

Ministry of Higher Education and Scientific Research  
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# CURRICULUM SEMINAR

MASTER 1 – ARCHITECTURE



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## **Preface**

This teaching handbook is conceived as a curricular seminar for first-year Master's students (LMD system) in Architecture, with the primary objective of providing essential knowledge and analytical tools in urban architecture. In a context of accelerating urbanization and growing complexity of cities, the education of future architects must extend beyond the scale of the building to include a deep understanding of urban space, its structure, dynamics, and social meaning.

The module aims to equip students with a solid theoretical and methodological foundation that enables them to analyze, interpret, and design within the urban context. Urban architecture is approached here as an interface between architectural form and the city, where spatial composition, public space, urban form, and morphology play a decisive role. The polycopy emphasizes the importance of understanding the city as a coherent yet evolving system, in which architectural interventions contribute to the quality, functionality, and identity of urban environments.

The pedagogical approach adopted in this seminar is progressive and multidisciplinary. It combines conceptual frameworks, analytical methods, and contemporary urban issues in order to strengthen students' capacity to read the city critically and to position architectural design within broader urban structures. Rather than treating urban space as a mere backdrop for buildings, this course encourages students to consider architecture as an active component of urban composition and spatial continuity.

The first chapter introduces urban public spaces through the concept of urban composition and its six dimensions: morphological, perceptual, visual, social, functional, and temporal. This framework allows students to understand how architectural form, public space, and human practices interact in the production of urban life, with particular emphasis on streets as fundamental spaces of urban architecture and social interaction.

The second chapter develops the principles of urban composition by presenting its laws, constituent elements, urban typologies, and planning tools. It provides students with key

references for understanding how architectural and urban decisions are structured, regulated, and implemented, while addressing contemporary challenges such as sustainability, accessibility, and aesthetic coherence in urban architecture.

The third chapter focuses on urban form and the fabric of cities, offering historical perspectives and major theoretical models that explain the spatial organization of urban environments. By analyzing land use, transportation networks, public spaces, and cultural and socioeconomic factors, students gain a comprehensive vision of how architectural forms participate in the shaping and transformation of cities.

The fourth chapter introduces urban morphology as a scientific and methodological field essential to urban architectural analysis. Through mathematical morphology, space syntax, morphometry, and fractal geometry, students are provided with advanced tools to understand urban structures, spatial patterns, and the relationships between architectural elements and the city as a whole.

Overall, this module is intended to strengthen students' knowledge and critical understanding of urban architecture, preparing them for design studios, research work, and professional practice. By linking architectural thinking to urban scales and processes, this polycopy seeks to contribute to the formation of architects capable of responding thoughtfully, responsibly, and creatively to contemporary urban challenges.

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***Chapter 01: Understanding Urban Public  
Spaces: The Six Dimensions of Urban  
Composition***

## **Introduction**

Urban public spaces play a vital role in community life, providing venues for social interaction, protests, celebrations, meetings, and even conflicts. These spaces facilitate public engagement, reflecting social rights and democratic values. The relationship between the properties of these places and their users' needs is crucial in determining their functionality. Successful urban public space design hinges on adherence to established guidelines while considering users' everyday activities and the uniqueness of the location. While some may view these spaces merely as open areas, their design involves numerous intricate details and considerations. Transforming a mundane open space into a vibrant community hub requires the careful arrangement of six essential properties, which must be uniquely positioned to enhance the space's appeal and functionality. (Yousefi & Fardi, 2016).

### **1. The Concept of Urban Composition**

The foundation of urban settlements post-agriculture is their spatial order, maintained by traditional daily life rules. This heritage, although hard to conserve, is invaluable. The arrangement of public spaces and streets constitutes a specific urban form. Architects Franciscus and Ferdinand Duranti emphasize that street patterns are critical design elements. A key distinction in urban form is between streets and fields, indicating that urban spaces go beyond mere buildings; roads also shape open areas. Penman notes that while the spaces between buildings are crucial in urban literature, they remain under-researched. Various urbanism theories agree that city layout is essential, linking buildings, streets, open spaces, and societal interactions. Urban composition examines how different components collaborate to create a cohesive environment, involving fixed structures like buildings and streets, which form the essence of a city. Streets connect and frame spaces known as public areas, which serve functions like resting and playing, while influencing building interactions. These elements work together as a dynamic network, constantly evolving. The spatial arrangement of urban components must be coordinated and holistic, reflecting the cityscape's constants and presenting society in motion. A study of ten major

British cities revealed unique street layouts, highlighting how organization of built spaces grants individuality to each city. This framework, termed urban composition, helps understand how traditional urban elements merge to create distinctive forms shaped by economic, social, and cultural dynamics. (Zeka & Ali Yüzer, 2014)(BAGNOLO & MANCA, 2019)

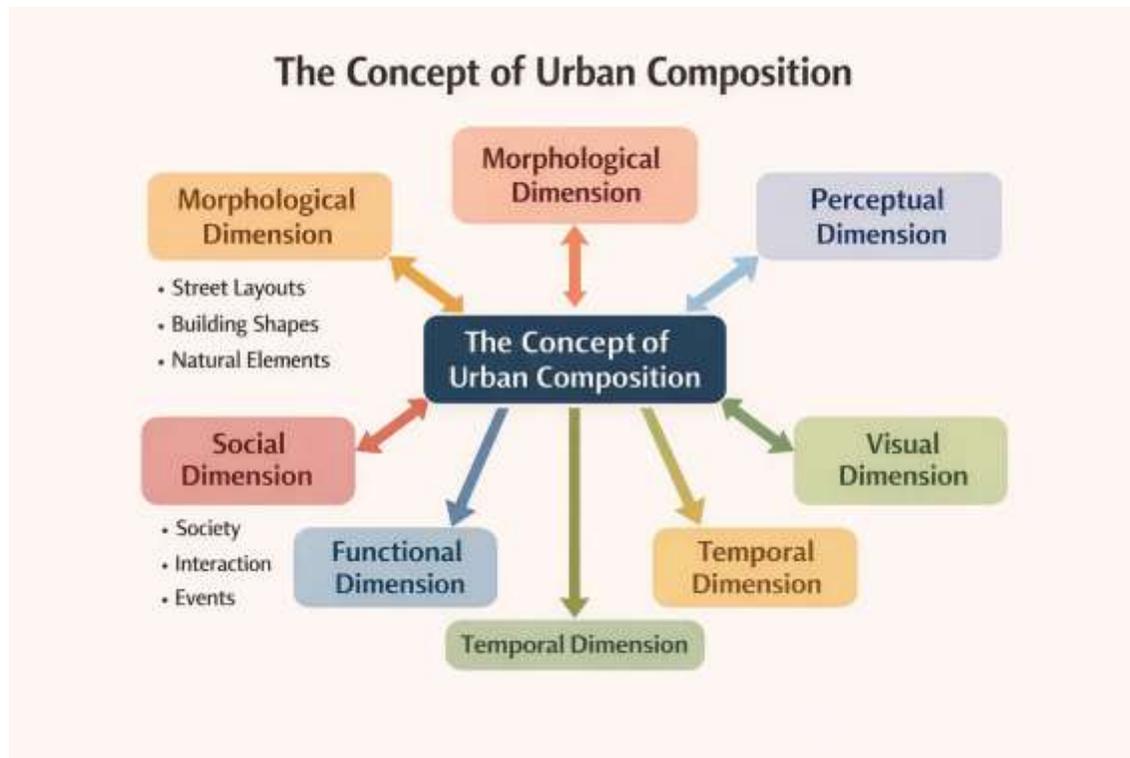


Figure 1: Conceptual Structure of Urban Composition

### 1.1. Key Elements for Understanding Urban Composition

It is essential to analyze the spatial and form organization of urban composition and its space usage. Urban form comprises elements like streets, plots, buildings, and public open spaces, represented in the ground plan as street, plot, and building footprints. The treatment of streets and public spaces significantly influences urban activities. The focus on Urban Form emphasizes four overlapping scales affecting population movement and communal gathering in public spaces. Streets dictate rights of access and connect plots, leading to a proposed typology: Main Road, Local Street, Alley, and Front Street. Building

activities may extend beyond their footprints. This text examines the spatial form of settlements, particularly regarding access amidst societal conflict in Korça, Albania. The city's image is vital in contemporary urban design, with two primary approaches: one focuses on the visual-artistic qualities of buildings and spaces, while the other addresses social usage and perceptions of the environment, including sensory experiences like sounds and smells. This duality recognizes both tangible and intangible aspects, emphasizing terms like complex, habitual, and cultural in environmental perception. Today, urban design practices view urban space as aesthetic and behavioral entities, evolving from mere physical spaces into multi-layered interpretations. Current city life is characterized by various archetypes that embody one of six dimensions. (Boeing, 2021)

## **2. The Six Dimensions of Urban Composition**

When moving within a city, citizens perceive it as a complex assembly of buildings, streets, and open spaces rather than just a collection of structures. This holistic view leads to categorizing urban spaces into six dimensions of urban composition, each providing a unique perspective for analyzing urban environments' qualities and issues across various scales. This framework is beneficial for extending research and studies on urban areas through diverse perspectives. Utilizing different angles in urban studies can enhance understanding of urban spaces. The six dimensions reveal several qualities in urban settings: morphological and perceptual features; visual space qualities; social settings; functions and attractiveness of public spaces; and rights to the built environment. Ignoring any aspect may complicate urban environments and threaten sustainable development through the relationship between the built environment and public. Thus, it's crucial to consider the interaction of different urban composition dimensions to gain a broader understanding of urban public environment issues. Balancing these considerations in practical applications presents complex challenges, making successful urban planning a matter of prioritizing specific strategies among these dimensions. (Fleischmann et al.2022)



Figure 2: The Six Dimensions of Urban Public Space Composition

## 2.1. Morphological Dimension: Configuration and Form

Urban public spaces are vital for social activities and events in cities. Their formation is influenced by historical conditions, human interactions, and local governance. Understanding contemporary urban public spaces involves comparing cities like London, Berlin, and Istanbul, with a focus on their morphological aspects. Interviews with experts in city branding and public changes revealed a global consensus on the essential needs for urban public spaces. The configuration and form of these spaces significantly affect citizens' daily lives; elements such as street layouts, aesthetics, and natural features contribute to the quality of urban life. High-quality urban spaces promote safety, accessibility, and enjoyment, facilitating social activities and interconnected business ventures, thus enhancing economic activities. A diverse range of materials in urban design also influences work-rest establishments. These spaces serve as arenas for public engagement, allowing citizens to gather, socialize, discuss, and share information, while

also acting as sites for worship, celebration, and protest. The potential transformation of public areas is shaped by daily users and emergency responses, reflecting the importance of materiality in urban environments. In shaping cities, it is crucial to consider material investments, collective life, and the heritage of urban landscapes, especially in the context of constant urban reform and complexity. (Jasim Essa Al-Saaidy, 2022)

## **2.2. Perceptual Dimension: Meaning and Visual Perception**

Urban public spaces represent the environmental setting of social life and, as such, their values and meanings are an important aspect of healthy town development. At the same time, such rapid physical development, reinforced by commercial culture and specialization, limits the capacity of design and planning to respond to use and cultural changes.

Although design and planning need new paradigms and a more articulated, flexible and complex program in order to maintain the social urban values of public spaces, a specific aspect of public space representation is what image they can evoke in the observer. On one hand, this contributes to a better understanding of the phenomenon of the perception of real images and the mental ones of remembered or imagined urban environments. On the other hand, it can favor the focusing of the urban designer's objectives and purposes within the complex framework of urban settings (BAGNOLO & MANCA, 2019).

As the constant interaction between the individual and the environment forms the basis of their daily experience, it is evident therefore that both urban researcher and designer should pay increasing attention to this aspect of urban phenomena. However, image interpretations of urban phenomena are frequently related to the visual qualities of urban spaces. This approach has been as far from the consumer city and from space significance, which subjects build through their use and experience of it (Ho & Tung Au, 2020).

### **2.3. Visual Dimension: Aesthetics and Landscape**

The visual dimension of urban public space regards the aesthetic aspects of the space itself by considering the particular landscape and visual identity of the site. In the planning and designing of urban public spaces, visual considerations are of prime importance since the qualities of these spaces will address the residents and shall engage the community overall (BAGNOLO & MANCA, 2019). Beauty and harmony have been subjects of inquiry for architects and urban designers over centuries. Harmony relies on an intuitive sense of the appropriateness of form, materials and colours, until it takes into account the context of site and even more the participation of people involved or affected by the project. The visual quality of a space includes such considerations as harmony, congruence, richness, beauty, interest, compatibility, variety, realism and the extent to which they are suited to the user or observer. The concept of beauty involves a combination of feeling and aesthetic judgment. Although there is no common understanding of it, philosophers and scientists discuss its nature and scope. The public agenda of urban planning implies that public art should be considered not merely like details for enhancement, but rather like fundamental elements to shape a proper urban landscape. The urban landscape is constituted by the interaction between built and natural environments. In the urban context, the incorporation of natural features includes the need for open spaces, such as parks, and water features such as fountains. A central issue in considering the role of the physical environment concerns green spaces, specifically, parks. Thus, an aesthetically pleasing physical environment and an increased amount of parks are likely to be perceived as enriching the environment of the district in all domains, which in turn may increase the quality of life and place attachment (Gao & Liu, 2021). Research in environmental psychology investigates the aesthetic features concerning the physical environment. Aesthetic differentiation and aesthetic preference may be associated with the experience of the districts and of their public and private spaces. The analysis of the aesthetic dimension of the physical environment also can be seen as a part of the research on the overall quality of urban public space. Studies show that good quality urban public space increases the community sentiment of well-

being, providing residents with more opportunities for social interaction and enhancing the community identity which leads to a stronger emotional attachment to the residential area.

## **2.4. Social Dimension: Space and Society**

The interaction between space and society, urban public space and planning for public realm, is the subfield of geography, sociology, urbanism, and urban design, to name but a few, that is most concerned with the constitution, functions, and management of the clearly defined spaces within cities which are open and accessible to all who wish to use them. A diversity of theoretical approaches and topical foci have determined the common usage of urban both as an adjective, describing such things as patterns of accommodation, competitions for employment, and forms of crime, and as the first part of several compound nouns such as structure, society, and life. The functions of such spaces are almost as numerous as the spaces themselves and are becoming ever greater apparent and complex as a consequence of the current round of formulation and inspection of local policy, character plans, and guidelines. The concept of function in relation to urban public space may usefully be broadened as its conscious employment to secure, encourage, or fulfill certain forms of behavior.

A space's ability to engender repeat appearances is an important supplementary function, for example, in ensuring the participants in dialogues subsequent encounters, thus initiating the formation of a social tie (Brain, 2019). A functioning that is implicit in virtually all definitions of urban public space is that of providing shelter or resting points for citizens who are deemed likely to become fatigued or weary. Urban design is one of a number of disciplines that have a part to play in the planning and practical implementation of urban public space and in the researching of its composition, form and function. Scholars and practitioners have now been involved in this task for several decades and the literature on the subject is correspondingly considerable, both in sheer quantity and in the variety of its coverage of international experience, expansive theories, and detailed case studies. At the same time it must be recognized that there exist voids and gaps in understanding the functioning of urban public space and ways it can be managed and designed. At present it

is well nigh impossible to define what in practicing has been loosely termed as ‘good design’ of the public realm and to envisage measures of success that may be of general applicability.

