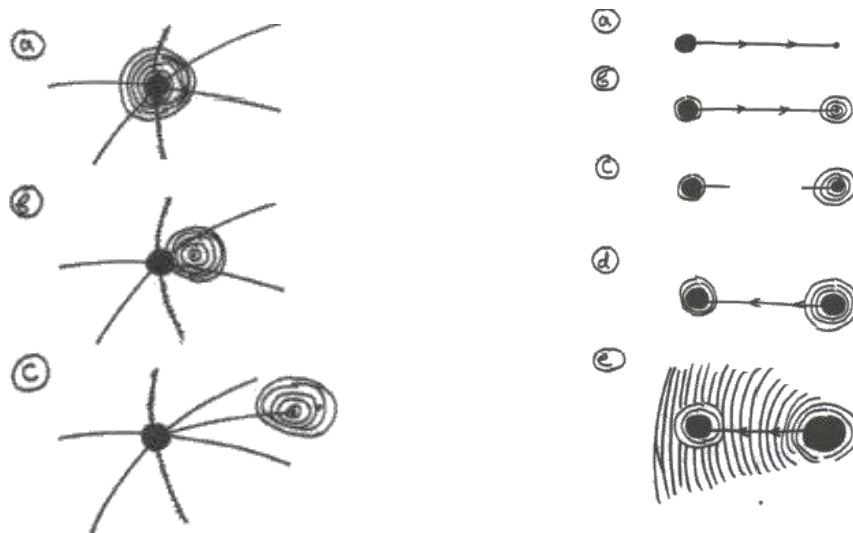
new settlement advances in power *to absorb the preexisting urban fabric of the old city's* (ibid) as seen in fig 4.6 (right).

Figure.4.6 The original sketches of Doxiadis for the creation of the new settlement around the preexisting urban fabric. (left) c. The Creation of the new settlement around the existing old with a sufficient distance. (right) (Source: Doxiadis, 2005)

As per Doxiadis ideally center grows with the least disturbance from the existing form, structure and function should allow for the stability and achieve a homogeneous and dynamic center. Two complementary principles were proposed by Doxiadis firstly the settlement should be based on the combination of

independent sectors as human communities and secondly liner growth along the predetermined axis for the center. Islamabad is a practical example of both of these principles by Doxiadis. It is worth noticing here that these aspects, like the location of the new settlement and the second is the growth, both showed the modernist urban planner's insensitive attitude towards the preexisting old urban fabric. ***The new settlement was first to feed on the old urban fabric and then later the old was to be discarded in the favor of the new urban fabric.*** Disregarding the flow of the old urban network, the urban fabric quality and the cultural importance and the values associated to it. Elaborated in fig. 4.6(right). It was Doxiadis concept of the conversion of connection between the two urban forms; the modern planned and the traditionally grown urban fabric, the former will gain more power on the latter as time passes.
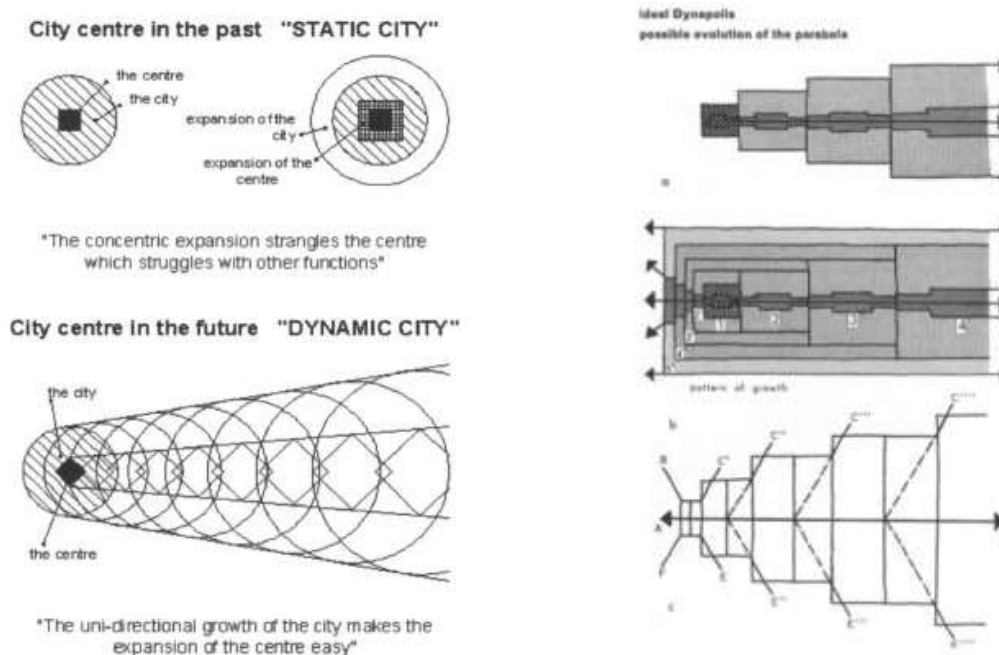

Figure 4.7 The city as dynapolis Instead of single center. 'Dynapolis' an open-ended band of centers arranged on a singular axis. (Source: CDA Archives, Islamabad report DOX-PA 72)

Doxiadis was a great planner, he before design Islamabad knew about the peripheral condition between the old preexisting urban fabric of Rawalpindi and

the modern capital Islamabad which he envisioned. He tackled the issue of peripheral destruction wisely by setting the growth of both the urban fabrics-Islamabad and Rawalpindi along a single axis. It ensured least peripheral disturbance. Secondly, Doxiadis planned the gradual shift of urban center from the old to the new in order to preserve the old heritage of the past. (Doxiadis, 1972) as shown in fig.4.7.

Doxiadis envisioned the true modern city of Islamabad to consist of *two categories: The cell and the networks"* (Doxiadis, 1972, p.239). For him the he network of the city was to be completely *mechanical and automatic*; whereas the cells to resemble the size of the past city. Islamabad was designed marvel of Doxiadis fulfilling all his design concepts that he envisioned for a modern capital city. In the following paragraphs through the elaboration of the master plan of Islamabad by Doxiadis, the above points will be clearer and further investigated by analysis of the current situation.

4.2.3. Doxiadis' Master plan for Islamabad (1959 - 1960):

For Doxiadis Rawalpindi was termed as the greatest man- made obstacle in the way of creation of the capital city Islamabad. It was conceived by Doxiadis as a metropolis of 3million inhabitants, which was based on the integration of the new capital with the existing city of Rawalpindi and a national park.

The structural frame for the master plan of Islamabad consisted of two orthogonal axes the first along the existing Grand Trunk Road and the other in accordance with the physical structure of the landscape of Margalla hills as shown in fig. 4.9. Two highways, Islamabad Highway and Murree Highway became the backbone of the Islamabad Metropolitan Area. On the second axis the capital complex of Islamabad was placed to form the dynamic nucleus and be well connected with Rawalpindi's city center. It was also placed strategically to over and gain