## **2.5. Functional Dimension: Space and Activities**

The functional dimension focuses on the relationship between urban spaces and the activities that occur within them. It examines how urban design enhances or inhibits the activities, level and range of activities, e.g. commerce, cultural events; and in what way; how it encourages interaction and community involvement; barriers to activities, e.g. limited seating or shadows on grass. Good urban space is a vibrant, socially active setting with multiple functions, it encourages social interaction and leads to the increase of visitation. The first dimension attempts to define the place of urban public spaces within today’s urban frameworks by focusing on the relationship between people and urban settings, activities and spatial forms. Urban public spaces are the essential elements of physical structure; as well, they are pivotal arenas of urban life.

Today, cities are discussing the best means to revive the disappearing life of their urban public spaces. The discussion is focused on the deficit of social encounters in urban settings, and thus the friendship, trust, understanding, and mutual regulation and tolerance that they provide. Contemporary cities put urban inhabitants in a situation where they can identify the places for living, working, leisure, and transit. Therefore, recent developments in conceptualization of urban society tend to elaborate urban spaces as marketable commodities, as destinations that are sold in order to drag inhabitants and tourists. The depth of this discussion is related to the concurrent topic of the place marketing of urban settings and their transformation into “desirable” landscapes which are consumed by masses. In the changing physical and social conditions, it is relevant to investigate the role of these policies on alteration of the use and perception of public areas realized at the heart of urban tradition that cultivates the culture of public life in squares.

The second level of this focus regards the comprehension of the historicity of changing uses of urban public spaces and the underlying socio-political impacts is considerably significant in terms of contemporarily understanding and shaping urban life of rapidly developing urban areas in which urban public spaces are commercialized and privatized at an ever increasing rate.

## **2.6. Temporal Dimension: Long and Short Term Perspectives**

The temporalities of a public space can be seen in a short time period and in a long time period. In the first perspective, it relates to the daily fluctuation of the activities in urban public space. Different activities happen in a certain time of the day. The daily activities in public space can be the complement ones each other. In the other side, daily activities in public space could be the competitor one another. However, besides the short period, the public space could be seen from the perspective of the long time. Sometimes, the public space is designed and operated for a certain time of period or certain season. Therefore, in a certain seasonal, the public space could be so crowded. The over crowded situation could not handle the fluctuation of the user activities in public space. Therefore, needs to design a public space which is so flexible (Putra Redyantanu & Damayanti, 2017). The public space from the point of view could be analyzed from the long and short-term perspective.

In general, the design perspective of public space from the temporalities could be seen in the short and long terms. In a certain time, the public space is designed only to response to the merely condition. Furthermore, the design of public space only responses to the contemporary condition. Although the design of public space has a certain respond, it usually does not respond for other situation or another time. On the other side, people only think that the urban creativity public space does not consider to the time. In other words, the urban creativity field in public space could be put with the congruent time. It means, stepped easily to be created than other design field. The public design in the city was promoted to support the creative city program. In the process, the design of the city sometimes learns the urban case from creative city.

In contrast, those that are not well considered are the temporality in designing a public space in the city. Sometimes, a public space in the city could not handle with the fluctuation of its user. The high fluctuation of its user will cause the public space in the city won't be durable. The user of public space will be bored to the place. They think the existence of the public space is not important. Finally, the public space in urban design won't be remained. On the other hand, designing public space in the city, usually separate the precondition of user with the place. Indeed, people who want to do the activities in the public space come to the place because the activities are available. Around the place of public space, need the attraction that could entertain the people, no matter with the people or an environment. The attraction around the public space of. In its case, attraction should be prepared to launch such as busker, pavilion, street exhibition, etc. The attraction or situation place could not be stand for long time. It will change to be bored soon. The public space does not exist in the future. The presence of attraction and situation won't support the function of public space in the city. The public space in the city still has a fluctuation of user activities. Because the public space only serves in a certain time. By the time, the public space will be ignored. The public facilities of place do not lend the help for the public space in the city. If the public facility share with the public space, the damaged public facility should be remained soon. It also influences to the damaged public space in the city. The undurability of the public space is caused by temporality. The public space in the city could not handle with temporality. On the opposite way, the public space in the city is designed of its temporality. The design of public space in the city should be analyzed from the long and short period of time. After done with the analyzing of its temporality, the design of the public space in the city should able to select the proper programs in the public space in the city. Temporality should be aware in designing a public space in the city. (Kashef et al., 2021)(Berdejo-Espinola et al.2021)(Gurnee & Tegmark, 2023)

### **3. Streets as Urban Public Spaces**

Streets occupy around 80 per cent of the city's public spaces. The majority of street social activity is informal, unplanned, and unpredictable that brings vibrancy and life to communities and they are some of the few public spaces left in a city that are open access

and truly free. As such, they are an important part of community life and social exchanges. The social environment of a street is influenced by many factors including, but not limited to, the location of streets, street type, natural and built environment, available amenities and facilities, maintenance, and street user perceptions of their environment. Traffic and transport modes also have a significant effect on street social activity for both users and non-users of the street network. Well-designed streets can provide many opportunities for different uses and for communities to come together. When thinking of streets as public spaces, it is important to consider who participates in these spaces as well as the form of participation as it relates to power, use, visibility, comfort and inclusivity. (Bartzokas-Tsiompras, 2022) (Attard et al., 2023) see Figure 03



Figure 3: Urban Streets as Public Spaces

Those designing urban environments see streets through a number of lenses including as essential transport corridors. Work on the urban design of streets has largely developed as a reaction to new urbanism and the failure of streets designed solely for fast and efficient movement. However, this design discourse does not address issues of safety of movement on foot in great depth, is focussed on larger, more city shaping streets, and is mainly focussed on streets in certain contexts. Another understanding of streets is as a setting for

an event. Here, the street is read by function, as or in opposition to a completely neutral carrier; and life is seen as secondary and produced by strategic occupation rather than intrinsic property. Events and activities can be said to take place in the street when they extend beyond its ordinary usage as either conduit or barrier, and the critical strategies that produce such events are a type of Fringe-cutting that offsets the normative functions of the street. Another emerging body of knowledge on streets is primarily from criminologists and considers how the design of urban spaces can problematise or support feelings of safety and security. This optimisation discourse contrasts with the available discourses that treat streets as a public space and may lead to environments that are exclusive and/or contribute to the re-entrenching of power relations. (Lund and Hvass2024)

### **3.1. Streets: The Continuous Fabric of Urban Life**

Streets are not merely thoroughfares that connect one point with another. Streets are where urban citizens meet, socialize, live, conduct their businesses, and so on. Whether cobblestoned in historic cities or made of concrete in contemporary urban agglomerations, streets have robust physical and psychological effects on urban residents, inducing relevant behaviors and shaping urban identities. For better or worse, streets compose urbanism itself. They are the enduring, old, and continuous fabric of urban life, because they physically structure urbanism. As a path or walkway between two points, streets can be formal or informal. Streets provide connections between various city regions and constitute urban mobility. Streets provide locations for interacting with both residents and outsiders, painting the picture of the substantial and urban environment. Streets provide mixing, gathering, and sharing. Streets create a spirit of community, rendering belonging feelings on behalf of residents (Lynn & Wood, 2023).

In today's neoliberal cities, congested commercial activities, consumption patterns, and decorative design initiatives backed by municipalities have sanctioned streets as places where the concept of community/ies is enmeshed with a rather corporative pinnacle. In this sense, streets become areas where community feeling is subjected to shopping choices, thus regarding the acquisition of products as a common identity. Streets can better serve

city residents since they host pedestrian activities. Bicycle paths and design enhancements can foster and boost the development of a street. Community activities, including design enhancements, can be organized collectively to raise themes associated with streets. Streets composed with the support of local communities and local businesses can be significantly enhanced. Public spaces, such as streets, can be designed extensively and have various facets. This wide spectrum of the street design approach can motivate creative urban space design pioneering and innovative thinking on public spaces in cities. (Femi et al., 2022)

#### **4. Case Studies of Urban Public Spaces**

Successfully developed public spaces are vital for community cohesion and self-expression in modern cities, and are integral to producing the places people want to be in. They facilitate local community engagement, tranquility, vibrancy, expression of culture and celebration, as well as play. However, these spaces are also the subject of great debate, and differing understandings exist in terms of what works where, resulting from the variability of practice and forms they take. Unsuccessful spaces are often experienced as barriers and areas to be avoided, rather than attractive destinations. Ongoing and increasingly sophisticated debates exist around the ways public space can be designed and delivered effectively (Pugalis, 2009). The most effective manner in which urban public space can be studied is through a consideration of location-specific context, for it is in varying localities, spaces and locales that the efficacy of urban space design and use takes place. This section explores a series of international case studies of urban public spaces, designed or naturally occurring, and in settings ranging from squares to informal network subsidiary streets, to warehouse districts, and urban waterfronts. Places are considered not only for their success or failure, but for the range of ways in which the urban public realm can be conceived (or neglected) in terms of design and urban composition. The aim is to explore questions of urban public space design and resultant uses through specific examples. The value of the case study approach is that international context can be explored in terms of the variable practice of urban space design. Further, it is anticipated to approach subjects of urban composition and public space design through an array of international contexts will alert to previously unconsidered problems and innovation solutions in urban space design. The

first section considers urban public spaces in terms of a series of design fundamentals. The second section moves on to consider urban spaces as composed environment, suggesting the urban composition of any urban public space is ‘unique’, and therefore significant to exploration of this concept. (Ma et al., 2021)

#### **4.1. Successful Urban Spaces Around the World**

Quality public places are beneficial for urban communities and for urban life. Today, with over 50% of the world living in cities and this number expected to climb to 70% by 2050, the provision of spaces for people to walk, rest, play and meet is all the more important. Urban design projects around the world have considered how to make these interventions into the small and large public spaces of cities into successful public places and indeed iconic spaces. The question is raised; what are the qualities that make for a successful space? (Folke et al.2021)

Throughout the world public urban places have common characteristics. They attend to the six dimensions of urban composition: these six dimensions being amenities, image, use, access, social interaction and involvement, and comfort and image. Different cultures and urban contexts give rise to urban spaces with differing emphases on the six dimensions. In cultures with oppressive climates the comfort dimension will be more critical as with outdoor spaces in the Mediterranean, the Middle East, South Asia and the tropical world. In the post-modern Western world the emphasis on image and the design of places often at the cost of those characteristics that really foster public involvement. But having paid close attention to local conditions, these six dimensions seem to provide a basis for understanding why an urban public space is functioning effectively and successfully. Here the case is made by examining a sample of successful public places in developing and developed countries. This examination is grounded in site and library research supplemented by observational research on visitors. (González-Flores & Organista)(Wang et al.2022)

Too many violent crimes take place in cities throughout the world. Dangerous environments have the capacity of isolating definite urban public spaces that have the effect of limiting the use of the urban space. In the context of crime prevention and urban safety in general, these dangerous environments could be described through diagnosis of public space deficiencies in safety and security terms. Public safety has become a fundamental issue in urban life and is a primary concern for citizens throughout the world, as well as for local authorities. Research has been carried out in many cities on the causes of crime and the prevention of criminal behavior in urban space, in order to provide safe urban environments. Many studies have been conducted on the relationship between crime, safety, security issues and the physical and social characteristics of urban spaces, which may have an effect on such behavior. (Almalki et al.2023)To prevent further criminal activities in such dangerous urban ambiance may initially require an exploration of the physical elements or deficiencies of urban space, which provoke feelings of discomfort, fear, or even unsafety, in various social groups. In this respect, there is an accepted method of diagnosis of public space deficiencies in safety and security terms, which is called DPD-PSD. This methodology has been applied in many cities in order to define the physical environment of urban spaces which involves the low level of attraction and use from citizens and, as a result, allocates a significant role in crime or fear of it. (Haque et al., 2022)

## **4.2. Challenges in Urban Public Space Design**

Every urban designer aims to provide the best design for public spaces, however public spaces can still show a number of inadequacies in their form or functions. (Carmona, 2019) states that through globalization, technological advancements and competitive relationships between cities, urban public open spaces have come to play the critical role of essential urban elements that determine how a city is perceived and valued by both visitors and those who come to live or work there. Since public open spaces were earliest elements before permanent structures to be initiated during the urban forming act, they are mostly distinguished by special qualities in terms of their natural and human-made features. Although some public open spaces are beginning to show distinctiveness, many were

planned and standardized against whole sociocultural structure in the city. The discrepancy between public open spaces in the city and the sociocultural structure gave way to a series of inadequacies in terms of either form or function to come into existence. In providing design decisions for public urban open spaces against the arising drawbacks in urban composition in public open spaces that have gradually been turning into commonly met urban problems in cities, this paper sub-divides urban public open spaces into four main components. (Palliwoda & Priess, 2021) In terms of urban composition deficiencies in the component of square/plaza/parc, it is seen that mainly needs and activities of the users are not addressed while offering decisions. Thus, it is crucial that during the formation of public urban open spaces, design proposals are made accordingly to the spatial expansion where during the course of the design component, the operation and activity pattern of the area will be reconsidered, high visual accessibility to the interior/yearn will be obtained, freedom to make use of the space freely and in a mobile manner will be provided, and that the surrounding use and users will be able to settle a certain relationship with the area where space-related, sitting-related and café spending-related functions play a significant role. Each city in the world is in a certain relationship with the place. Since the place is not only a reflection of its past in terms of culture, tradition and history, but also it is a reflection of its future in terms of urban services and organizational functions. As such, the place does not only have a function as a tool for urban social rest, recreation and having fun but also it has a use pattern to strengthen the certain urban life dynamics in a systematic manner. (Jens and Gregg 2022)(Asghar, 2023)

## **5. The Role of Community in Urban Spaces**

Public spaces that are enabled to adapt to the needs of the community give people the chance to celebrate their own way of life by colouring and shaping such spaces. The critical success factor of urban revitalization of a public space is the community behind this process (Larson, 2017). The importance of public space in cities immensely determines the quality of daily life and operations within the city. Thus, urban public spaces take central place in cities, played the role of existing brindle elements of a city. Open and public spaces continue to be a thing of great value to the cultivation of democracy. Because it implies the

capacity of individuals for commingling in large communities and therefore constitutes the forum for public discussion, event, and exchange.

The design of urban public spaces always involves conceiving them as places for social gathering and fostering commercial and cultural activities, thus reinforcing its meaning as an urban place. Except for those, the search for cohesive hardware was another argument. As a part of urban design, the identification of plaza space for the beneficiaries. In the role of stakeholder groups and project ownership, participatory design emerges as one of the bottom-up approaches. Through participation, the local people could express that positive opinions about being able to keep alive and maintain the spaces (J. Ellery & Ellery, 2019). Through a simplified approach, the paper adopts a theoretical approach towards placemaking and community-based involvement attempts to delve deeper into the collaboration procedures to concretise the false myth that the unexperienced people, matter local or not have the necessary skills in the design of urban spaces. see figure 04



Figure 4: The Role of Community in Urban Spaces: The Role of Community in Urban Spaces

Rather, the design professionals are challenged to an analysis of the side effects of such attempts and encourage them to support and cherish the plurality of approaches and inspirations which designates, in the end, more relevant and nontempted objects. At the same time, the input of amateurs, inhabitants, users is contextually enhanced for their ability to push the planning process beyond the standardized, the ordinary, the utilitarian, and help to be aware of the details and the local specificity. Again, the realization of urban public spaces rehab becomes another chance to interweave urban social, cultural, and economic aspects. This is grounded in the awareness that ethnic and cultural diversity marks the essential while delicate world's fabric.

### **5.1. Community Engagement and Urban Design**

With shifting demographics and increased demand for equitable participation from people often marginalized, challenges to maintain participation are higher than ever (Stamatis, 2018). Diverse voices and perspectives which enrich and complicate the dialogues and narratives about urban life often lack formal representation. Ensuring that processes of collaborative design are inclusive of the marginalized or excluded members remains a central problem to designers. In a model of community-engaged urban design planning, architects collaborated with a consultant team in order to facilitate a participatory process for a neighborhood planning project in Park Hill, a historically African-American neighborhood in Denver, CO. Through the lens of this project, a successful and collaborative participatory model that was achieved, and suggests that it is the iterative and adaptive approach that builds trust and infrastructure over time, ultimately leading to more meaningful and effective spaces.

An environment where people of all ages, incomes, ethnic backgrounds, and neighborhoods are welcome and comfortable, where people feel a connection to place, appreciate a community's identity and feel that the environment has been shaped for their well-being, is desired by all Denver residents. Asking residents to create positive change

through decisions about their neighborhood's future is integral to preserving the well-being of a neighborhood. Engaging community members in decisions about the built environment that impacts daily lives improves the overall vitality of a neighborhood, encourages ownership and stewardship, and safeguards residents against undesirable changes. In recognition of these principles, since 2014 Denver has been working to promote health, equity, creativity, and connection through investment of a 3-year grant awarded to Love Park Hill by the Colorado Health Foundation. The Park Hill Neighborhood Plan (PHNP) has been developed by using this funding to create a collaboration between agencies and the Park Hill community, in order to shape future physical improvements of the neighborhood. At the heart of a successful public engagement model is the belief that collaboration is more than just having a seat at the table - it is ensuring equitable power and decision-making, as well as embracing the idea that there are many ways and cultures to participate in dialogues about urban design.

## **5.2. Cultural Influences on Urban Spaces**

Urban spaces have a unique capacity to reflect the cultural and social contexts of communities. At the same time, they are transformed by the people who frequent and experience them. How places are developed and sustained have an immeasurable impact on the quality of public life, social sustainability, and identity, culture, and community. Thus there is a fundamental value in understanding the six dimensions of urban composition – namely the cultural influences, activation and uses, physical characteristics, dimensions and scale, accessibility and movement, and social environment – that combine to form public space. The focus of this research is urban public spaces, however the six dimensions are relevant and widely applicable to all forms and scales of urban space, from large parks to urban plazas or temporary pocket spaces. Similarly there is acknowledgment to the complex and multifaceted nature of cities, public spaces, and social life, all subject to limit. Urban space has both cultural and cultural perceptions, whose meanings change over time for individuals, public, or professionals. Furthermore, user age, previous experience, occupation, gender, or culture all alter the perception of the urban environment. Despite the limitations it's hoped that these dimensions serve to inform a more varied

planning response to the conditions and contest of meeting places, especially within the context of cultural traditions and the developing cultural precincts intended to regenerate urban areas. Within this investigation, each of the six dimensions of urban composition are interrogated to reveal how they influence the use and experience of urban space. Empirical findings and case study analysis demonstrate the significance of the cultural dimension of urban composition and of the six dimensions as an integrated whole, in the formation of a vibrant and engaging urban setting for public life and activity (Jalalkamali & Doratli, 2022). The research contributes to a more inclusive, descriptive and adaptive understanding of public space, and the culture of meeting places.

## **6. Future Trends in Urban Public Spaces**

Urban public spaces are areas having a public function promoting social interaction, recreation, and other communal activities. These might include parks, squares, and sports stadiums. They are important to urban quality of life and the image of a place. As participants in architecture or as landscape architects, urban designers will create new urban spaces or redefine existing spaces for changing their meaning, form, and usage. The power of change is reflected in the varied meanings, forms, and usages of urban space possibilities. In the future, through this power, new creations can anticipate trends. Covered here are political and technological changes that are expected to be the future trends of the meaning, form, and usage of urban spaces (A Adous, 2016).

The planning and redesign of urban spaces should be effective in promoting sustainability. One way to achieve sustainable urban environments is to design green infrastructure as part of the urban form. Green design elements, such as roof gardens, pocket parks, solar orientation of streets, and open spaces, can mitigate the urban heat island effect and reduce building energy demands. Moreover, sustainable urban environments demand equal access to space. New public spaces must integrate green design elements that provide amenity, privacy, safety, and access to desirable public urban spaces across the social spectrum, particularly in lower income categories.

In the past century, technological changes have had a profound impact on urban life by transforming communication, production, and travel. It is broadly recognized that information and communication technologies (ICT) are acting as a promoter of increasing urban efficiency. Critical discussion of smart cities points out their tendency towards the market-led and top-down approaches to urban governance. However, urban spaces are the key of urban quality of life and democratic urban governance, both of which are vulnerable to the application of ICT.



Figure 5: Future Trends in Urban Public Spaces

## 6.1. Sustainability in Urban Design

Urban public spaces are the key components of urban sustainability policy in enhancing social, economic, and environmental quality of the community. When considering the six dimensions of urban composition, the renovation and completion of fresh livability in contemporary urban space relate spatial structure with quality and quantity of green space, in which environmental quality, measured and assessed with the level of pollution and

biodiversity (Simić & Bajić, 2013), was chosen. The discussion on the quality of space, therefore, tend to fit with the generally accepted meaning of that term, while the quantity and level of usage will provide the position and role of different types and territories in public urban space design.

Most recently, EU policy directed to global level adopts the objective of resilient cities under the challenge of resource pressures and climate change. Apart the demand-side for efficient use of natural resources and urban greens of global policies, within urban design there is scope to shape the eco-friendly product by interventions on the built and unbuilt environment. The supporting measure of greening the city has gained large acceptance as a way to reduce urban air temperature, alleviate the heat island effect and improve the aesthetic and recreational aspects of urban areas. In terms of multifunctionality, green and blue infrastructure can be efficient in both mitigation and adaptation strategies for facing climate change effect. One the one hand, more green and blue in the city provides shading and air-treatments, thus improving urban microclimate and creating common spaces as a shelter. On the other hand, agriculture and natural element in the city can enhance ecosystem services and productivity, relying on a proper management system. In this regard, urban design is increasingly involved in the integral implementation of green and blue as flexible toolkits for regulating the urban climate and enhancing the quality of life, though in most cases it is still related to the perimeter layout. From an exhaustive literature review on eco-urban design can be inferred that, despite international practices are well established, lacking is a methodological approach to support decision-making processes in the field of spatial planning at local level, in order to be integrated in the overall strategic planning on climate change and land use. Since different and contrasting activities for the life-quality of the smaller cities rely on the urban design, the added-value of investigation is the attempt to overcome the above gap by setting up an operative methodology for integral urban design process as a toolkit for a balanced and sustainable system of green and blue in the city.

## **6.2. Technological Innovations in Urban Spaces**

Technological innovations have a profound impact on urban public spaces and their design. With the emergence of new technologies, urban public places and parks, traditional or modern, suffer alterations regarding their function, performance, and design. Prompted by technological advances, places of such a nature would be renovated or newly formed in order to provide users with better service and a novel visit/experience. The urban environment, as the complex interweaving of material systems and complex processes, is transformed by emerging technologies as innovative models to maximize the usability of urban areas for users.

The model of the Smart Cities and the broad range of issues, technologies, and components it interconnects, including infrastructure and public and private buildings, emerge in the focus of urban design. The urban environment industry in general is bound to be largely restructured and new converging industries and sectors will emerge dealing with cars, transport, and telecommunications beyond the simple notion of vehicles and infrastructure. Due to the digital infrastructure's growing importance and potential, the different aspects, applications and models related to urban design, urban space, and public life are brought up in the focus of the research.

The role of emerging technologies in urban public space design is examined from the point of view of the urban dimension: accessibility, functional performance, and personal safety concerns. The way they may facilitate and co-model a jointly evolving complex city life is considered, as involving a great number of actors and instances: private and public administrations, the academia and the individual professionals, and the citizen-actors. A brief review of ongoing European research projects in the domain of urban environment briefly introduces the possible effects of emerging technologies on the design and use of public spaces (Zammit et al., 2019).

## **Conclusion**

The exploration of urban public spaces reveals a complex relationship between urban composition and community life. Six dimensions of urban composition inform public space design, each highlighting different urban aspects. There's no one-size-fits-all approach to enhancing public spaces for community dynamics, as this varies by context. Public spaces cater to diverse audiences, including researchers, designers, planners, and users, each having distinct expectations. Clear articulation of these perspectives is necessary in urban discussions. Architects, urbanists, and authorities view public life and space improvement differently, presenting both challenges and opportunities for understanding urban composition. Engaging the community in these discussions is vital, as well-designed urban areas can foster inclusive dialogues and decisions. Current public spaces must tackle issues like safety, resilience, and sustainability, embodying urban life where significant changes occur. Urban space design should involve citizens, creating environments for thriving rather than mere observation. Designs must foster specific behaviors and emotions, necessitating that urban spaces are dynamic, vibrant, and equitable while promoting social justice. Urban designers should find a balance between adaptability and service quality in public spaces, addressing diverse community needs to encourage positive interactions in diverse urban settings. As urban spaces evolve, thorough democratic processes are essential for their development. These insights can guide future public space design and inspire further research into urban spaces' significance.

## References:

1. Yousefi, M. & Fardi, R. (2016). Physical Responding of the Urban Public Space to Citizens' Rights.
2. Zeka, E. & Ali Yüzer, M. (2014). Traditional Street Pattern Typology: Case of Korça.
3. BAGNOLO, V. I. N. C. E. N. Z. O. & MANCA, A. N. D. R. E. A. (2019). Image beyond the form. Representing perception of urban environment.
4. Boeing, G. (2021). Spatial information and the legibility of urban form: Big data in urban morphology. *International Journal of Information Management*.
5. Fleischmann, M., Feliciotti, A., Romice, O., & Porta, S. (2022). Methodological foundation of a numerical taxonomy of urban form. *Environment and Planning B: Urban Analytics and City Science*, 49(4), 1283-1299.
6. Jasim Essa Al-Saaidy, H. (2022). The Street Edge: Micro-Morphological Analysis of the Street Characteristics of Baghdad, Iraq.
7. Ho, R. & Tung Au, W. (2020). Scale Development for Environmental Perception of Public Space.
8. Gao, S. & Liu, S. (2021). Exploration and Analysis of the Aesthetic Cognitive Schema of Contemporary Western Urban Landscapes.
9. Brain, D. (2019). Reconstituting the Urban Commons: Public Space, Social Capital and the Project of Urbanism.
10. Putra Redyantanu, B. & Damayanti, R. (2017). TEMPORALITY IN A DISCUSSION OF SUSTAINABLE ARCHITECTURE.
11. Kashef, M., Visvizi, A., & Troisi, O. (2021). Smart city as a smart service system: Human-computer interaction and smart city surveillance systems. *Computers in Human Behavior*.
12. Berdejo-Espinola, V., Suárez-Castro, A. F., Amano, T., Fielding, K. S., Oh, R. R. Y., & Fuller, R. A. (2021). Urban green space use during a time of stress: A case study during the COVID-19 pandemic in Brisbane, Australia. *People and Nature*, 3(3), 597-609.
13. Gurnee, W. & Tegmark, M. (2023). Language models represent space and time. arXiv preprint arXiv:2310.02207.
14. Bartzokas-Tsiompras, A. (2022). Utilizing OpenStreetMap data to measure and compare pedestrian street lengths in 992 cities around the world. *European Journal of Geography*.
15. Attard, M., Guzman, L. A., & Oviedo, D. (2023). Urban space distribution: The case for a more equitable mobility system. *Case studies on transport policy*.
16. Lund, K. G., & Hvass, M. (2024, March). Socially inclusive Lighting Design: exploring a method to enhance freedom of movement for marginalised groups. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1320, No. 1, p. 012029). IOP Publishing.
17. Lynn, T. & Wood, C. (2023). Smart Streets as a Cyber-Physical Social Platform: A Conceptual Framework.

18. Femi, T., Adeola, N., & Ademola, K. (2022). Assessing the Impact of Urban Pedestrian Streets on Enhancing Urban Vitality and Social Interactions: A Case Study of Rasht's Pedestrian Street.
19. Pugalís, L. (2009). The culture and economics of urban public space design: public and professional perceptions.
20. Ma, K. W., Mak, C. M., & Wong, H. M. (2021). Effects of environmental sound quality on soundscape preference in a public urban space. *Applied Acoustics*.
21. Folke, C., Polasky, S., Rockström, J., Galaz, V., Westley, F., Lamont, M., ... & Walker, B. H. (2021). Our future in the Anthropocene biosphere. *Ambio*, 50, 834-869.
22. González-Flores, Z. N. & Organista, M. (). Exploring the interactions between society, wellbeing and urban spaces: An investigation of safety and morphological attributes focusing on human .... Wellbeing.
23. Wang, L., Han, X., He, J., & Jung, T. (2022). Measuring residents' perceptions of city streets to inform better street planning through deep learning and space syntax. *ISPRS Journal of Photogrammetry and Remote Sensing*, 190, 215-230.
24. Almalki, F. A., Alsamhi, S. H., Sahal, R., Hassan, J., Hawbani, A., Rajput, N. S., ... & Breslin, J. (2023). Green IoT for eco-friendly and sustainable smart cities: future directions and opportunities. *Mobile Networks and Applications*, 28(1), 178-202.
25. Haque, A. K. M. B., Bhushan, B., & Dhiman, G. (2022). Conceptualizing smart city applications: Requirements, architecture, security issues, and emerging trends. *Expert Systems*.
26. Carmona, M. (2019). Principles for public space design, planning to do better.
27. Palliwoda, J. & Priess, J. A. (2021). What do people value in urban green? Linking characteristics of urban green spaces to users' perceptions of nature benefits, disturbances, and disservices. *Ecology and Society*.
28. Jens, K., & Gregg, J. S. (2022). Building performances in open and enclosed spaces: A method for balancing operational costs and space utilization with a focus on user needs and satisfaction. *Architectural Engineering and Design Management*, 18(2), 149-164.
29. Asghar, M. (2023). Cafe politics: how food service operators influence university students' satisfaction and dining frequency.
30. Larson, R. (2017). The Power Of Public Space: Urban Revitalization In New York And Medelli?n.
31. J. Ellery, P. & Ellery, J. (2019). Strengthening Community Sense of Place through Placemaking.
32. Stamatis, S. (2018). Designing with Communities: A Framework for a Collaborative Public Engagement Process.
33. Jalalkamali, A. & Doratli, N. (2022). Public Space Behaviors and Intentions: The Role of Gender through the Window of Culture, Case of Kerman.
34. A Adous, Z. (2016). Exploring the urban environment and technological change in the discourse of urban design.

35. Simić, I. & Bajić, T. (2013). Green and blue spaces: Integral urban design as a toolkit for climate change adaptation in the case of smaller settlements in Vojvodina Region.
36. Zammit, A., Kenna, T., & Maksymiuk, G. (2019). Social implications of new mediated spaces: The need for a rethought design approach.

## ***Chapter 02: Urban Composition***

## **Introduction**

Urban landscape is an important factor in the increasing inequality, spatial segregation, and social isolation observed in contemporary cities while most of the basic work on this issue treats its structure mostly in terms of the usual coordinates such as demography, economy, and education. These geographical factors only partially explain the structure of social networks among the city's population. Meanwhile the field of urban morphology focusing on the spatial forms of the city, a perceptual approach on how the urban composition helps to evolve spatial experience, and mathematical and computational methods are developed to perceive this spatial experience organized in the form of a network of streets. This network is treated as an undirected graph (Blanchard & Volchenkov, 2013).