dominance over Rawalpindi with the shared periphery shown in red color in fig. 3.9. This axis, named as the 'expanding axes'. By adjusting the external boundaries the other two axes were placed parallel to the first two. In this setting the existing city of Rawalpindi was in the south and the new capital area towards the north and the national park in the north-east section.
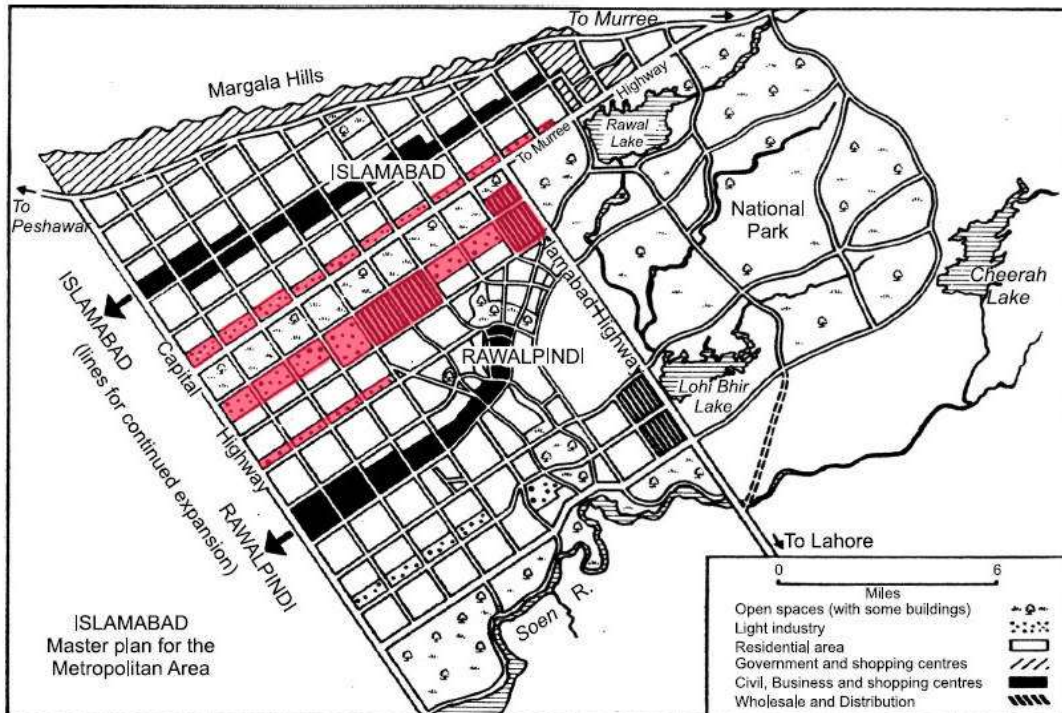
Figure 4.8 The Basic layout design layout by Doxiadis 1961 (Source: CDA Achieves Islamabad, Document: DOX-PA 127; p. 19)

The Metropolitan Area of Islamabad was defined under three distinctive areas as planned by Doxiadis: The first is area was named as *Islamabad proper*. The second part is the area was the preexisting urban fabric of Rawalpindi it was taken from the center of which is the city of Rawalpindi. And the third is *The National Park* area to function for agricultural activities and national sports center, the national university, and research institute as shown in fig. 4.10.

Doxiadis proposed expansion towards the South-West for the area of Islamabad and Rawalpindi *(*Doxiadis, 1964, p. 331). It is worth noting that the master plan

proposed by Doxiadis had three metropolitan areas and Islamabad was only one part of it. Each of these three components had specific parts to play and a distinct role in the overall functional and spatial organization of the Capital city of Islamabad. ***Serving each other in complementary ways the cities of Islamabad and Rawalpindi will develop as twin cities.*** (Doxiadis, 1970, p.332).
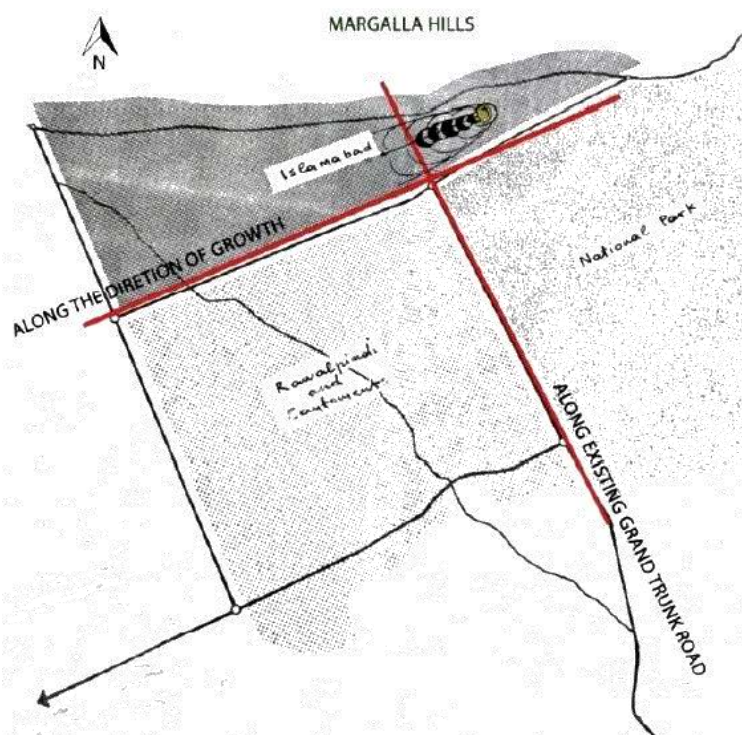
Figure 4.9 The expansion of central business district of both cities as layout by Doxiadis 1965 (Source: CDA Achieves Islamabad, Document: DOX-PA 127; p. 19)

Doxiadis' view: ***"Islamabad was to be created without any commitment to the past"*** (1965, p.6). Then why he placed it near Rawalpindi is to understand Doxiadis ambition to make Islamabad strictly as a functional capital and serve mainly administrative and cultural functions. Keeping Islamabad near Rawalpindi was to strategically derive the unnecessary functions towards the other side; as Rawalpindi was the regional center serving industrial and commercial functions. As shown in fig. 4.11; the confinement of Rawalpindi is visible within the grid of four highways.
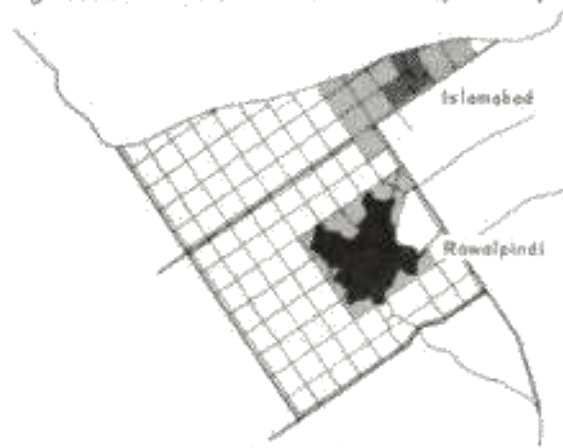
Figure.4.10. The Dynapolis growth of Islamabad and Rawalpindi. The last stage C depits Islamabad urban fabric taking over Rawalpindi. (Source: Doxiadis, 1970, p. 467

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4.2.4. The urban collision space between Islamabad and Rawalpindi as per Doxiadis master plan:
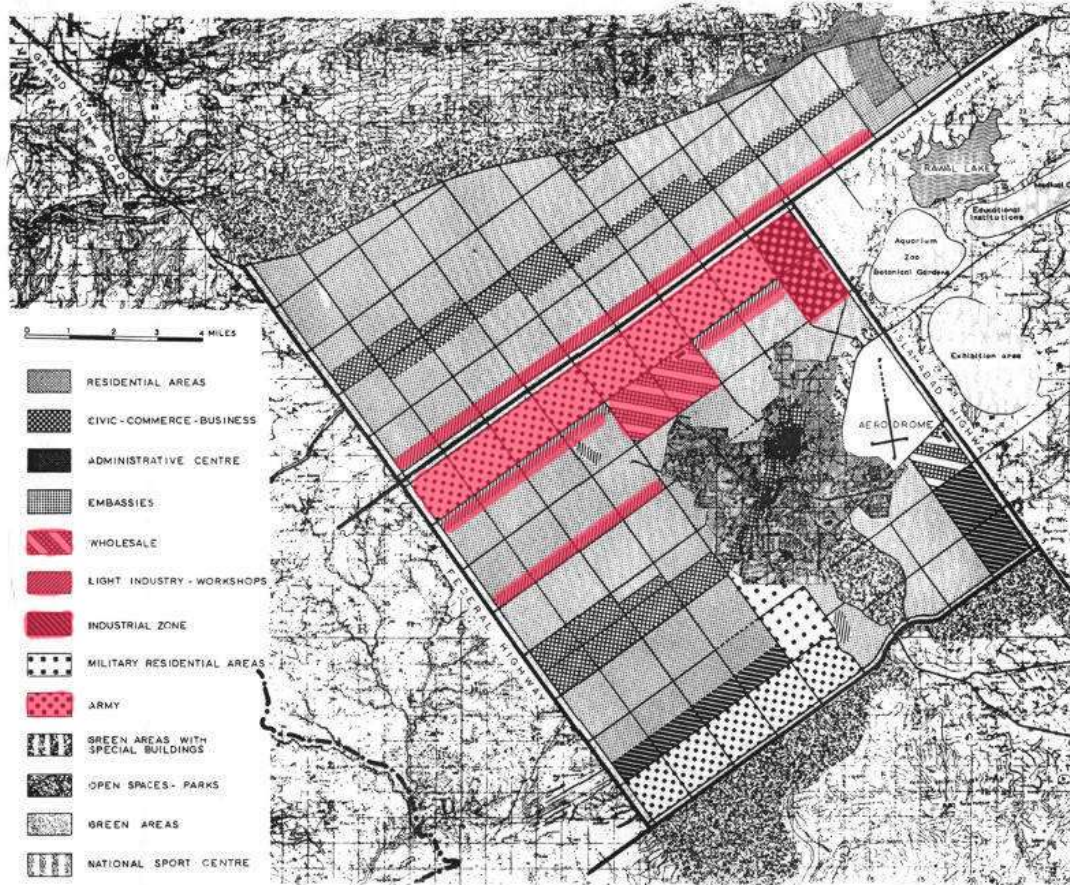
Figue.4.11. The Master plan of Islamabad. (Source: Doxiadis, 1970, p. 435)