Four hundred years ago Galileo probed with inclined planes and declared that the distance between two mines was not proportional to the time spent to cover it. Inspired by this toy experiment, we assume here that the spatial experience in humans intervening in the city may be organized in the form of a universally acceptable network such as the streets and squares in a city. By Steiner's principle one expects that the frequently travelled routes are nothing else than the 'projective invariants' of the given layout of streets and squares. Basing on these two assumptions, a method is developed that allows capturing a neighborhood's inaccessibility in terms of how much one can hear, see or access things according to both the geographical and architectural layout of the city. All geometrical considerations are restricted to ideal cities consisting of regularly spaced streets set in a parallel or square grid. The method is illustrated with the Silk Road of the historical city center of Samarkand, and the Compagnonnages routes between the churches of Tours. All not cited results are either elementary or contained in a previous paper. (Harrison et al.2024)

### **1. Definition of urban composition**

Urban is a protean term, meaning many different things to different people. A composite definition has been tailored a starting point for further discussion as much as a definitive set of necessary conditions. The general tendency has been to define urban as a settlement type, focusing on the presence of specific attributes such as large populations, high

population density, distinct administrative functions, or particular sociocultural practices (Fox & Wolf, 2022). The first and most fundamental point is that urban is a geodemographic attribute. An urban place is created through the congregation of large numbers of people for sustained periods of time, and nothing more. Park and plaza, café or souq, skate rink or beach, suicidal drop or chowk, all are urban(ized) spaces to the degree that they are the setting for dense metabolic activity. So too are slum, shanty town, favella, transient village, and camp. In theory at least, being thus defined, the urban could be found in any number of unexpected locations, from an Arctic mining settlement to the shopping-malls of Southern California. See Figure 01



Figure 1: Key Elements of Urban Composition

It is in part exactly this offbeat quality that has inspired continued debate over what precisely it is that makes a place urban. The disposable income of both residents and neighborhood, as well as the availability and variety of food and drink, are matched by rapidly expanding hours and infrastructure for their consumption. As site of collective labour and leisure, Piccadilly Circus and its cattle trough, Westway and the damp grassy

hillocks on either side, Oxford Street and the lurid summer gowns of aging transvestites, are thus urban spaces, as well as those below. It is the busyness of these places, evidenced in daily rhythms of accretion and dispersal, contestation and camaraderie, that makes them seem, maybe unnecessarily so, quintessentially urban. Judging by the plethora of publications on the subject, the question “What makes a place urban?” remains the topic of ongoing debate. (Martínez & Short, 2021)

## 2. Laws of Urban Composition

A type of city is composed of 24 rectangular buildings 3-7 stories high. This sort of city is entirely generic and typified Europe/Eurasia at least since medieval days. Nowadays, because it still typifies Europe, and Europe is the paradigm of cities, it typifies all cities. Europe is composed because it consists of city. Therefore, the generic rectangle becomes an archetype replete with symbolic meaning. How clever to ‘invent’ the staircase, a typological component, and graphic method for depicting on paper urban structures, reminiscent of the type. Social symbiosis urges literary spatial-filling. See Figure 02

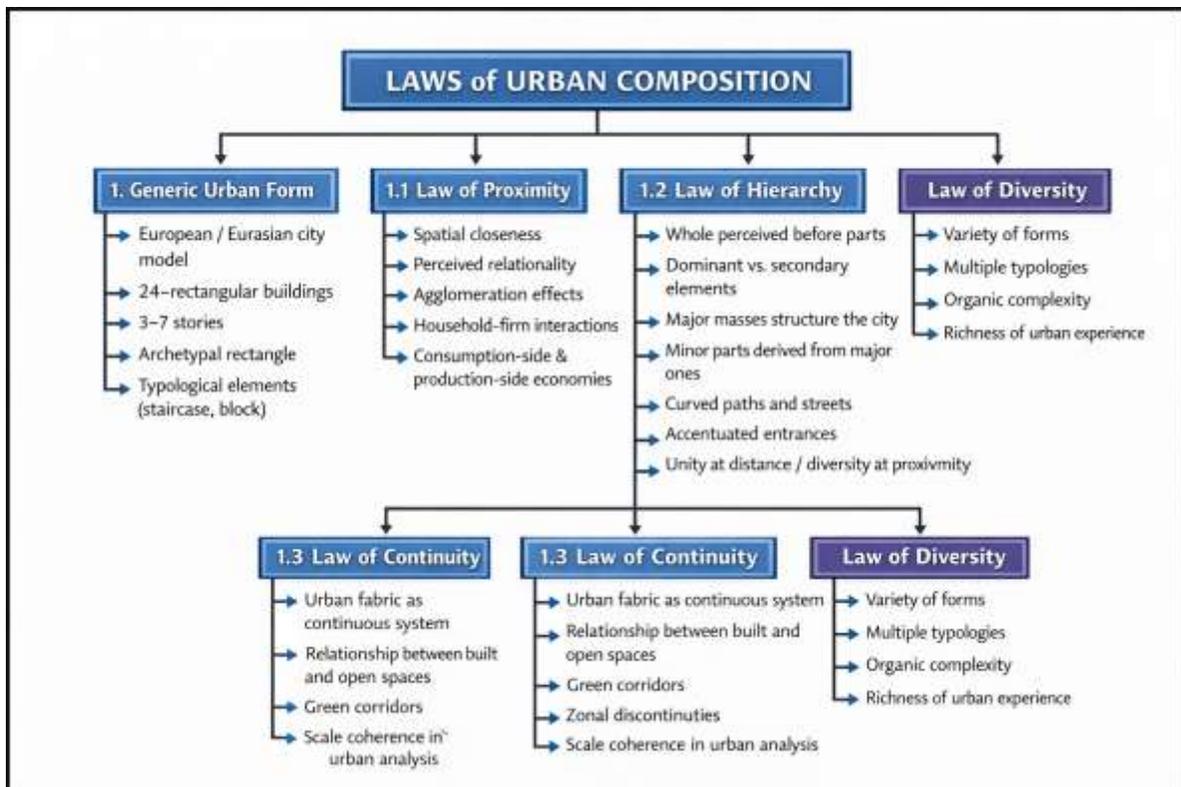


Figure 2: Lows of Urban Composition

## 2.1.Law of Proximity

This may be the first formal proof that President Trump is an idiot savant. The Law of Proximity is not part of the title, but it's cool like that.

Given the longstanding tradition of masonry architects around the world in asserting the Law of Proximity, we can take it as pretty much accepted that objects placed in close proximity to one another will perceive a degree of relationality that unites them. Why? Agglomeration effects with place-based economies when location decisions are dominipically distorted tend to focus on outcomes at the metropolitan level. Households and firms are seen as atoms that, once located, produce productive and consumptive interactions with nearby entities. (Anne Fennell, 2014) focus on “output-side” economies and suggest that trying to finesse a shift toward a “production-side view of agglomeration,” . builds a proof of concept for a “consumption-side view of agglomeration,” and applies the idea to locations across firms. After developing the theory here, the consumption-side approach is instead applied to locations across households.

## 2.2.Law of Hierarchy

It is argued that parks are often more beautiful than cities. As the variety of a city is neglect, it cannot compete in beauty with a larger area of landscape. To create an original harmony, to obtain a vision with a single meaning and form that expresses an unique thought, to arouse an ineffable emotion that words cannot capture, is the role of composition. Indeed, composition is the way that gives charm and enchantment to the décor.

In order that the roads and paths of a city may be beautiful, they must be created in curves, an eternal flux that creates rectilinear cap. They must suggest leading somewhere, though this might be an impression, as by ending in the horizon. Therefore, the main entrance of a city must be accentuated: the other sides may remain obscure to augment the surprise when entering. Disguising exits and corners is indispensable so the city appears impermeable and of an indefinite size. But universal beauty is finally achieved by the composition of mass,

line and colour. This one must be subordinate to the fundamental mass; the general structure must be easily discernible, so that the complexity of the city can be side by side seen.

The principle of urban composition is found in the law of hierarchy, that the beauty of cities, as with all complex organism in nature, stems from the intentional cooperation of simple, diverse and organic elements. The discrimination means that, when seen from afar, the ensemble is read as a whole; and, as one approaches, the parts distinguish themselves from one another. The internal relationships have generally simple ratios: the minor parts are themselves desegregations of the major ones. (Cozzolino, 2023)

### **2.3. Law of Continuity**

#### 2.3.1. The Law of Continuity

The 1935 principles of the City limits institute a breach for the confrontation of two model devices in the urban scope. From one side the strategy is based on the arrangement in which the residential areas are isolated by a zonal discontinuance, constituent by green corridors and by an equipment congregator of plateauxs destinied to the concentration of the services (prohibiting the intensification of the edified beyond the residential compound). The boasting of the discipline (figuratively numbered in Crescendo) consist in the study of the affair deployed between these limitant elements. Contrary, a significant part of the current literature has impuled the rather presumptuous realization of scalar analyses, usually far stretch too from the order of grandeur which might happen to be considerate positively relevant. (Gašparović et al., 2021)

#### 2.3.2. Reasoning by Reciprocal and Pantoscopic Relationship

That what the eye broadly apprehends – the so-called bird view – offers an advantage which varies of that one that deadens the gaze in a specific object. The recurrence of the generally panoramic reading, executed when the sight finds itself over the ground, discloses a peculiar declination which conforms an oppost disposition in relation to the standing point. Therein emerges a model of unfolded device that is conceivable with a clear conception of the panorama limits. It is allowable, latterly, to enumerate it. First, the scene constantly

transforms with any step relation to the window (or, analogously, if the observer steps back and forward). Secondly, the vision of any detail daarie continge upon it angular deviation relatively to the point of view vigorously confirming a piece of evidence that is ones more related to the recognition of the fallibleness of the authority displayed by the perspective than its very construction. Lastly, what is observed, the object and its viewproach, represent angular correlation; the object is always seen a window, certain moment that it fall upon reality disrupt the delicate equilibrium constituted with concealment (Gorgeri, 2016).

#### **2.4.Law of Diversity**

Paragraph begins with a summary of 1-3 key findings, using data or specific examples for context. Then it explains the results and outcomes. It includes interpretations, applications, and implications, and suggests further work.

Urban composition is like a living organism, developing from elements in three states called gains, losses and in-situ. Urban areas typically follow a balance between gains and losses. This balance is well described by a simple power law, so that in typical cities most elements will remain short-lived structures seen in fewer and fewer locations, effectively characterized by their properties as in-situ elements. This interpretation introduces the use of across-roadwalk time to quantify the visibility of different urban elements. Since gains are added, the lifespan distribution of visible elements shifts, resembling decay of a while from random sample. This phenomenon could be macroscopic analog of a similar behavior on the individual-soccer level.

Urban vitality, a widely debated term in the planning discipline, is closely associated with the development and expansion of urban areas. One of the pivotal issues is how the conceptual framework of urban vitality is operationalized because its multidimensional nature transcends individual indicators. This study addresses the concern regarding the methodological challenge of quantifying urban vitality by proposing a set of indicators that can account for the comprehensive dimensions of vitality. The empirical results and discussions are based on data collected from 12 cities in Germany. Subsequently, a set of (Kumakoshi et al., 2021) refined indicators of urban vitality is proposed, which provide a

comprehensive framework for measuring vitality. This emphasizes a greater emphasis planning on the social wellbeing and quality of life of residents in urban fabrics.

### **3. Constituent Elements of Urban Space**

Defining the urban composition, it is proposed to treat it as a photo. In other words, as a poly-dimensional. However, it appears as a doubtful question. The level of urban complexity has far exceeded the technological possibilities of a single shot getting of an All-Over image. An urban space photo cannot be printed out for the inability to place it on a horizontal plane. As time flows, the urban tectonics change, constantly or slowly, seriously or faintly, underground or unseen. An attempt was made to classify these things, the bricks, cast in an urban composition. According to the Urban Planning Theory, space or form generation of a settlement at its initial, primary stage is concerned with selecting a site and choosing a layout. Even at the primary stage the settlement appears as a complex of the system of paths and the system of the location. At an evolved stage it acquires more complex and enlarged systems. Still, M. Goodman argues that the basic scheme of structuring urban space arises accidentally (Krashennnikov, 2019).

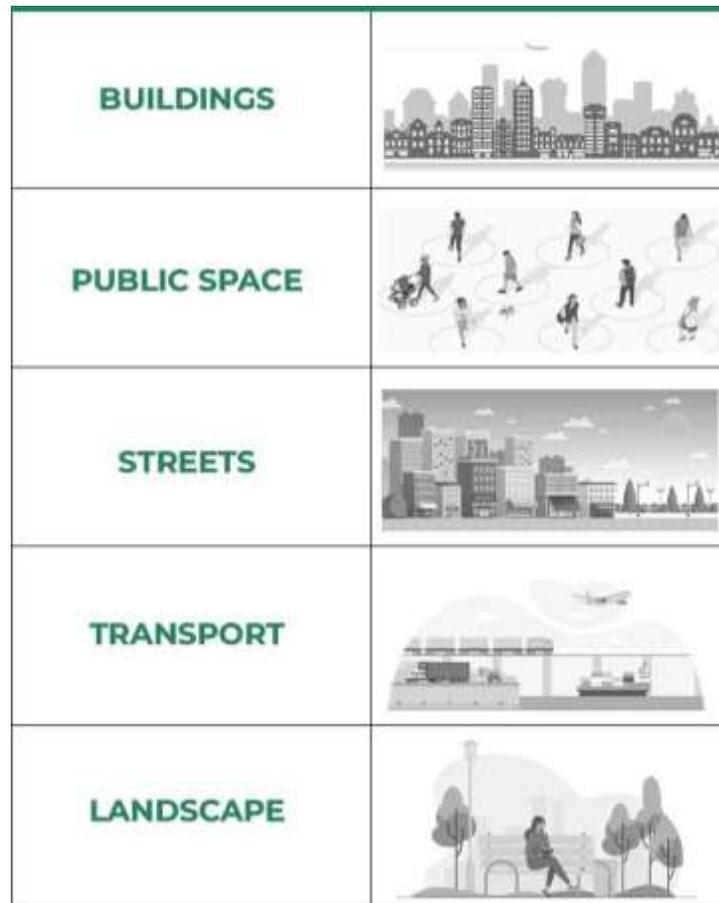


Figure 3:Element of Urban Space

### 3.1.Buildings

Throughout the history of cities, the basic formative element of the urban environment has been the building. Buildings are the components of urban composition that determine its spatial configuration and functional organization. The functions of buildings are numerous and they can vary according to variation in their architectural forms. They can serve almost every kind of need essential to the human physical and social existence. Design and management of houses make an important topic of urban design and planning. In the functional composition, buildings of markedly different kinds of services and spatial qualities may stand side by side or oppose one another.

Every designated area occupied by a structure affects the form of the buildings, and an arrangement that considers the proffered locations and the height of a building is called as a "building envelope." The sum of all such enclosures, preferably but not necessarily including the street rights-of-way, in a designated area is termed as a "Building Envelope Area" or "Lot Coverage." In urban conservation areas required to conserving the existing residential architectural design, this area can be protected by determining a "Minimum Building Envelope Area." Buildings in these organizations need to pay attention to the shadows that throw around. The shadow track of the high-rise buildings depends on their sizes, shapes and locations also affects the pattern in such a way that restrictions may be desired. A distance from a point to the nearest shadow track relates to the shadow effect, the same building at a distance less than 2.5 times its height would be in full shadow (R. Alexander et al., 1988). In many locations it could be possible that tall shade buildings are ideal shadows for much larger regions than existing times. The structures can cause a decrease in the insolation and can create an acceptability problem in the interior. This may prevent natural cooling and/or heating, and any arid protection measure would cause considerable energy waste, also causing a loss of the esthetical quality of the site. At the same time cooling mechanism placed on specify and spaces from construction walls to create a problems in saturation. High-Rise Buildings must be planned and managed as an integrated and an inseparable planning component of the settlement system as a whole (DŽIDIĆ & KOVAČEVIĆ, 2018). The relevant restrictions in their planning should be the location, height and area of coverage.

### **3.2.Public Spaces**

Public space and democracy have a long and diverse history. The historically shifting relationship between public space and democracy shows how critical public space is for democracy, as it allows citizens a public space to come together and discuss issues. One of the most famous was the Wall Street occupation, a protest against economic inequality which started on September 17, 2011. The occupation of the Zuccotti Park on the same day served as a catalyst for the movement. Public squares and plazas have often played a critical role by providing a setting, even before the establishment of the first democracies. In cities, public spaces are at a premium and the act of occupying physical public open spaces has

been significant for large protests. Field studies have also shown that protests taking place in public spaces are more likely to receive greater media attention. Nonetheless, physical occupation of public spaces is not the only way in which public spaces can be significant for protests. Demonstrations are a common form of political dispute that quite often unfold mainly or partly in public spaces. However, besides the political uses of public space, there are also day-to-day quotidian ones. According to research, 85% of public spaces worldwide are legitimate gathering places and not for transportation. Indeed, if the shared universe of public space helps to build a culture of order, engaging civility between all the city's citizens then equality and democracy can be rightfully maintained, without debt for any party involved. Besides this public supervision formal level, the way in which private properties are built is critical even to profound levels which in turn affect how owners' establishments enforce behavior around the public spaces of their domain. Clearly, most of the downtown population is negative, scared, fed up with traffic, fed up with noise excitement, fed up with crowdedness, fed up with anything which could be defined as a nuisance, and as 'social issues'. Usefulness of urban furniture has to be understood as compensation for the lack of specific urban shapes, which trigger specific activities. (Craig, 2022)

### **3.3. Infrastructure**

Urban Composition is a term often used by architects to indicate the location and the architecture of the buildings that are the subject of an architectural project (Novazzi, 2014). In this sense, urban composition is composed both by buildings and by the spaces between them and among them that make the city. Considering something different from that, I mean the deal between buildings and infrastructures; it is not just the architectural composition, which obviously matters, but rather the variety of activities we usually find around a certain building or a certain public space. The city, with the complexity that characterizes it both physically and socially, is the backdrop; the many relationships happen precisely within that variety of settings that frequently meets, juxtaposing and overlapping.

Infrastructure is the ensemble of transport systems and services that support them, such as roads, railways, airports, ports, bridges and tunnel, water distribution or treatment facilities, sewer and energy systems, internet and telecommunication network. Urban infrastructure provide urban agglomerations with an organized set of elements that facilitate the meeting of residents' needs, often varying in scale. The idea of development is linked to the ability to respond to human needs, especially in terms of public spaces and services. In the urban evolution, the appearance of these elements determines the arrangement of the growing city, representing both limits and possibilities for its expansion. This particular condition also allows the infrastructure to be generally considered as neutral elements, characterized by reduced complexity compared to the surrounding scenarios, with which they tend to establish a sort of balance; they exist facilitating the urban life, so it happens that after a while they are taken-for-granted by the users. More than often they work in the dark, they are emphasized only when something goes wrong. (Fan et al., 2021)(Derkenbaeva et al.2022)

#### **4. Urban Typologies**

Steps were taken across Milan's centre from the church of Santa Maria delle Grazie to the monumental cemetery located to the north of the city. Similar quality of construction methods was apparent in several of the Grade 1 listed buildings, centres of authority it transpired. The urban fabric outside although sharing the same urban constraints was desperately poor in comparison. Attention turned to the buildings and it was seen that they stretched back into many different building typologies of various origins, eras, and adaptive reuses – parties, offices and apartments converted into hotels; a foundry into flats; shops into a police station and a cinema into a reception area (Kay-Jones & Janvier, 1970). The juxtaposition of these buildings formed a diverse and complex street scape of public and private spaces that could be closed, overlooked or open to view.

The concept of typology is concerned with the classification, organization and understanding of types within the built environment. Where types and the rules for the initial generation are perceived at the architectural scale, the virtual absence of the building scale allows the city to be considered as an accretion of generic plots and street types

forming a City Model consisting of typological rules for development. In the school of studies by Aymonino and Aldo Rossi, the elements that compose the urban form are defined as the building types within the city each conforming to a particular plot type. The defining attributes of the plot type are ratio of built to open form and in addition set of generic complex types on public squares and intersecting streets. A city morphology is defined by forecast models of the how the generated rules assemble over number of plots. At any point in the felt urban environment the global city can be observed as intensities at different scales including the street and building façade. Initial tests involve the classification of these images with the intent of developing methods for constraining generating models. Beyond the validation of the city model, the above provides an analysis of the accuracy of the rules in a north Italian case study and indicates two new typological rules related to neighbourhood geometry that were not previously evident. By the latter half of the 20th century, Milan and its province had evolved into the devouring urban cancer portrayed by Rossi through massive speculation and often erratic planning (Moura Lima de Aragão, 2006). Implementing a systemic and recursive framework the score for this city-MAS (multi-agent system) mechanism enables critical examination of the role of various urban characters in the formation of block typologies and the emergent urban fabric. Influential parameters can tip a balance in favour of tabula rasa or incremental land development strategies, congestion or fluid movement, and thus historically change the identity of a city. Simulation experiments suggest destructive bombardment might as well reinforce the urban weave when compared to a wholesale remodelling of the built form.



Figure 4: Urban Typologies: Urban Centers, Suburbs, and Rural Areas

#### 4.1. Urban Centers

European cities mostly still resemble what they looked like in the lifetime of St. Thomas Aquinas with regard to their sizes and configurations. Urban populations in European countries were largely stagnant for nearly two centuries or even fell until the onset of industrialization in most territories. The growing and vast majority of the population were thus bedded in rural settings. Settlement geometries and structures responded to a long equilibrium in an agrarian economy: city and hamlet functions did not fundamentally change, and economic activities were conducted for the most on foot (Wurm et al., 2021). This has led to the development of monocentric urban spatial structures in European cities. Such spatial patterns of concentration were safeguarded by land-use policies and cultural norms. This structure could be preserved nearly intact until the 19th century. The Industrial Revolution with its steam engines hubs and fancy new machines did away large parts of such urban structures nevertheless. It replaced old usages of buildings and spaces and indeed upended the very notion of rivers and ponds. Probably more importantly, technological breakthroughs facilitated new spatial forms of production. Manufacturing activities were now decoupled from the agglomeration of people as new machines no longer ran on water but coal. The less striking shift was the development of semiconducting

and other methods of transportation. This especially concerned the train which achieved a tenfold growth in Europe in less than a century starting in the 1830s. The combination of these processes expelled craftman activities from city centers. The remainder is well known: with giant leaps in engine technology, towering housing blocks of the working urban class rose on urban rims in a barely twenty years. The further ubiquity of cars to most of the developed world further facilitated processes both insets independent and ubiquity processes of de-concentration and suburbanization, a term introduced as early as 1826. In fact, the tectonic urban history of the 20th century is mostly that of a frantic development of outskirts spaces scarcely inhabited a handful of decades ago and, in major cities, the process simply shows no sign of abating as testified by the protracted rise of the urban belts. These processual truths may ring less mellifluent to those however bound to revisit the piddling embrace of the atomistic still described as innovative revolution in the European convoluted laws and not the welfare of its hollowed out carriages.

#### **4.2.Suburbs**

Since the achievements of Christopher Alexander, there has been relatively little research on how people use public open space for leisure. This paper models how the inhabitants of Darmstadt and Freiburg behave in the unit of the urban block, and the unit of the public open space. Multifactor maps help in the analysis. Recent findings illuminate the possible interdependencies of architects, regional planners, decision-makers and private investors for a more sensitive approach to private and public clients. (Venter et al.2021)

#### **4.3.Rural Areas**

The 50 km urban spatial mass and vitality of major population centres accelerates decrease of low-density rural areas, but development and history also play a crucial role. There is a system of commuting to the latter's detriment and the movement of those in retirement age from urban areas to such local self-governments. In contrast, a significant number of local self-governments in the vicinity of large cities were classified as cities in all the years analysed. Besides, in mountain regions the number of local self-governments classified as cities is very low. With the exploitation decline and bankruptcy of certain mines, the total population of some rural communes almost halved in successive decades. There are local

self-governments whose administrative area includes vast forest complexes where no residential buildings and very few registered locations exist, demographically these communes are in turn sparsely populated. Inhabitants of nearly every rural commune decrease in number in successive years. Amongst them, 72.0% are rural communes. The average shrinkage of such places in 2006–2019 is - 1.2%. Goods and services are elected in the sense that the cities in their vicinity do not offer the possibility of shopping in shops with the highest range of products. This applies especially to agri-food goods that are necessary for everyday life. (Sun et al., 2023)

## 5. Challenges of Urban Composition

Urban composition involves shaping large areas of land into ones with intensive human settlement. Since the city is itself a condition of the human psyche, and one of profound and lasting influence, urban composition may cover from the arrangement of clouds in the sky to the characters of sub-paragraphs on a planning directive. Moreover, most what is remembered is not an architectural shape, but a composite of connected spaces between buildings. It may be a sequence of sights encountered on a walk, a variety of spatial experiences, or the memory of occasions in different places. As victorious armies know, built space is a powerful means of influencing the behaviors of its populace (Anne Fennell, 2014). Thus, the shape of a city and its buildings evolve a power beyond the provincial.

Urban composition involves many disciplines, from urban planning to garden design. As technological advancements have rapidly increased, so also has the sophistication employed in the synthesis of environmental elements. Urban composition overall has a strong focus on balancing the needs of residents with the environment and the wider community. Since the city is composed of many interacting systems, its form may arise as a manifestation of reaching  $\emptyset$ -state condition for values of certain driving variables. These might include population density, level of trading activity, or amount of industrial pollution. These are purely functional relationships between the optimum density for a function and the level at which it is most effectively provided (S.Y. Lau, 2010).

From first principles, it is little more than syllogism to conceive such a city as being derived from an iterative process of decisions made over zoning patterns. But it is obvious that,

beyond a certain point, this would suggest an over-simplification of the actual process of city-forming. Early theories about it tend to ignore the changing nature of driving variables within the time-space fabric of the city and concentrate on the end event. Balancing all the processes in planning on the growing edge of the city provides psycho-spatial and temporal landscapes as part of a growth model in a Dedalian fashion. The central theme in current thought regards the form of the city as a complex evolving growth structure. See Figure 05

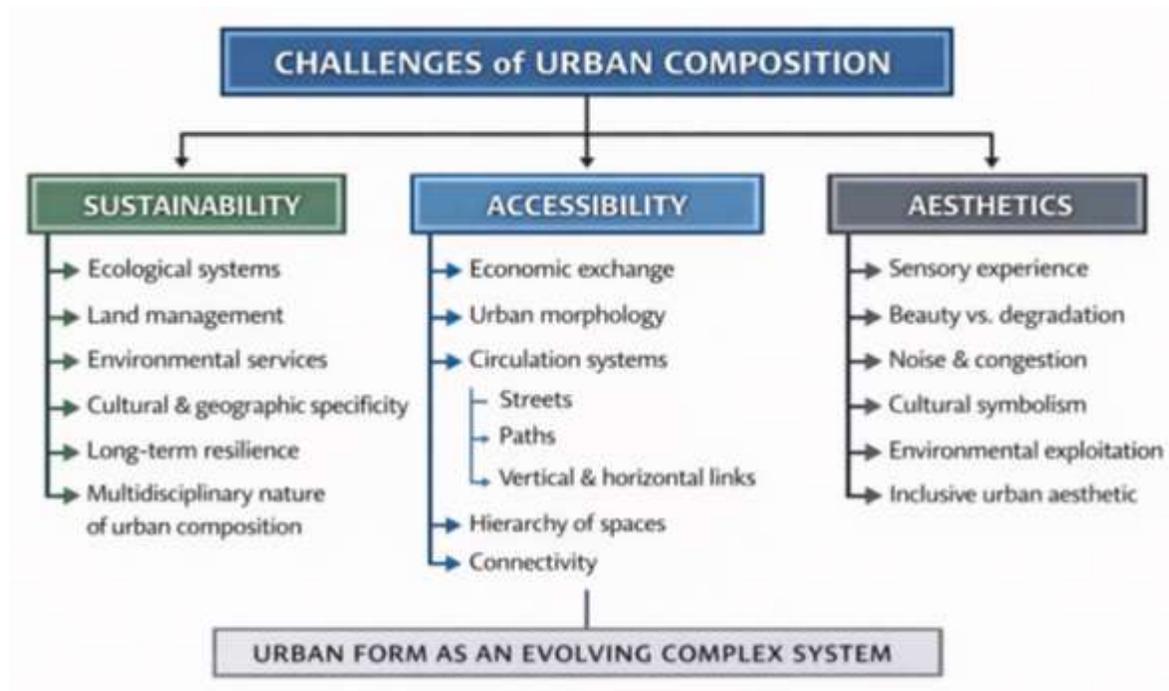


Figure 5: Challenges of urban composition

### 5.1.Sustainability

No longer something pertaining exclusively to development codes, the implementation of sustainable development potentially extends the complicated value of eco-services. As a result of these complex worth of natural processes is able to encourage the discernment and sustainable handling of the land, a significant contrast to urban design's typical reliance on growth forms and their infrastructure (H. III Akers, 2009). For this reason, consideration and possible implementation of such practices in new cities might best be facilitated via exemplification. Replicating this process necessitates the geological founding of Fayetteville, Arkansas as sustenance. Rather than dissect the ecological ethos within

American history, a cultural realm addressing human digestion is here referred to. Varied cultural group organic systems comprise unique forms of sustenance. At their own rate these substances are metabolized rapidly or slowly by group bodies, hereby transforming these forms of sustenance through the digestive organs into waste and subsequently, psychology. Analogously, various forms and amounts of sustainability are ingested and deprecated by the various cultural bodies of the earth. Unique geographic and human factors contribute to differing social rates of sustainability consumption. Bills and ordinances seeking a balanced urban food chain should follow other occupants vibrant studies of yak herding and whale watching.

## **5.2. Accessibility**

Discussing this combination of urban studies and structuralism, three somewhat speculative lines of investigation are outlined: the role of economic exchange within cities, the potential of developing an urban metalanguage that could embrace different fields of knowledge within architectural and urban research, and the usefulness of certain recent developments in urban Morphology as a theoretical and methodological platform.

The city is the locus for the co-location of various systems of economic exchange. The nature of activities in different locations has much in common with the classification of morphological features, and to some extent shape both the city and the building articulation. A very basic vocabulary appears regularly in buildings and in cities, although their combinations could be infinite. At a general level, urban fabric could be described in terms of height and density. In a more detailed approach are aspects such as internal distribution, vertical arrangement, surface articulation, situational placement, relation with open spaces, type and form of accesses, presence and hierarchy of street furniture, and so forth. At the same time, the building could be examined at different scales: from the design level, the construction systems or the building technology to the integration of several units in the urban ensemble as a dwellings block, a marketplace. At both ends, creation of space implies circulation, either external, horizontal and vertical, or internal. Stairs or streets can be taken as paradigmatic examples. Amplification of the basic concept of circulation leads into a network of spaces or, from a different point of view, the pattern of paths. From a

structuralist perspective based on this hybrid vocabulary, a city would be composed by a dense fabric of interconnected so-called urban objects, each one being described by a certain number of features as place, space, building, movement, etc. (Karjalainen et al.2023)

### **5.3.Aesthetics**

For most people the city, particularly the industrial city, is the antithesis of the aesthetic. While there may be sections that have their charm, trucks and automobiles have conquered the urban streets and pedestrians scurry before them. Gardens and parks are occasional oases amidst the stone desert of concrete and asphalt, but the dominating features of urban experience remain mechanical and electronic noise, trash, monolithic skyscrapers, and moving vehicles (Berleant, 1986). This is a realistic portrayal of the urban environment in industrial centers and smaller regional cities. Side by side with all their cultural treasures, their galleries and streets crowded with tourists, many great cities exist under their elegant facade at the level of a grotesque sewer, a terror incognita. Degraded environments are there for all to see, but attention is easily drawn to other matters: to the theaters, the museums, the shops, and the lavish restaurants. To come back to the city in the received sense of that term is also, in some respect, to come to a stop. The city is motion; its forms are the forms of desire, Love as much as Hatred. It cannot be caught in a snapshot and it always eludes the rhetoric of a summary description.