It is worth noticing that Doxiadis conceive the idea of the capital city of Islamabad in relation to already existing urban fabric of Rawalpindi to expand together in a controlled manner. The relationship that Doxiadis planned for Islamabad and Rawalpindi can be best understood by the functions assigned to the space between the two; in this thesis termed as the collision area. Fig 4.11 the master plan of Islamabad 1960 by *Doxiadis elaborating the land use of the shared periphery of Rawalpindi and Islamabad as one continuous region consisting of military residential facilities with large green belts, expanding along the shared axis and bordered on both sides by long strip assigned to light industrial setups with two*

sectors devoted to wholesale market. Doxiadis' idea was to plan the shared periphery; as a light controlled industrial and trade zone and inside military residential sectors were set-in. It was decided as per the master plan of Islamabad that the original grid of Islamabad will be followed for Rawalpindi as well. This grid was confining the traditional chaotic urban fabric of Rawalpindi without much consideration of the traditional urban structure, linkages and configuration. From the figure 4.10 and 4.11, it can be observed that the shared belt has been assigned the function of Army headquarter belt followed by light industrial strip, dedicated wholesale public projects and business district.
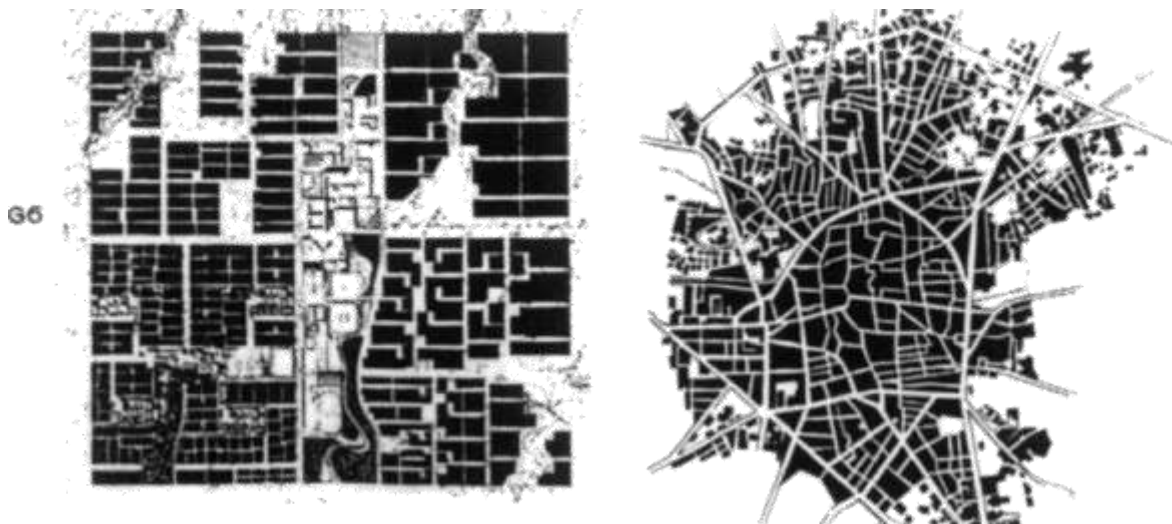
Figue.4.12 The figure-ground comparison of Islamabad sector G6 and Rawalpindi's traditional urban core. Notice how the grain size has been kept the same as per traditional urban fabric. (Source: Constantinos and Emma Doxiadis Foundation)

"If this master plan development (of Rawalpindi) is not implemented carefully, the consequences may be extremely unsatisfactory not only for Rawalpindi but also for Islamabad and the whole of the Metropolitan area." *(Doxiadis, 1960).* For Doxiadis it was important to take Rawalpindi into consideration in order for Islamabad to function as the capital. The functions he set in the area between the two cities were of utmost importance. It was his firms believe that the problems of the periphery will be reciprocated to the center of both the cities. He knew the modern urban planning of Islamabad and the traditional urban fabric of Rawalpindi

must have a common grounds in-between in order to function coherently as twin cities of Pakistan. The need for coordination of development was utmost important. Doxiadis forecasted that if the planning of Rawalpindi didn't go as per the master plan scheme it will create a problem for both the cities in future.

Doxiadis aimed at creating new urban fabric of Islamabad, derived from the old fabric of the context. This according to him eliminates isolation of modernist urban structure and allows coexistence of both urban fabrics. (Mehsud, 2010, p.30). Doxiadis wanted to preserve the design and urban scale of the traditional existing urban fabric and envisioned the new planning to mimic the old so that it won't be alienated. This can be observed by his sketches of the old urban core of Rawalpindi and his thought process to derive the sector g6 of Islamabad as shown in fig4.12. The historical attributes of the traditional urban fabric of Rawalpindi contributed to the design of individual sectors as planned by Doxiadis. A critical analysis reveals that the orientation, as well as the size of the grain, follows the same layout and scale as per the existing traditional urban layout. As shown in fig 4.12. Moreover, the relationship of public spaces has also been imitated the same way; with the same connections established between the individual houses to the street, square and open spaces. The same community living of the traditional urban fabric of Rawalpindi was replicated for the modern planning of each sector of Islamabad by Doxiadis.

4.3. Doxiadis' grand master plan scheme remained restricted to Islamabad and its implications:

The current situation however is very different from the original master plan as designed by C. A. Doxiadis. As Doxiadis perceived Islamabad and Rawalpindi as two metropolis areas their work in the original master plan was adjusted to complement one another. It was the shared space and its functionality as perceived

and set by Doxiadis that was overlooked when the master plans were altered. Although the master plan of Islamabad was not changed much. But the effect of the periphery resonates with the core of the city. The issues responsible for the changes in the original master plan are as followed:
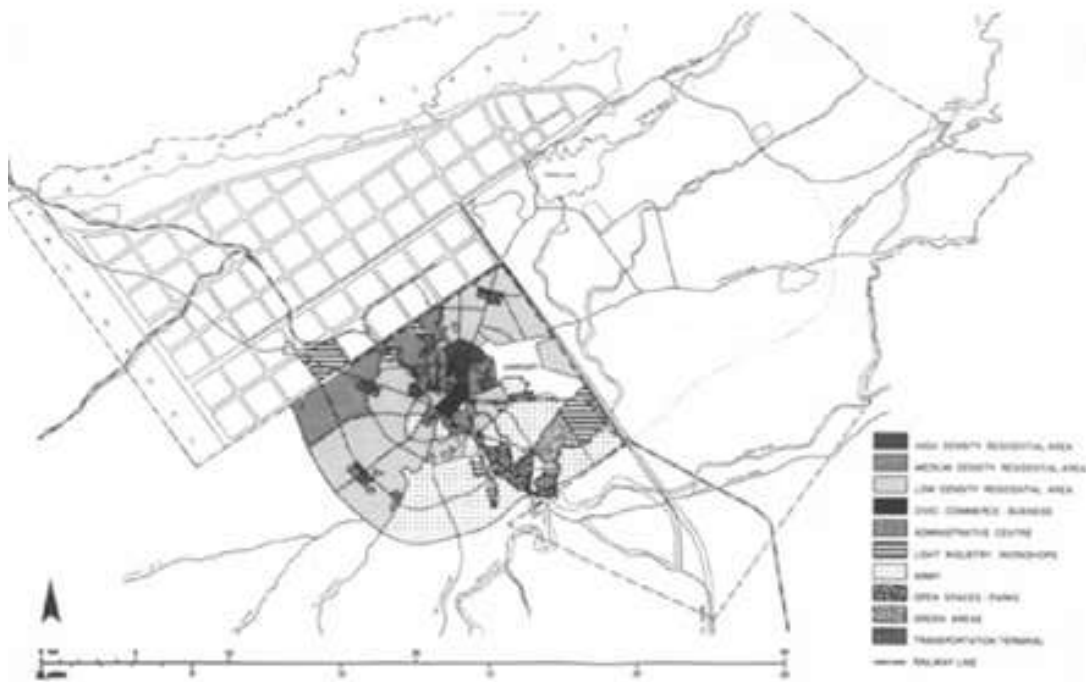
Figue.4.13 The Master plan alterations of Rawalpindi 1970. (Source: Botka, 1995)