However, by claiming the loss as well as the gain, it is possible to begin to establish an aesthetic of urban life which would encompass the phenomena of discomfort and distress resulting from the encounter with so much aggressive architecture, wanton ugliness, exploitation, and accumulated hostility. The exploitation of the urban environment generates a surplus of ugliness which limits the potential of urban living. Of course, there are other exploitations: the exploitation of work, of the social body, of the image and role of women, and so on. The exploitation of nature in urban planning, excavation, profit-making land speculation, devastation and desertification of entire areas, obviously involves the formation of an environment which is not conducive to well-being, and, in

consequence, constitutes a loss and diminishes the possibility of a more direct relation with nature. (Kreichauf2023)

## 6. Methods of Analyzing Urban Composition

Park and Burgess presented the urban Geographical ecological model in 1925. The ideas that they presented led to the development of urban geography, and the urban spatial structure model presented by them served as the basis for almost all the subsequent models of urban spatial structure. Using the concept of the Chicago School into a cellular automata model to examine the evolution of urban spatial boundaries. In doing so, found that these boundaries may not have to shrink uniformly over time and instead can spread out in a way. This idea is generally consistent with the situation observed in many cities, where the CBD becomes more marginalized in terms of space distribution but still remains the center of economic activity (Knaap et al., 2019). In a broader context, knowledge of neighborhoods and urban spatial structure is of great general social importance since the two are powerfully linked to issues of poverty, segregation and inequality. Attention to these links has grown over the past two decades, creating a great need for study of the spatial aspects of urban neighborhoods.

Two main questions regarding urban spatial structure and ethnocentrism, using examples from the United States (US), but also appropriate to other countries. First, the following questions regarding urban spatial structure and ethnocentrism will be explored. Second, the following questions about cultural boundaries will be examined: What kinds of neighborhoods may be distinguished? What criteria are used? How do these work out in practice? In addition, the empirical evidence on assumed cultural boundaries is evaluated. Continuing in the tradition of the Chicago School, there is broad interest in the study of neighborhoods and urban spatial structure. The Chicago School proposed a model of the city as a living organism with a natural lifestyle and socio-spatial structure as the natural boundary of urban neighborhoods. After the concept of the neighborhood was consolidated and the definitions urban spatial structure was proposed, it marked the beginning of the development of a scientific discipline. Social factors play a significant role in the formation of the city and urban spatial boundaries. At the same time, political factors and national

legal support also influence the formation and preservation of cultural boundaries. (Allam et al.2023)

### 6.1.Spatial Analysis

In Scarborough, there is one square grid and two rectilinear grids. The other boroughs have higher entropy street orientations, not adhering as strictly to the ordering logic of a single grid. This study scale aggregates heterogeneous neighborhoods into a single analytical whole but offers the benefit of capturing the scale of city planning jurisdiction to tell us about the spatial ordering that the circulatory system provides. While some intuitive relationships exist between land use, street network, and form, we have lacked the necessary data at sufficient spatial scales and level of detail to computationally bear this out. Plan documents reveal open space planning that directly affects street pattern in ways not yet accounted for in spatial parameterizations. Aggregating Holistic Neighborhood Areas objects shows that physical land development, not just zoning designations, is vital for understanding the relationship between land use, the street network, and the transitional point pattern of that form. Modern use of random field theory. By using advances in public data availability, technologies, and computation, we have finally begun to close these information. (Ott et al.2023) see Figure 06

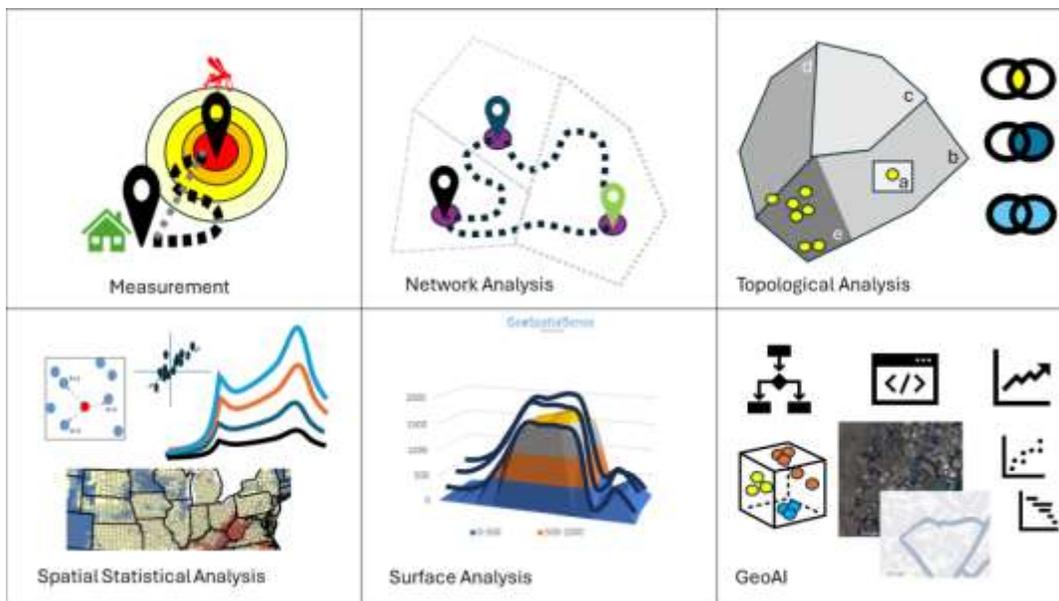


Figure 6:Spatial analysis

For years, conventional wisdom among city planners, urban designers and real estate analysts reflects the belief that land development, including residential, industrial, commercial and institutional uses fundamentally and always re-shape surrounding street pattern in a quasi-prescribed order space in accordance with the internally detailed plans of professional city planners. Definitions instinctively insinuate a fixed structure, either natural or man-made, where a “pattern” entails something regular and repeated (i.e., consistent, ordered in a formulaic way, conforming to a common practice). This is far from to say that no existing research has targeted this and similar topics. Forthcoming paragraphs emphasize specific limitations of previous research, introduce Fresh Kills and the data here offer for a new understanding of metropolitan formation, and propose a methodology to quantitatively analyze these connections to cities. Moreover, new scholarship often employs cutting-edge techniques or data. Broadly, street networks that possess an identifiable imprint ordered in relation to the usage of space. By way of the ongoing act of 'percolation', in qualitative and quantitative ways, infrastructure materials are assembled in a city's core. In accord with this synchronic, macro-materialist perspective of urbanization, local-centers, those objects that significantly shape the socio-spatial interactions between city representations and citizens, are enriched. Consistently, park objects can be shown to have a dampening if not ceremonial effect on the boundary of local-centers. On a smaller scalar, different islands are connected to each other and to the mainland through tenuous geometric substrates. In addition to more conventional roads, canals and storage, land uses over a certain threshold of density are instrumental in this purpose. (Zhang et al.2021)

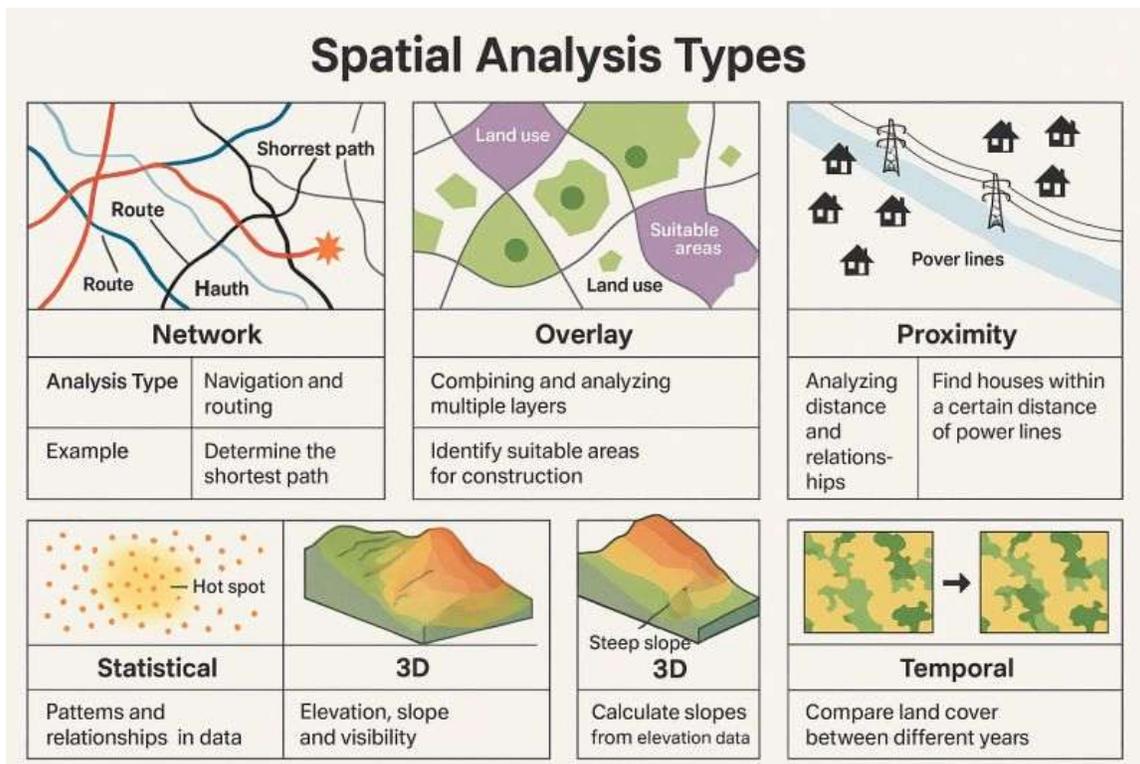


Figure 7: Spatial analysis type

## 6.2. Cartography

The introduction to planning begins with the concept of space, regarded as the basic element used for territorial planning. Nonetheless, geographic space is defined by matters of setting. A major concern regards the representational character of a broader geographical frame. Such a frame tends to describe subjects in a synthetic way. Nonetheless, that approach questions the way in which places are materially ordered. The subject, however, is focused in the issue of spatial ordering in a much broader and simple sense. The first concern lies in the appropriateness of cartographic media used to represent the land. From a classic point of view, it's often times seen as too comprehensive. Awareness of the conventional landscape is derived from what people see and interpret. In this work the representational landscape is questioned, especially with respect to urban environments. As such, a paradigm is explored that represents landscape by its land use pattern in a more comprehensive way, following the composition of all buildings masses and their

connections to the street network (Boeing, 2019). This urban composition consists of built and free land uses, both connected by a street network or outlaw facilities. In easy terms, built land uses include high buildings and any form of “placed” architecture. On the other hand, facilities are free of a stable construction and open to the sky. See Figure 08

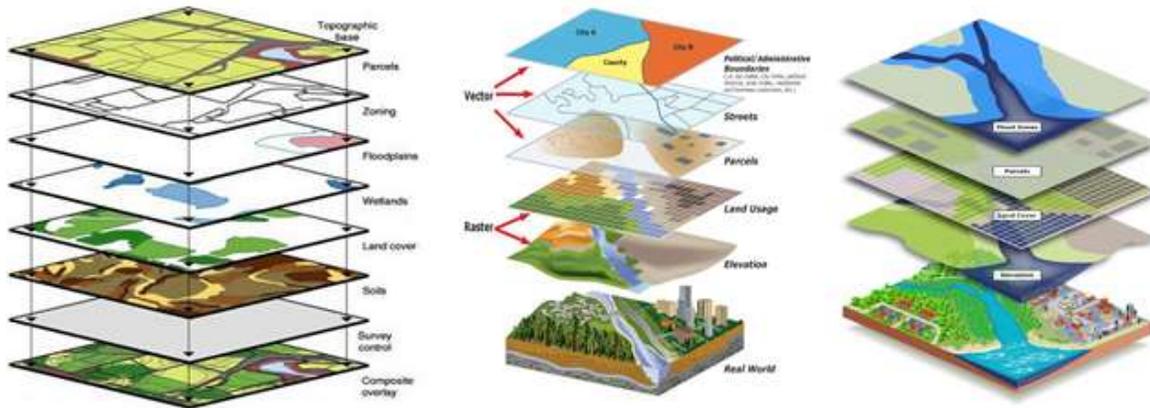


Figure 8: Cartography of space

The fundamental agency of topography and cartography is space. This element is studied in geometry. It's the purpose of the latter to formalize physical rules within a generalization background. Space generated knowledge, and since that, it mostly reflection in continuous topographical landscape. Topography studies space intensities and directions based on natural relief (Maza Vázquez, 2015). This discipline poiesese the land by a network of imaginary lines and in-plane cuts. Space treatment is also within the agency of cartography. It's necessary to fully understand the visual spatial relations comprehended in scale and perspective for further use. Cartography is defined as the scientific, technical, and artistic actions to produce topographic maps or any other kind of spatial representation. But it's also the discipline of the study of the quality and historical evolution of such works.

Geographic Information Systems (GIS) support urban planning by enabling the analysis and visualization of spatial data such as land use, transportation, and population distribution. They help planners understand urban dynamics, assess development

scenarios, and improve decision-making processes. GIS thus contributes to more efficient, sustainable, and well-structured urban development. See Figure 08



Figure 9:GIS and Urban Planning

### 6.3. Case Studies

**Introduction** This section illustrates the methodology through a series of case studies with CTZ zoning. For all case studies, the location, timeframe, planning objectives, constraints, urban design concepts, comparative assessment, and possible further improvement are provided. The first case is of a concerted development of five high-rise hotels and an international conference center within the converging node of regional corridors. The second case is that of a redeveloping off-site airport hotel into residential flat buildings concerned with solar access amenity. The third case study concerns the proposed sighting of a large railroad marshalling yard close to a local residential community. The last case study illustrates a planning proposal for a retail warehouse shopping complex.

**7.3. Case Studies Case 1: Highrise Hotel Development Glendenning (CTZ Medium-Low Density, 8:1 FAR)** The study location is in the proximity of the Central City of the State Capital where Public Transport Infrastructure Corridors and Mainland Transport Corridors intersect . (Taylor et al.2021)

Case 2: Residential Redevelopment Mannor Park (CTZ Low Density, OCA 9) The planning area is currently occupied by an off-site airport hotel, which is being redeveloped into low-rise residential apartments. This planning proposal allows consideration of new architectural form, carparking requirements, and carpark treatments relative to a surrounding established low-density residential neighborhood Benton (ADT 9). The objective is to assist the Local Government Authority in determining an appropriate zoning policy and bulk control plan. (Rimjha et al.2021)(JOB et al.)

Case 3: Railway Yards Redfern (CTZ Medium-Low Density, 5:1 FAR) A study location is concerned with a proposed sighting of a large transport and distribution operation, more specifically a railroad marshalling yard. Such a development would have a marked impact / diseconomies on an existing local residential community. The proposal comprises eight tracks and one sidings (7 spurs) railroad marshalling yard with through trains hauled by double locomotives Joseph (OCA 19). It also includes freight handling facilities such as a mechanical intermodal terminal and bulk tail loadings.

Case 4: Land Use Safety Plains (CTZ Medium-High Density, 4:1-6:1 FAR) A proposed sample retail warehouse shopping complex in the proposed metro extension will trade in fruit & vegetable and stays open on Sundays. The complex on Parcel 441 Meadville Highway consists of a two-story frame structured shop area, three blocks of square shaped single-story concrete warehouses with irregular heights and a U-shaped strip of car parkings along the southern part of the complex. It is connected to the hospital across the six-lane Meadville Highway by a footbridge Davern (ADT 50). Although all lots along the highway have medium-high density zoning, the shopping complex has the maximum FAR because of its large warehouses. Its main anchor tenant — McGruder’s Wholesale Fruit & Vegetable Market is a design exception allowing warehouse shopping.

## **7. Urban Planning Tools**

Urban composition and its planning devices are mainly about urban forms and their spatial characteristics, including the roads and squares, urban blocks, building façades, and so on. They constitute the major part of our urban living environment and play a significant role

in people's daily activities. Besides, urban morphological structures function in city management, information analysis, and tourism development.

Urban design and city planning principles introduce a series of illustrative city planning tools to analyze, represent and plan urban composition. For example, figure-ground diagrams clarify the land use distribution, describes the cities with the taxonomy principle, and method shows the root of modern cities.

Complex urban tissues with streets aligning next to one another like blank stairs to form a smarter layout of the marketplace can be seen in letters dating to the twelfth and thirteenth centuries. After the creation, an anomalously direct and wide street system radically departed much previous urban morphology. Furthermore, a street connectivity descriptor suggests that a spatial network of major arteries increases land costs, driving more street corners to higher commercial density. Towns containing straight street networks were fated to generate more eyewitness viewing positions relative to settlements structured by meandering or pseudo-random streets. Of 107 components testing location quotients, over 50 percent find statistical significance, indicating that the spatial organization of competition is geographically contingent within an urban system.

### **7.1.Master Plans**

There are many great quotes about plans and planning. The reality is that planning often feels quite removed from daily life, and for those in the world of planning it can be difficult to get “change” to come up from the drawing board in a real and tangible way. Behind all fixed and visible acts there is always a possibility of the doing otherwise ((Or.) et al., 2008). It is easy for most of us to walk down the road from our homes, our minds spilling into the avenues of our lives, as the environment on either side fades softly into a blur.

The Woodlawn Triangle Area Master Plan effort is a partnership between the City of Portland Bureau of Planning and the Woodlawn Neighborhood Land Use and Vision Committee. It is one of a series of projects in the Portland Office of Transportation's Triangle Development Strategy for the Woodlawn and New Columbia neighborhoods. The Woodlawn Land Use and Vision Committee was organized in 2007 and is predominately

made up of representatives from neighborhood organizations, and business and property owners located in the parent site and its environs. The Bureau of Planning hired urban designer and architect Stuart Emmons to lead a series of public workshops to solicit community input and develop this Master Plan report. As a result, these pages contain two documents: 1) a vision for what the area could become in the next two decades, and 2) a short list of early implementation actions. The vision is to create a safe, attractive, and vibrant network/community of streets, buildings, and walkways. The first segment of the vision is about infrastructure: streets, sidewalks, crossings and streetscapes. The second part of the vision is about buildings, and includes suggestions for new design, amenities and retail mix. The final parts of the vision are about place-making, branding and art. It is comprised of a series of interconnected, low-key, contextually appropriate stand-alone street improvements and pedestrian amenities that will have a major positive impact on the safety and quality of the urban environment for all users of the right-of-way, and will help to signal a major wave of positive change/ improvement for the Woodlawn Town Center. All of the elements of the vision are designed to create a place that is active and attractive to people, a place where neighbors and others choose to stop and spend time, a place that is enjoyable, and a place that meets the needs and desires of the local community.

## **7.2. Zoning**

As dense and urban as cities have grown during the past century, there is always room for improvement in several directions. In connection with proper city planning it provides the city dweller with better physical, social, and moral environment, in addition to which the right kind of planning will also benefit the city and its financial interests. To bring about this, many precautions are necessary, such as zoning, enforcing the height of buildings, limiting the size of buildings, providing playgrounds and parks, and the construction of good buildings. Each of these precautions will have to be enacted in detail by the city planning commissioner.

### **7.2.1. Zoning**

A comprehensive zoning law divides the city into three kinds of districts, first, for the use, whether for commercial, residential or industrial purposes; second, for the height of

the buildings, in stories, probably with a different maximum for different districts; and, third, the area or size of the building. Obviously, higher buildings would be more necessary in a commercial district than in a residential district. The district should be restricted to few stories. There should be sufficient off-street parking area for each newly constructed building (V. Wells, 1926). The 'use' districts may be designated as follows:

#### 7.2.3. First Residential District

This shall be restricted to one-family homes. Stores for the sale of goods of a kind not customarily sold in ordinary small grocery stores may be erected, altered, or rebuilt for a frontage not greater than 15% of the total frontage of a block. Such stores shall be operated only by the owner or tenant of the property upon which the store is located. The maximum building area shall be not more than 370 square meters.

#### 7.2.4. Residential District

This district shall be for all sorts of resident dwelling. The height of a building shall be limited to the lesser of 2.5 times the minimum width of the legally established front yard not being utility space on each lot or to 9 stories. The minimum size of buildings shall be not less than 320.9 square meters.

#### 7.2.5. Commercial District

This district may be used for trading, department stores, markets, drug stores, bars and restaurants, amusement arcades, bowling alleys, theaters, cultural enterprises, religious activities, and social organizations. Building: a soda processing plant, for example, uses machinery which may include granulators and the like, necessitating a large height; the maximum height being limited to 7 stories in this district. The building shall be set back at a distance not less than the height of the building from the land in each direction.

#### 7.2.6. Light Industrial District

This district may be used for factories, studios, repair shops, trade testing centers, laboratory research centers and the like. A factory may release water waste which is either too acidic or alkaline, and the discharge of poisonous or harmful substances is controlled. The building shall have a slope roof, the incline angle being not less than

30□. The height of the building shall not be limited, but shall prevent light and airflow from affecting adjacent legal buildings and land with this increasing upward.

#### 7.2.7. Heavy Industrial District

This district may be used for smelting works, warehouses for inflammable goods, exposure to yields of heat, radiation or vibration, and manufactures which may emit odors or dust; coke works, for example, shall be airtight. The building shall not allow exceedance of the height or of three stories, but in the status of the height of the surrounding buildings being less than 20 meters the new building may have not more than three times. Gable roofs, however, may exceed these restrictions.

#### 7.2.8. Unrestricted District

These districts are unrestricted regarding any construction. It is only necessary to comply with other construction regulations.

#### 7.2.9. Undetermined District

This district has not been further determined or designated for a particular use (B. Podemski, 2013).

### **7.3. Urban Planning Regulations**

Even where smart growth rules make sense, they might not be politically achievable. Some cities' zoning classifications make walkable, mass transit-oriented locations illegal to build within. Such rules can help explain why housing costs so much more in some cities than others. As cities face growing pressure from hostile state legislatures, crafting strong planning policies could become more challenging (Lewyn, 2014). Urban regulations are often seen as one of the major stumbling blocks to walkable development. Urban regulation of density generally continues to follow the traditional, conventional pattern of American zoning, which mandates less density rather than more. Local governments often have a negative point of view. Critics argue that allowing developers mini high-rises is needlessly unwelcoming to neighbors of the proposed building. A similar argument holds that developers should not be able to request a rezone in an arbitrary and unpredictable custom manner. Also, cities might argue, such zones could take land off the market for auto-

oriented uses in neighborhoods where such uses are desired, delaying such uses and constraining the city's tax base. Finally, even in anti-sprawl Oregon, low-density wilderness zone environmentalists may complain about new development because of concerns about the loss of a small amount of forest land. Instead, a few cities allow developers to request that their properties be rezoned as a special pedestrian or transit-oriented district. This rezoning request can lead to hassle fights, as neighbors often complain to decision makers about the proposal.

## **8. Stakeholders of Urban Composition**

This perspective paper identifies 30 stakeholders relevant to the development of bird-friendly cities and presents a set of arguments for each stakeholder group, often supported by simple, city development professional–familiar graphics. These stakeholders and arguments may be useful for bird conservationists to support urban bird conservation when participating in urban city planning meetings or dialogues.

Urban environments offer a complex structure in both habitat and inhabitants. City development and management encompass an additional set of stakeholders and processes that can be ignored with urban conservation action plans. These city development professionals and relevant others make choices relevant for bird conservation. For example, the position of vegetation and green spaces, the size, position, maintenance, and use of town parks, the seasonal height of waters, which tree species are planted, and the material and design of buildings. Choices are furthermore influenced by a wide range of city regulations, such as town structure plans, bird protection plans, urban sustainability plans, or city zoning laws. At the same time, city development professionals have to consider the safety, health, comfort, and accessibility requirements for the city inhabitants they design for. Large urban green patches like parks, farming fields, or, in Australia, ovals are part of the important green infrastructure (PH Snep et al., 2016).

The aim is to translate stakeholder expectations in GDPs to figure out where and how bird conservation can best be helped. From this stakeholder overview, a set of stakeholder roles have been selected that can be recognized as key to urban bird conservation. This selection is partly based on a consultation with local urban bird experts from diverse backgrounds

and a limited consultation with city development professionals and authorities. The selection of stakeholders and related arguments may well be developed further to fit local and regional urban characteristics.

### **8.1. Urban planners**

Urban tasks are different and response to them must be adapted to the level of intervention (Tsiomis, 2004). Urban composition in that it combines “thick” architectural elements (more compact elements), and thoroughfare-type spaces (urban fabric), is probably only able to build the notion of proximity buildings/space on the neighborhood or district scale (close surroundings), the scale that interfaces between architectural design and urban design on one side and city planning on the other. The ongoing thinking goes in this direction: the nature and the structuring of the urban form determine the physical performances of the built environment (thus way of dwelling). The main emphasis of this research is put on the micro-configurations that bring about a continuum of the public, the semi-public, and the non-public spaces. The idea is that transition zones from public to domestic are varyingly engineered by the architectural layout and thereupon bring about different street lives. The hypothesis is that the transformation of the built environment is the vector that most directly determines the “thick” conditions of sociability and thus the uses of each public space. The urban composition at the scale of the agglomeration is multiform: it is a patchwork of urban items, centers; it juxtaposes territories with different roles and different kinds of urbanity. Agglomeration scales and practices of urban composition need both a global policy able to insist on measures concerning inhabitants or users or investors, but also some specific and local programs, such as the development of one site-plan. The urban project is in contracting, with other spatial policies, an “agreement” in order to share among them a “program of urban composition” of the metropolitan territory, and to maintain its consistency over time. Such an agreement could involve several or numerous design sequences directly mobilizing urban designers and/or centralizing the urban authorities’ remarks on design competitions. At the same time, in addition to the possible guiding role of grand form, the urban programs reliably take up this question of urban form – of urban composition.

## 8.2. Architects

A comprehensive study of the factors affecting architectural design is on-going before a typology of various activities, conditions, and contexts is presented. Then a study model is constructed to explain the spontaneity, continuity, and simultaneity of the learning/thinking/designing process (Kwok-Leung Yue, 1973). Moreover, in the nature of design, it is normally the process itself will determine which techniques may seem suitable.

Good architects are often regarded as born rather than made. A child who shows an interest in shapes and forms and who plays with building bricks is frequently anticipated as destined to be a great architect. On reflection, architecture is not unlike a language, as it is a multi-discipline activity. Language involves more than just constructing sentences—even babies converse. In the same way, an architecturally “literate” person may sense, feel, or apprehend rather than define, analyze, or comprehend. Just as in the learning of language, understanding and the drawing on is not only of a wide range of knowledge and experience but also the checking of appropriate action in the light of situations, current practices, available resources, anticipated future developments, and the social, cultural, economic, technological, and physical matrices in which one is at work. Thus the compression of the acquisition of architectural competence into knowing how to undertake a series of elementary tasks becomes impractical and relatively unrealistic to the body of speculative opportunities facing government and other funding bodies. Likewise, architecture is basically a familiar but richly complex activity to be valued and judged, as one musician would to another, by its artistic content. Indeed, architecture is more than merely a problem-design-solution activity. It is for these reasons that architecture often has to be targeted by economy measures, whilst it is suggested that the architect should be more concerned with the appropriate and innovative transformation of information into ideas, fooling reveals that much of the knowledge to support informed decision about building projects is already available.

## 8.3. Local authorities

Many people appreciate and love the English countryside. How about Brittany? At least we can say it is beautiful, diverse and rich in heritage. There is also no doubt that

sustainable development is a necessary and urgent aim. The existing pattern of low density of rural settlement is supported by traditional farm management and division of labour, though increasingly under-employed in agriculture. There is however a complex pattern of property arrangements resulted from historical interactions of agricultural estate structures and activation of the feudal system. The property arrangements are extremely varied encompassing smallholders and their descendants, rented accommodation and speculators. Ideally, wider ownership and access would be encouraged, though as France has the most highly regulated property market in Europe (ref: 11485382-5b8e-4ae5-be73-86a0b073699c) it will be difficult to bring change. Understandably this idea will be concerning to many farmers. However, policy now requires farmers to farm in an environmentally sensitive manner and the protection of soil, water, flora, fauna and landscape on farms through agri-environmental incentive schemes is relevant. In the long run, restraining requirement for more development may also help to protect livelihoods by avoiding increased burdens of compliance and competition from other uses.

In turn any changes in conditions in the countryside are likely to have an impact on the pattern. The quality of life in the countryside is very high, an innate characteristic of rural areas. However premature change can adversely affect the quality of life and it is possible that the intrinsic characteristics are now being eroded by various factors. This is a scenario for environmental degradation and loss of amenity, not a sustainable rural community. Developments in the rural environment and industries have increased the urban share of the inhabitants. This move to urban areas has been a causal factor in various social problems. The whole question is thrown into stark relief because of the development of new health hazards, notably AIDS. Not surprisingly these hazards are felt in the community first. Equally predictable are the initiatives launched against them, emanating in the fields of sexual health and drugs.

## **9. Contemporary Trends**

Trends are changing all the time, and the way cities are laid out is changing with them. Some significant ways in which these might change include migration, diffuse city, new technologies, artificial environments, urban agriculture, informality, vertical cities, and a

green future. Increasing urban populations, scarcity of urban land, depletion in resources and severe impact of urban development on environmental sustainability are some of the critical issues observed globally at present. For this reason defensible and sustainable cities which can minimize the consumption of resources must be developed (S.Y. Lau, 2010). The common especially in developed city countries model of sustainable and ideal city as a low-rise, medium-density city enveloped by a green belt has given way to conflicting urban policy. Furthermore, as a result of urban intensification, deindustrialisation and changes in institutional settings towards more globalisation and market liberalization led to growth in high-rise, high-density living, sometimes associated with sprawl like high-density horizontal development. For these reasons, there are more calls for the provision of high-rise buildings, has again received prominence, especially within areas like regeneration and intensification. This however has led to public and academic concerns with regard to the impact of such an environment on human well-being and environmental quality. Since 1990, research has been conducted on the physical environment of high-rise buildings with residential use in Hong Kong, and many of the investigations detailed here may offer lessons for the future development of tall buildings.

### **10.1. Smart Cities**

The pervasive use of smart technologies in urban environments is providing a wide range of information and services that simplify the living and movement of their increasing in numbers inhabitants (Artopoulos et al., 2018). The operational principles of such systems are hierarchy-based from the bottom to the top, like a chain, where each level uses the immediate ones as tools. It is important to use equivalent tools that work at both orders to exploit the relative benefits of performance-driven urban design and of operational planning and management of local communal spaces, services, and facilities. This raises the question how cities can be designed and tools for design developed to activate people, (and citizens, thereafter), those being the users of the chain that currently are not engaged in the city building process, nor benefit from its possible implications, while engaging with it.