Islamabad was designed in 1960 the preliminary Master Plan of Islamabad was presented by C. A. Doxiadis. However, it couldn't get implemented for Rawalpindi. The reasons elaborated by various professionals are ***the differences in the governmental planning agencies*** stated by Dusan Botka (1995) since these were two independent cities that fell into different governing territories of the country. Islamabad's planning agency was Capital Development Authority CDA and for Rawalpindi, it is now known as the Rawalpindi Development Authority RDA. Furthermore, Islamabad, as was the capital city, was given ample resources and fell into the Federal Capital Area where as Rawalpindi was part of the territory of the province of Punjab. Punjab is the most populous province of Pakistan and

already comprises one of the big cities of Pakistan like Lahore, Multan etc. The two Islamabad and Rawalpindi since belonged to two separate government departments and to facilitate coordination Dogar (1985) found that there was no legal framework. Naturally as a result there was no commitment to implement the Master Plan in the case of Rawalpindi.
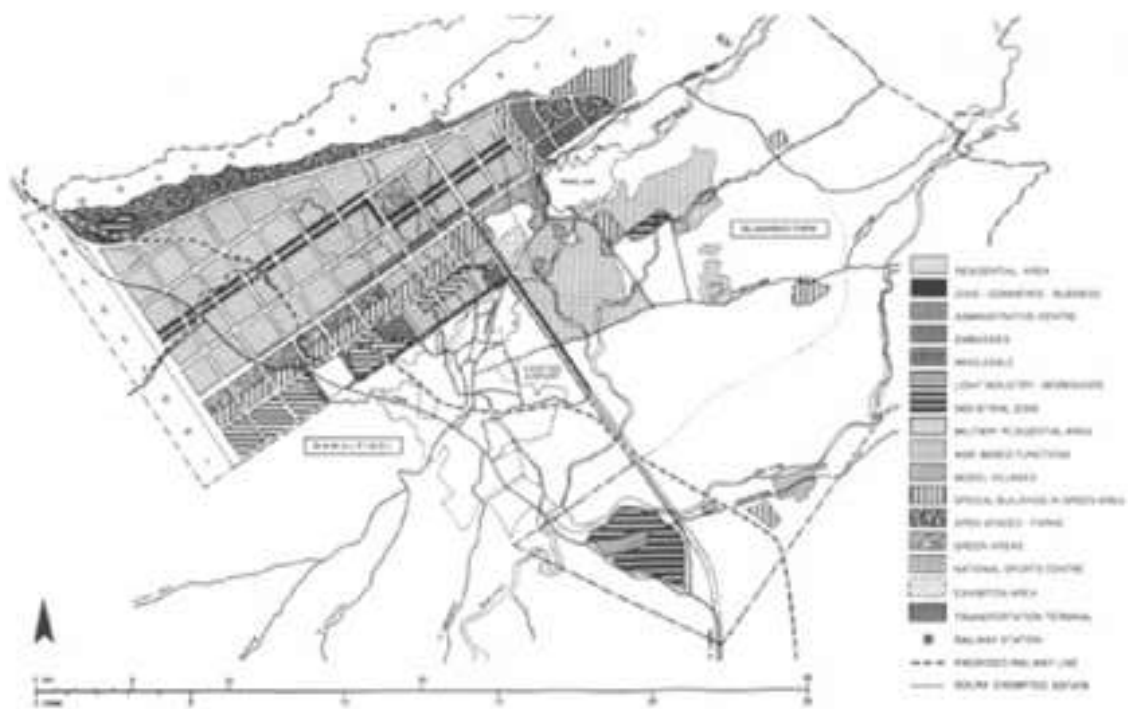
Figue.4.14 The Master plan alterations of Islamabad 1978. (Source: Botka, 1995)

The original master plan of Doxiadis was revised for Islamabad in 1978 as Rawalpindi authorities presented their own guided development plan in 1970; this sowed the seed of fragmented urban planning for the twin cities of Islamabad and Rawalpindi. As shown in figure 4.13; the concentric street links proposed by the new Master Plan for Rawalpindi – represent a modified grid-iron pattern loosely related to the strictly geometric road system of Islamabad. It is worth noting in fig.4.13; the absence of any other link of the main connecting road between Rawalpindi and the Islamabad Administrative Area.

The 1970 master plan of Rawalpindi placed the high-density residential area on the main road that connected Rawalpindi and Islamabad which resulted in congestion and circulation issues in the area.

Islamabad master plan was also revised following the first draft of the master plan of Rawalpindi. Figure 4.14 demonstrated the 1978 master plan of Islamabad by C.D.A. The capital development authority was responsible for Islamabad's urban fabric and development. The major changes include modification of the site of the National University. Originally it was located within the National Park. It was relocated to the northeast of the Administrative Area and Diplomatic Enclave. Another important change to the master plan of Islamabad was the alterations to the Blue area which served as a free-flowing ribbon of commercials. The new planning made the blue area a regularized commercial band of high-rise commercial zone. (Botka, 1995). A narrow continuous band along the Kashmir Highway was changed to serve as an Industrial and Trade zone which failed as it was too close to the residential area. Another major change that affected the originality of the master plan of Islamabad badly was sectors E-8, E-9, E-10 and D-10 were turned over to the three branches of the Pakistan Armed Forces, resulting in the modification of the rights-of-way of the principal road arteries and restricted access. The Last change made by CDA was to convert sector F-9 - into a large City Park. The peripheral area between Islamabad and Rawalpindi was affected in the worst possible way as the plan by Doxiadis was set aside and new functions were incorporated. The primary reason was that the original master plan, designed the residential army area in between the industrial zone and it was considered unfit from security point of view. Hence; those sectors were converted to regular community living sectors with small industrial setups. The green belt which was originally designed in front of the residential sector by Doxiadis was also eliminated. As Rawalpindi's development was unguided for many years this area between Islamabad and Rawalpindi emerged as a high density residential and

commercial hub on its own. This was quite opposite to the initial master plan of Doxiadis. This resulted in congestion along connecting main road between Islamabad and Rawalpindi. The civic center of Rawalpindi was not planned as per the original master plan and this lead to encapsulation of the commercial activity in the traditional urban fabric of the city resulting in choked central area.

4.4. The urban collision between Islamabad and Rawalpindi:

The above mentioned aspects were discussed from the political and theoretical point of view which laid the foundation of the urban collision between Islamabad and Rawalpindi. This section of the thesis discusses the implications of the urban collision between Islamabad and Rawalpindi from morphological angle. Through mapping the Islamabad and Rawalpindi the aim is to highlight and understand the location and different function performed by the urban collision space in the holistic urban setting and its implications.

Rawalpindi today represents a skewed urban development pattern, whereas Islamabad maintains high standard of living facilities (Dusan Botka, 1995, p.216). The overspills of Islamabad are accommodated in Rawalpindi which adds further pressure to the already chaotic urban configuration and overstretched the facilities making it to fall further below the standard set by Islamabad. This has led to the social conflict between the twins cities, Islamabad became the city of the elites, the government officials and the higher rank working class whereas Rawalpindi due to its low standards of living became the home of big households and lower income group travelling to Islamabad for work on daily bases. Disintegrated network and inability to perform efficiently as "Dynapolis" planned by Doxiadis.
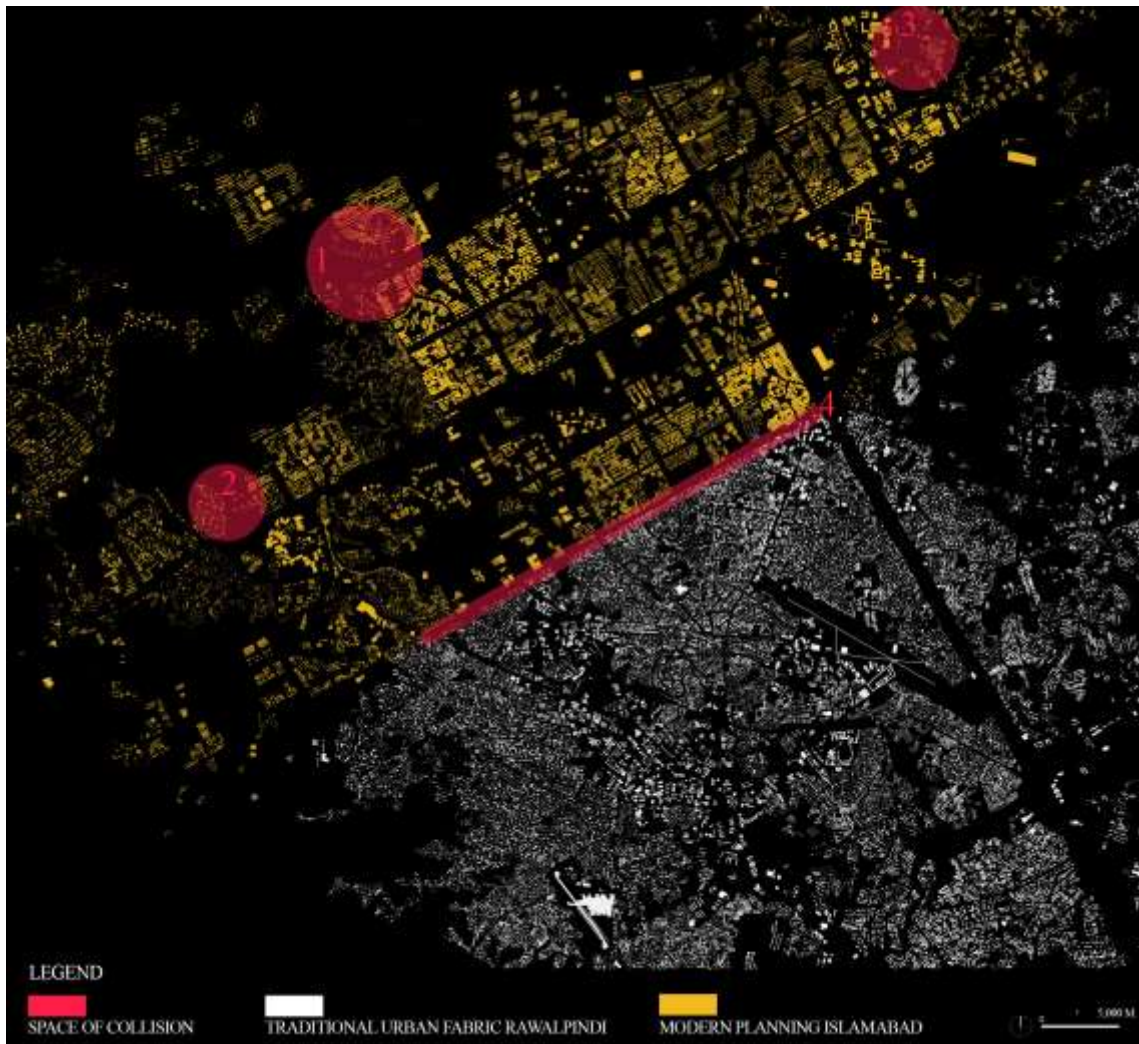
Figue.4.14 The Built form of Islamabad and Rawalpindi. The space of collision highlighted as red (Source: Author, 2022)

The built form of Islamabad and Rawalpindi and highlights the urban collision condition in the urban fabric holistically. All these urban collision condition are a result of modifications in the master plan of Doxiadis which turned to be a sore eye for Islamabad.

4.4.1. Analysis of the space of urban collision in case of Islamabad and Rawalpindi:

The first urban collision condition is the G12, F12 and a few parts of E11 sector of Islamabad. This root cause of this collision has been mapped out in fig. 4.15.

Figue.4.15 The point 1- Urban collision analysis in Islamabad. (Source: Author)

The area was taken out of the master plan of Islamabad due to the presence of a historical tomb of religious importance and political interests of the region which for CDA were difficult to resist. ***This perhaps was the worst decision for Islamabad urban planning*** (Botka, 1995). An irregular chaotic parcellation was created within the city of Islamabad which resulted in the deterioration of the orderly facilities and services of Islamabad. As shown in fig.4.15 the sector facilities as planned by Doxiadis has been completely destroyed the central space is taken over by the irregular development of Golra. Dusan Botka in his book, Islamabad after 33years highlighted this issue as well. The issue in these urban areas of Islamabad is also aggravated due to the physical obstacles which in this case are the railway line which connects to Golra railway station along which informal settlement started to build up. The space of collision is between the planned settlement as designed by Doxiadis enclosed in a sector setting and the unplanned urban growth due to political factors which has eaten up the space for amenities and services in the area.

The second point marked in fig. 4.16 is the G14 sector of Islamabad. This collision point of Islamabad is the extension of G14sector the informal settlement which grew along the GT road. These are mixed land use areas with residential and commercial activity combined. As the GT road is the oldest route that connects Rawalpindi to adjacent small cities and towns the land mafia due to high commercial prices is not willing to move from this area. This results in the choked flow of traffic as this junction is very important it connects Islamabad from the Motorway as well as from GT Road through Srinagar highway and for Rawalpindi; it is the prime route of GT road. At this junction, private bus terminals are also located which makes the flow of traffic inefficient due to congestion caused by the absence of a sound master plan for this area. The capital development authority has issued letters for all the settlements here to be illegal. As per the master plan of Islamabad this sector was reserved as a green area to act as a buffer zone between Islamabad and Rawalpindi and the second half of this sector is reserved for special

building institutions. As discussed in the above paragraph this area is overpopulated already with commercial activity and is in dire need of an open breathing space. In 2017 the notice has been taken by the government to eliminate these illegal settlements from Islamabad and review the master plan for Islamabad.

Figue.4.16 The point 2- Urban collision analysis in Islamabad. (Source: Author)

The third collision point marked in fig.4.17 denotes the old village with the name of Noorpur Shahan that falls right behind the Parliament of Pakistan, Prime Minister House as well as closely connected with the diplomatic enclave.
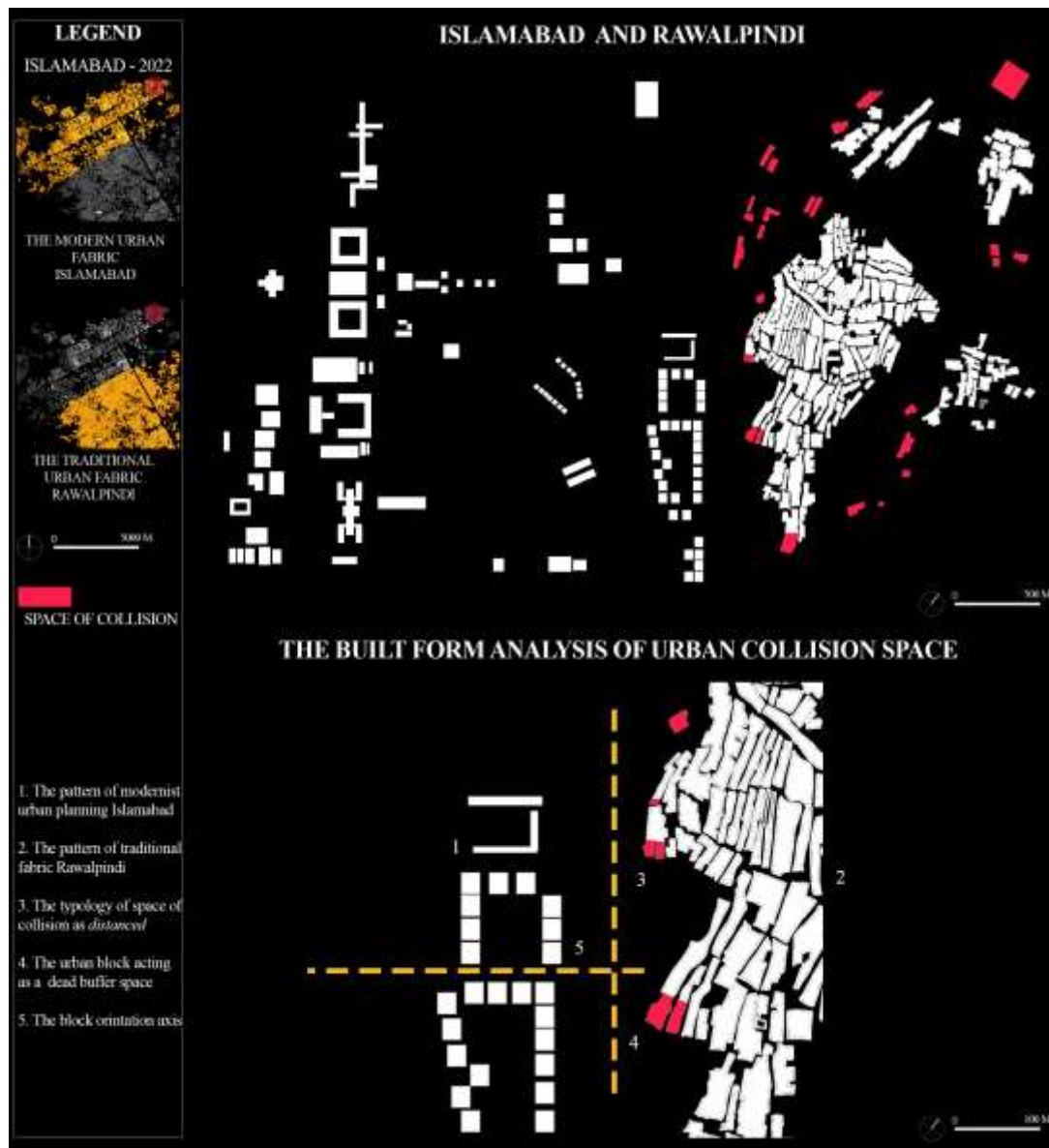

Figue.4.17 The point 3- Urban collision analysis in Islamabad. (Source: Author)

The history of this area goes back to the *Sufi salasul* and the families settled here are of political and religious importance. This area also houses the popular shrine

of *Bari Imaam* and is also known by this name. This area also includes remnants of historical and religious importance sites of the region. This area has the potential to be developed as a cultural center but due to the security issues and its close location to the government buildings of Pakistan, the area is marked as a controlled-access site. The area of collision is between the governmental buildings in Islamabad on the left and the traditional settlement of the village which hold religious importance.

The fourth pointer in the fig4.18 denotes the most interesting site of urban collision that is important to this thesis. This site demonstrates the collision between modern Islamabad and the traditional Rawalpindi. This strip as discussed in the above paragraphs was planned by Doxiadis to incorporate light industrial functions and a military residential area with a large green belt in between. But due to security concerns, the plan was not followed. Doxiadis anticipated the collision condition between Islamabad and Rawalpindi due to his decision of incorporating a controlled, neutral function in the shared periphery of both cities. However, the changes in the original master plan lead to the urban collision giving rise to urban conflict in this area. The urban collision between Islamabad and Rawalpindi as shown in figure 4.18 can be seen to comprise an IJP road that runs between the two as well as low rise commercial belt from Rawalpindi and a residential area from Islamabad's side. The space of collision demonstrates a conflict of functions as well as a conflict of urban density. Islamabad exhibits lower than usual urban density due to high land value whereas the Rawalpindi area is congested and over-packed. The functions of both urban fabrics are also in conflict. From Islamabad's side, the land use is residential whereas the Rawalpindi strip is haphazard commercials with heavy trade activities.
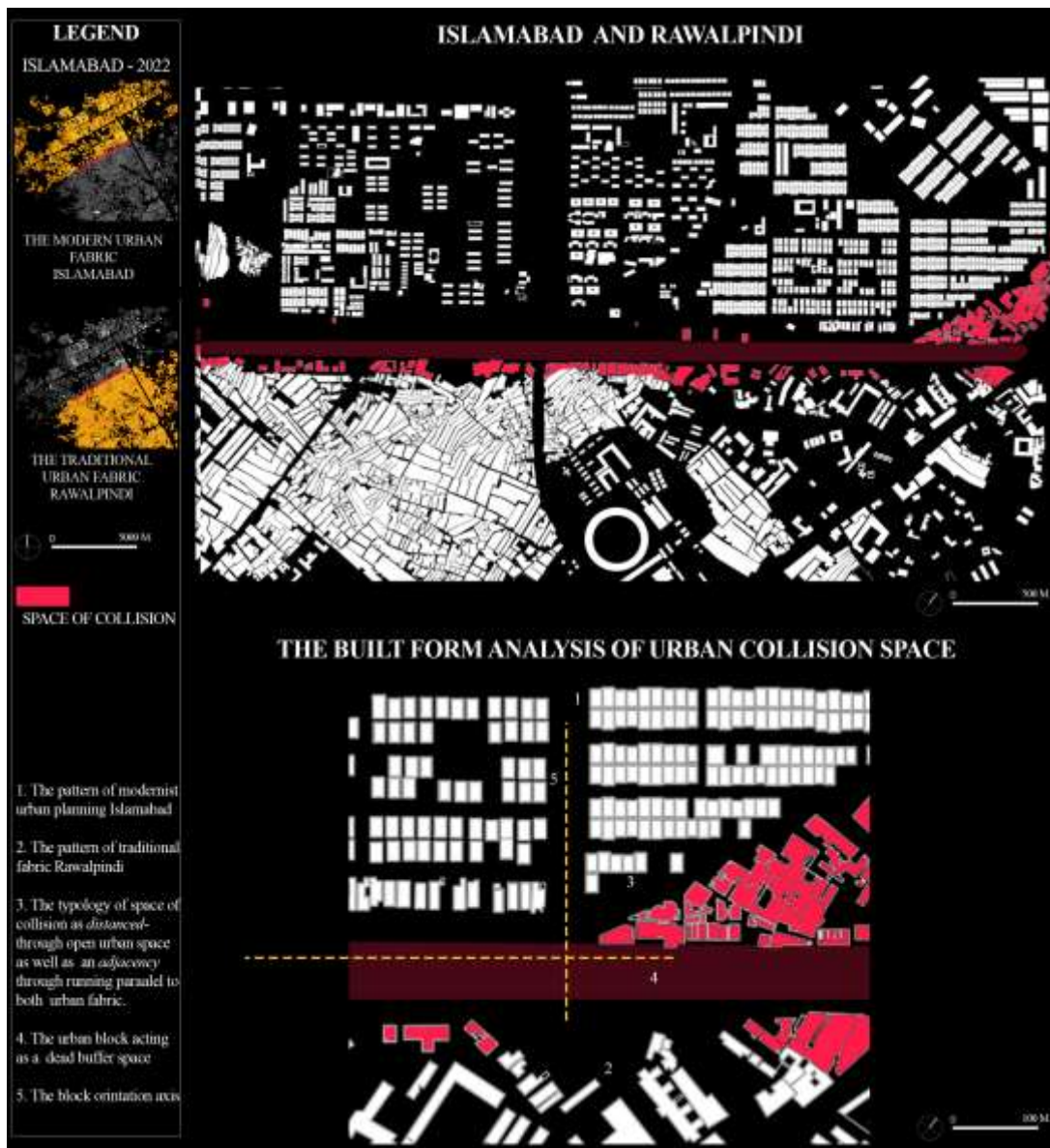
Figue.4.18 The point 4- Urban collision analysis in Islamabad. (Source: Author)

4.4.2. The formation of urban collision in time between 1985-2021:

It is important to understand the urban collision issue of Islamabad from the perspective of its formation in time and relate it to the political and planning scenario that we already discussed to get to the root cause for the formation of the urban collision space. The urban collision between Islamabad and Rawalpindi was

not something that occurred recently it was due to the flaws of the planning authorities of both the cities' inefficiency to adapt to the master plan of Doxiadis or make timely decisions for the future planned growth.

Figure 4.20 shows how the urban collision between Islamabad and Rawalpindi has progressed in time from the year 1985 to 2021. It can be noticed that the urban collision in the map of 1985 due to the lack of any master plan or guided development for Rawalpindi resulted in the formation of a small parcel of urban collision which later turned into the whole strip of IJP road in a condition of chaos. Whereas in the year 2000 the urban collision roots started to grow deeper into the urban fabric. It was this same time when the master plan of Islamabad was revisited by CDA due to political pressures which resulted in the Golra area being exempted from the master plan of Islamabad resulting in E12 skewed urban development as well as the urban fabric of the old village of Noorpur Shahan also started to develop. It was around 2010 as shown in fig.4.18; it can be seen that the problem of urban collision started to impact the urban life of both the cities. The urban fabric in the year 2010 is tightly compressed around the peripheral area of Islamabad and Rawalpindi. The problem of congestion and inefficient traffic flow became the major issues for the residents and daily commute started to get difficult. It was between the year 2010 – 2015 when the peri-urbanization started in Islamabad and Rawalpindi. Factors like Afghan war refugees and shortage of housing contributed to the skewed development to the fringes of the capital city.
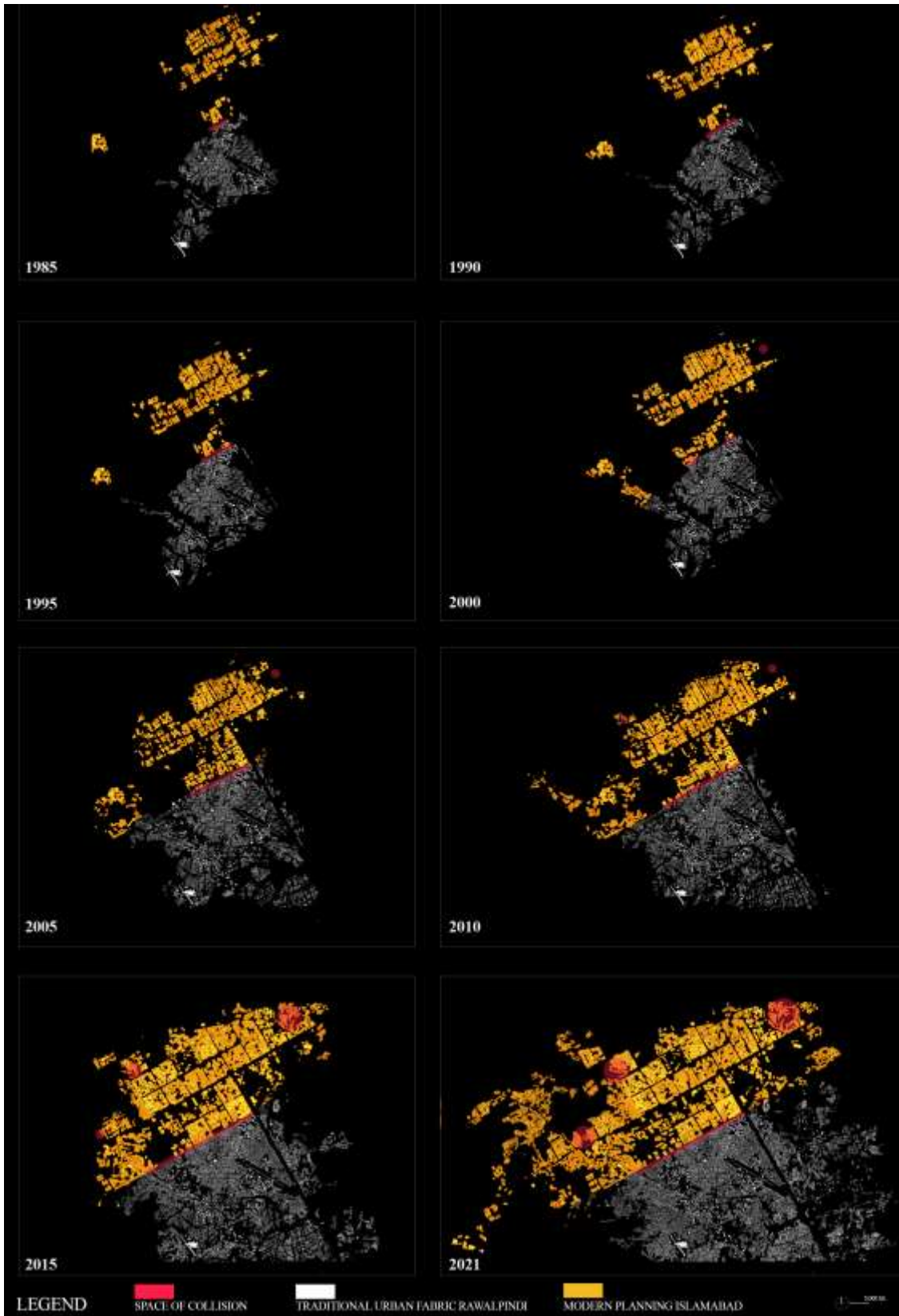
Figue.4.20 The formation of urban collision in time from the year 1985 to 2021. (Source: Author

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4.5. Concluding remarks:

This chapter focuses on the collision between the modern urban planning of Islamabad and the traditional urban fabric of Rawalpindi. The urban collision has been discussed from socio-political point of view by giving a narrative of the background situation at the time of conception of the idea of the new capital Islamabad. Political scenario has been defined which elaborated the purpose for which the new capital city was being built. This is followed by the design legacy of Doxiadis. The research discusses the point of view of the modernist urban planner Doxiadis towards the existing urban fabric of Rawalpindi. What design approach he used and what relationship he envisioned to establish between the two cities, Islamabad and Rawalpindi. This formed the theoretical base for the formation of collision between the twin cities of Pakistan. The research further investigates and highlights the urban periphery functions set by Doxiadis and his anticipation over half a decade ago for the current situation of urban collision between Islamabad and Rawalpindi. The last part of this chapter highlights the areas in the master plan that were not followed as per the original master plan proposed by Doxiadis which lead to areas of collision in Islamabad. A detail description has been made of those areas and mapped out the location in the urban fabric. The collision space between Islamabad and Rawalpindi is discussed and analyzed in detail as well as its implications for both the cities. This chapter is ended with the progressive mapping of the two cities urban fabric, Islamabad and Rawalpindi and a comparative analysis is done with the changes in master plan and its effects on the urban fabric.

4.5.1. The proposition for the space of urban collision in case of Islamabad and Rawalpindi:

The urban collision between Islamabad and Rawalpindi has been a result of inefficiency of the urban planning department of Pakistan to follow up or adopt a timely framework for changes into the master plan. Due to difference in planning

departments of both the cities the condition of collision worsened for the two making both the cities to face problems like fragmentary development, inefficiently traffic flow and unequal density. The urban collision spaces in case of Islamabad and Rawalpindi are loosely formed. The area of urban collision fails to establish a dialogue between the planned and the unplanned.

For Islamabad the problem of urban collision has been highlights in four major points and mapped out in fig.4.14. The resource management system as designed by Doxiadis based on sector wise division where each sector was self-sustainable. Due to the problem of urban collision there were issues of the distribution of facilities. As the population of the sectors near the collision site became uneven and more than the planned making the facilities fell short. These areas in Islamabad face major shortage of water, gas supplies due to over burdening. The urban collision condition has badly affected the land value of these sectors. The security conditions have also worsened for these areas. As for Rawalpindi the urban collision has caused to further choke the routes and thin Narrow Street of the traditional urban fabric. Due to unplanned and unguided development the strip of the collision turned into commercial activity while the sectors of Islamabad are residential in nature this results in noise pollution and congestion for the residential areas. The land value for the areas of Rawalpindi went high and many residential plots were converted to commercial activities and mixed use was incorporated. This placed more pressure on the urban fabric of Rawalpindi.

The collision between Islamabad and Rawalpindi is in conflict with respect to the land use functions and with respect to urban form as well. A mediating solution is required to form a balancing between the two urban fabrics. As discussed in previous chapter and the functionality of the space of urban collision in various cases, the case of Islamabad and Rawalpindi can adopt the urban collision function and initiate a dialogue between the planned and the unplanned urban fabric.
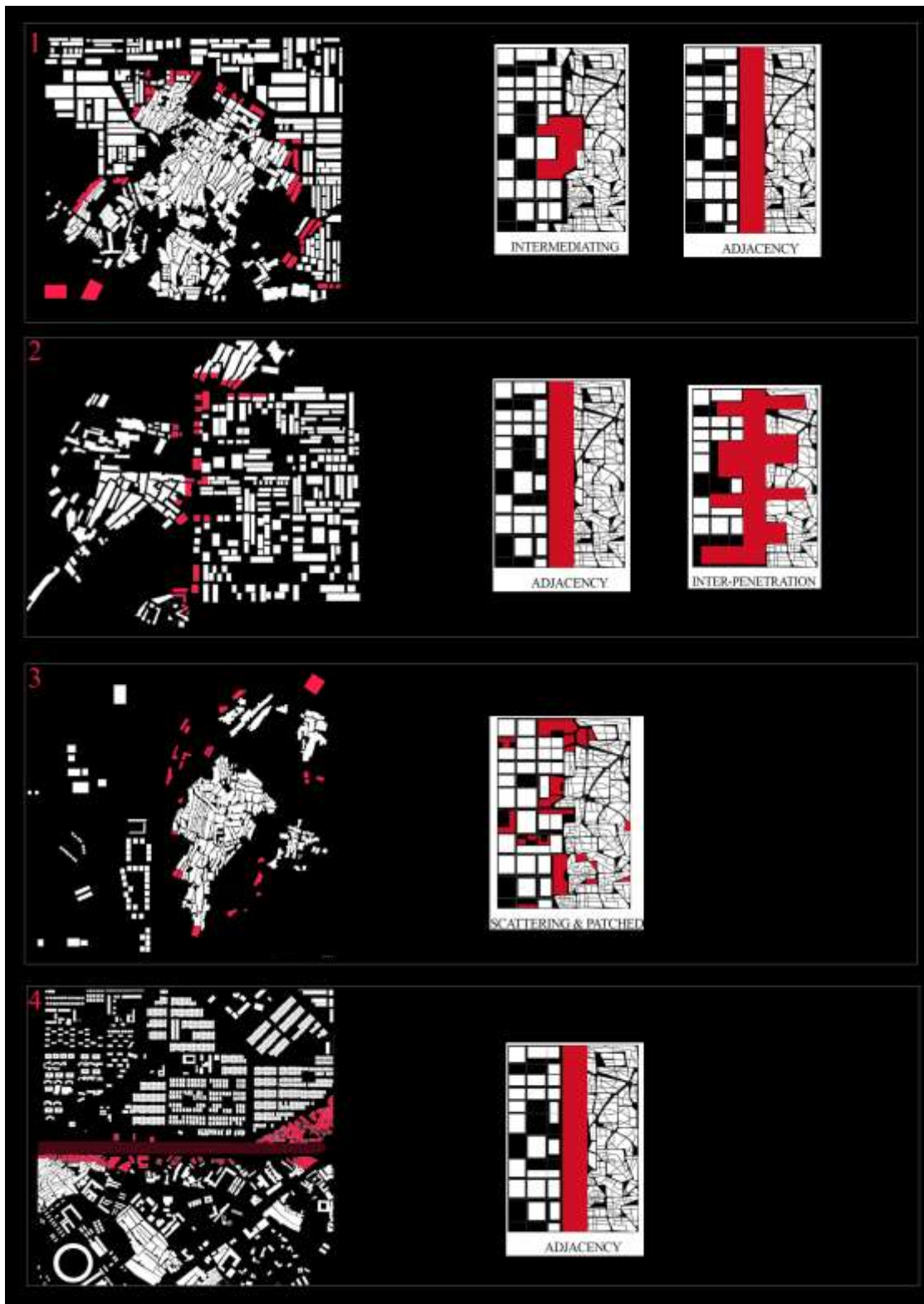
Figue.4.21 The proposed urban collision typology for the case of Islamabad and Rawalpindi (Source: Author)

In case of Islamabad and Rawalpindi these areas truly represent the disorganized haphazard nature of urban fabric. The space of urban collision when fails to establish an exchange of urban dialogue it results in loss of urban character are creation of *lost spaces* (Trancik, 1986).The first case of urban collision in Islamabad is the sector of G13, the sector is purely residential with unplanned settlement mushroomed in the center due to which this sector did not have its due facilities of *markaz*. The collision typology proposed for this site is *intermediating* and the *Adjacency* typology of urban collision. the adjacency function of urban collision controls the unplanned growth and also acts as a porous boarder between the two urban forms. An adjacency of urban collision is defined as when the space of collision runs parallel between the two urban fabrics that is modern and the traditional it can be in the form of urban blocks. For the second case of urban collision where the unplanned settlement is along the GT Road and is of commercial in nature and the sector is purely residential. For this urban collision space the typology of adjacency. The third area of collision is the religious village of Noorpur along the presidency and Prime Minister house of the country. This area has the potential to develop into a cultural hub in accordance to the presence of old ruins and the historical tomb. The typology best fitted for this area is the distanced and scattering. Through scatter the focal points in the urban tissue will be created and the distanced typology will maintain a buffer between the two different functions. The fourth area of collision already exhibits the distance and adjacency typology. In this case it's in the form of the highway road running between the two cities. The adjacency in this case needs to form a more porous band that allows the flow between both the urban forms.

CHAPTER 5

CONCLUSION

This research adopts a critical approach to the static and conventional perspectives dominating the discipline of urban planning and design by tracing the fundamental paradigm shifts in the history it states that the modern planning although in literature mostly considered as a design in isolation or disregarding existing urban fabric associated with terms like tabula rasa but this research actually brings out the fact that it is not the case. *The modern urban planning although visually seemed to be set in isolation but it developed a very intricate relation to the existing traditional urban fabric of the context.* This intricate relationship is the space of urban collision. This thesis highlighted this shared space as a field performing the function of bridging the modern and the traditional urban fabric through four design operations- inter-penetration, adjacency, scattering and patching and intermediating. Through these design operations the space of urban collision suggests a very diverse kind of urban condition a hybrid continuum of both urban orders the modern and the traditional.

Analyzing the world historical urban case studies exhibiting similar dichotomy of the modern and the traditional and investigating the space in-between helped establish an understanding of functions of the urban collision. This thesis aims at distinguishing the space of urban collision between modernist planning and the traditional urban fabric through morphologically analyzing the built form of the

selected case studies and devising the typology based on design function performed by the field of urban collision. The thesis answered three research questions regarding recognition of the space of collision between the modern planning and the traditional urban fabric. Each chapter of this research corresponds to the answers of each research question. This summary gives a concluding point to these questions.

What is the foundation of urban collision between the modernist planned and the traditional urban fabric? This has been defined in chapter 2 of the thesis which gives a detail theoretical understanding of the ideological perspective of modernism towards the existing urban fabric. *The research answers this questions as the basis of the condition of the field of urban collision is actually the modern planning in search for utopia introduced a whole new urban form into the traditionally evolved urban tissue; this diversity created the foundation of urban collision.* Modern planning because of its diverse and new ideas introduced tensioned into the urban fabric. The primary urban section this phenomenon could be well observed was the area between the two contrasting urban orders where an interactive urban condition emerged called the field of urban collision.

What are the morphological characteristics and different features and functions of the collision space? This part in chapter 3 deals with the defination and theoretical framework of the urban collision. The collision is described as the occurrence of two different objects. It is the change of border conditions between the two entities in proximity. The morphological analysis of the selected case studies revealed the four primary functions of the space of urban collision.

What is the process of formation of urban collision in time and its implications? In the case of Islamabad and Rawalpindi. Chapter 4 investigates the true essence of Doxiadis the modernist urban planner's approach towards the existing urban fabric. it also gave an insight on the fact that the political factors are also involved the

formation process of the space of urban and effects on the surrounding urban fabric is discussed. Progressive mapping gave an insight of the overall scenario of urban collision formation in time. The thesis revealed that through the progressive mapping that when the revisions were taken place in the original master plan it lead to the field of urban collision to worsen and move towards urban conflict. The urban collision spaces in the master plan of Islamabad are identified and analyzed morphologically corresponding to the timeline. The typologies best fitted are concluded at the end of this chapter.

The thesis research hopes to opens new discussion on the relationship formed between the modern planning and the existing traditional urban fabric of old towns. To understand the forces exerted by each urban form onto the other; through the space of collision between them.

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