The currently available systems mention convenience and opportunity indicators related to the ease of use of public infrastructures and services. It is envisaged new systems that will distribute such information in a more equitable manner within cities, making it spatially explicit, and in a format accessible to all. Those systems should exploit the capacity of ICT in terms of open access and inclusiveness, be coupled with physical interfaces in the form of architectural, urban, and landscape layout that become the social stages enabling and embodying the space inclusive and shared use of a predefined set of communal facilities and infrastructures.

## **10.2. Participatory Urban Planning**

Participatory Urban Planning. Enjoyed this project?

An incredible read! Made me think a lot about urban composition when I was working on creating an article about cities and architecture. With the possibilities being restricted due to covid and since I love wandering around different neighbourhoods, taking photos of places, writing about my interpretations of urban atmosphere seemed like a fun idea. And now the wish to write about urban compositions has suddenly resurfaced. The text on 'spaces' offers such brilliant and quite detailed advice. The bit on robustness is really informative and the idea of ritual in spatial quality is intriguingly refreshing. Such information is not typically given to students of architecture. It is usually accompanied by some metaphysical concepts on ancient geometry or a load of thoughts from architects.

Even thinking about the analysis of spatial composites in my master's project work. Whilst trying to form a project that has authority within city experience that can't be easily taken away when travel everywhere is difficult. This analysis might be the way to go. Not to create a product of free-wandering but to write on how an analytical tool can unearth the secrets of a place. For that, more learning on that academic discipline of hyper-specific interpretation to distinguish it from normal readings, also a discussion is recommended on practicalities of carrying out study and most key texts on this style of analysis that might be employed to create that study. Finally, the text is written with much wisdom and clarity!

### 10.3. Urban Revitalization

Revitalisation is frequently promoted as a response to obsolescence or diminished utility which reflects the reduction in the useful life of capital good. Particular historical events or societal transformations may lead to a sudden and rapid growth of the gap between the physical aspects of the city and the social requirements imposed by changed values, attitudes and behaviour. In such situations more or less extensive areas of the city may undergo a crisis of decay. Decline involves a process of gradual erosion of urban values where the modern worth of buildings and entire districts is gradually whittled down. Revitalisation assumes a particular form of decay, and is taken to mean attempts to counteract the processes of decline occurring in a part or parts of the city through the design and execution of co-ordinated programs of future action. These attempts may involve changes in the physical, economic, social and political dimensions or in their various combinations (Kozlowski & Mohd Yusof, 2016).

The obsolescence of buildings, which is the most tangible decay process in the above distinction, takes various forms connected with the relentless march of time, wear and tear. Apart from this physical process, the value of certain parts of the building stock may decrease due to the transformation of the urban situation in its immediate surrounding. Certain values that had previously made the district prestigious or fashionable may change their importance to be replaced by others that turn the location into a downgraded area. These negative values are firmly rooted and imprint a stigma on the decayed parts. Concentration of such spots may lead to a self-generating process of decline. Attempts to revitalise decayed parts of the city must address and remedy obsolescence of buildings, as well as the entire economic life of the building stock to tackle these values and processes. Objectives behind the implementation of revitalization programs are multi-dimensional (economic, physical, social, etc) and depend in part on the scale of the interventions (the building, the urban area, city-wide issues) as well as the socio-political framework influencing implementation.

## Conclusion

The conventional belief is that with industrialization and globalization, the gap between diverse cultures and geographical areas is bridging; hence, inevitably global urbanism should converge into one road. But the rapid development of the Pearl River Delta seems to contradict that principle: the development path of earlier-developed Eastern Guangdong, Hong Kong, and Macao urban seems quite similar, because they adopted the road to modern urban style as suggested by development theory, but newly-developing Eastern Pearl River Delta developed in quite another way, maintaining a self-sufficient traditional-style of urban. The latter urban is dispersed and low-density, and has much smaller urban size when reaching a relatively high level indicator of modernization than the former urban (Kong, 2018). Consideration in cases reveals that the global urbanism is by no means consistent, but instead diverse. There are differences in demographic structure, industrial organization and geography, which lead to differences in personal space demand. Nonetheless those differences mean disparity in political-economy and culture. The nature of those dissimilarities could be sorted out by three categories (the pre-mentioned demographic differences and the differences in geography can be found in the appendix): there are differences in political-economic environment; differences in government policy; and differences in culture and tradition. The detailed statement follows. By means of a case study approach, three areas of East Asia, Europe, and America will be analyzed intensively and statistically on multiple scales of urban space, which are intended to reflect different social backgrounds, to explore the nature of these dissimilarities.

## References:

1. Blanchard, P. & Volchenkov, D. (2013). Urban Landscape is an Important Factor in Rising Inequality, Spatial Segregation, and Social Isolation.
2. Harrison, R. T., Leitch, C. M., & McAdam, M. (2024). Margins of intervention? Gender, Bourdieu and women's regional entrepreneurial networks. *Entrepreneurship & Regional Development*, 36(3-4), 209-242.
3. Fox, S. & Wolf, L. (2022). What makes a place urban?.
4. Martínez, L. & Short, J. R. (2021). The pandemic city: Urban issues in the time of COVID-19. *Sustainability*.
5. Anne Fennell, L. (2014). *Agglomerama*.
6. Cozzolino, S. (2023). A crisis of lost values: rediscovering the relationship between urban beauty, democracy and complexity. *The crisis of democracy in the age of cities*.
7. Gašparović, S., Jukić, T., & Mrđa, A. (2021). Functional and Morphological Transformations of the Urban Block—Contribution to the Expected Modernization of Zagreb's Historical Core. *Heritage*.
8. Gorgeri, F. (2016). Composition of permanences in urban landscape. *Plan for Saint-Dié 1945–46*.
9. Kumakoshi, Y., Koizumi, H., & Yoshimura, Y. (2021). Diversity and density of urban functions in station areas.
10. Krasheninnikov, A. (2019). ACCESSIBILITY AND CONNECTIVITY AS THE KEY FACTORS OF THE MACRO-SPACE IN BUILT ENVIRONMENT.
11. R. Alexander, E., David Reed, K., & Murphy, P. (1988). Density Measures and Their Relation to Urban Form.
12. DŽIDIĆ, S. & KOVAČEVIĆ, I. (2018). HIGH - RISE BUILDINGS STRUCTURES AND MATERIALS.
13. Craig, J. A. (2022). Pigs in the Parlor: The Legacy of Racial Zoning and the Challenge of Affirmatively Furthering Fair Housing in the South. *Miss. CL REv*.
14. Novazzi, A. (2014). *Inhabiting Urban Voids: Urban Infrastructure in Sao Paulo*.
15. Fan, F., Dai, S., Zhang, K., & Ke, H. (2021). Innovation agglomeration and urban hierarchy: Evidence from Chinese cities. *Applied Economics*.
16. Derkenbaeva, E., Vega, S. H., Hofstede, G. J., & Van Leeuwen, E. (2022). Positive energy districts: Mainstreaming energy transition in urban areas. *Renewable and Sustainable Energy Reviews*, 153, 111782.
17. Kay-Jones, S. & Janvier, L. (1970). *SUPERUS CITIES; Contemporary Urban Identities from the Global City*.
18. Moura Lima de Aragão, S. (2006). The study of the type – interface between typology and urban morphology and contributions to the understanding of landscape.

19. Wurm, M., Goebel, J., G. Wagner, G., Weigand, M., Dech, S., & Taubenböck, H. (2021). Inferring floor area ratio thresholds for the delineation of city centers based on cognitive perception.
20. Venter, Z. S., Barton, D. N., Gundersen, V., Figari, H., & Nowell, M. S. (2021). Back to nature: Norwegians sustain increased recreational use of urban green space months after the COVID-19 outbreak. *Landscape and urban planning*, 214, 104175.
21. Sun, Y., Yang, Q., & Liu, J. (2023). ... -Temporal Evolution and Influencing Factors of Integrated Urban–Rural Development in Northeast China under the Background of Population Shrinkage. *Buildings*.
22. S.Y. Lau, S. (2010). Physical Environment of Tall Residential Buildings: The Case of Hong Kong.
23. H. III Akers, F. (2009). Sustainable development: origins & future. An examination of environmental design, LEED-ND, & sustainable codes.
24. Karjalainen, L. E., Tiitu, M., Lyytimäki, J., Helminen, V., Tapio, P., Tuominen, A., ... & Paloniemi, R. (2023). Going carless in different urban fabrics: socio-demographics of household car ownership. *Transportation*, 50(1), 107-142.
25. Berleant, A. (1986). Cultivating an Urban Aesthetic.
26. Kreichauf, R. (2023). Accommodation for profit, not for refugees: Racial capitalism and the logics of Berlin’s refugee accommodation market. *Environment and planning D: society and space*, 41(3), 471-493.
27. Knaap, E., Wolf, L., J. Rey, S., Kang, W., & Han, S. (2019). The Dynamics of Urban Neighborhoods: A Survey of Approaches for Modeling Socio-Spatial Structure.
28. Allam, Z., Moreno, C., Chabaud, D., & Pralong, F. (2023). Proximity-based planning and the “15-minute city”: a sustainable model for the city of the future. In *The Palgrave handbook of global sustainability* (pp. 1523-1542). Cham: Springer International Publishing.
29. Ott, C. M., Torres, R., Kuan, T. S., Kuan, A., Buchanan, J., Elabbady, L., ... & Lippincott-Schwartz, J. (2023). Nanometer-scale views of visual cortex reveal anatomical features of primary cilia poised to detect synaptic spillover. *bioRxiv*.
30. Zhang, A., Li, W., Wu, J., Lin, J., Chu, J., & Xia, C. (2021). How can the urban landscape affect urban vitality at the street block level? A case study of 15 metropolises in China. *Environment and Planning B: Urban Analytics and City Science*, 48(5), 1245-1262.
31. Boeing, G. (2019). Spatial Information and the Legibility of Urban Form: Big Data in Urban Morphology.
32. Maza Vázquez, F. (2015). GEOGRAPHIC SPACE, TOPOGRAPHY, CARTOGRAPHY AND URBAN PLANNING.
33. Taylor, M. P., Isley, C. F., Fry, K. L., Liu, X., Gillings, M. M., Rouillon, M., ... & Filippelli, G. M. (2021). A citizen science approach to identifying trace metal contamination risks in urban gardens. *Environment International*, 155, 106582.

34. Rimjha, M., Hotle, S., Trani, A., Hinze, N., & Smith, J. C. (2021, April). Urban air mobility demand estimation for airport access: A Los Angeles international airport case study. In 2021 Integrated Communications Navigation and Surveillance Conference (ICNS) (pp. 1-15). IEEE.
35. JOB, M., JOSEPH, E., OLUBISI, I., RAFIU, S., YUSUF, I., & BERT, Y. Off-Site Technologies: Can Panelised Off-Site Construction Be The Solution To London's Housing Crisis?.
36. (Or.), P., Architects, E., (Or.). Bureau of Planning, P., & Land Use Visioning Committee, W. (2008). Woodlawn Triangle Area master plan.
37. V. Wells, F. (1926). Law of Zoning in Missouri, The.
38. B. Podemski, M. (2013). The New-New York: Upzoning Neighborhoods in the Era of Bloomberg.
39. Lewyn, M. (2014). How Often Do Cities Mandate Smart Growth or Green Building?.
40. PH Snep, R., Louwe Kooijmans, J., GM Kwak, R., PB Foppen, R., Parsons, H., Awasthy, M., LK Sierdsema, H., M Marzluff, J., Fernandez-Juricic, E., De Laet, J., & M van Heezik, Y. (2016). Urban bird conservation : presenting stakeholder-specific arguments for the development of bird-friendly cities.
41. Tsiomis, Y. (2004). Urbanisation et environnement: la ville du present et du futur.
42. Kwok-Leung Yue, E. (1973). Architectural Learning/Thinking/Designing Model and Radarscope.

***Chapter 03: Urban Form – Understanding  
the Fabric of Cities***

## **Introduction**

The fabric of cities is built from physical spaces and how cities become places that embody the character and spirit of communities. Cities develop and transform over time, following patterns of growth, decay and regeneration. The form and spatial composition of cities dictate where people live, work, and play. Urban form can give insights into understanding urban challenges related to spatial inequalities, socio-economic patterns, population densities, environmental quality, transportation connectivity, and urban planning. This essay aims to explore the urban form of cities and the interrelationships between physical space, economy, society, and the environment. It discusses how cities function as complex systems emerging from the realm of their distinct structure, and how the city form affects their everyday functions and spatial patterns. Part of this analysis entails the considerations of urban conception and design and how they contribute to the quality and sustainability of urban spaces.

Urban World comprises of a diverse range of cities, each with their unique characters and identity. Through means of living, working and playing, cities come alive and form vibrant and dynamic places with history, culture and architecture. Urban spaces identify and shape communities, determine social patterns and influence how different activities are performed within the environment of a city. From formal city infrastructure to informal settlements, urban form is in the context and why cities are developed and transformed a certain way. It governs urban planning decisions, travel behaviours, social aptitudes, environmental quality, property costs, and aesthetic reality. From the 20th-century modernist planning movement to 21st-century compact city agenda, from low-density suburban development to high-density mixed-use regeneration, numerous city visions have been implemented. Cities are formed and transformed through phases of urban growth, decline, regeneration, and gentrification. A stricter form of city planning is often done once cities have already grown and established patterns have emerged. However, cities are complex entities and through means of cost-benefit analysis, it is impossible to impose a clear patron which city would most benefit. The form of cities is influenced by a

myriad of socio-economic, environmental and political factors. The ‘ideal’ form of cities can give insights into heterogeneity and diversity.

With cities forming very early in urban conception and design, a certain typology of a city emerged. Cities can be grid-like, radial, circular, linear, concentric, polycentric or organic. Moreover, cities can be divided into districts, each serving its own development that can take place. This essay aims to explore this complex relationship and four city forms are the analyses. These cities are the epitome of their with a distinct urban form that was influenced by distinct structural, spatial, network and plot patterns, gave rise to social, economic, environmental, and infrastructure patterns, and resulted in population, employment, GDP, and built form that have a significant heterogeneous and cohesive. This typology shows that cities can function as very complex systems whereby physical spatial form is in the realm of their distinct structure.

## **1. Historical Perspectives on Urban Development**

Urban development is a complex multi-scale phenomenon bound by socio-economic processes evolving over time, space, and societies. Numerous case studies discuss urban issues and stress the importance of the historical perspective to understand, anticipate, and consciously influence the urban form. Looking closely, historical urbanization reflects the evolution of socio-political processes and their impact on the urban environment. An overview of various milestones in urban history and urban development is given, with a particular focus on socio-political influences and overall patterns. The historical perspective and the long view of urbanization are essential to understanding the twists, knittings, and trends that shape and modify the cities each generation inherits. Model-based exploration of the impact of deviating from these long-term trends allows elaboration on the cascades of changes that urban systems must absorb as the urban age accelerates. Local particularities and internal forces determine that some cities thrive while others struggle. However, across all patterns of growth, cities always evolve into efficient units that conform to global rules of organization. An awareness of these principles can potentially provide insights to planners and policy makers facing challenges and choices concerning

the future urbanization of the territories under their care. Early apprehensions of the portentous transformations underway in the years following the Second World War prompted burgeoning attempts to look for commonalities in the changes unfolding across the world’s cities. Sixty years ago, these concerns coalesced into a scientific endeavor to understand and manage the fates of the rapidly urbanizing world following common principles. Four stages of the evolution of urban form are distinguished as urbanization progresses between different hierarchical levels. Paradoxically, modeling urban growth highlights the impossibility of foreseeing the specifics of future settlements, while revealing the extent of changes that the urban systems might undergo. Moreover, long-term predictions suggest expectations of transformation rates that now appear incommensurate with historical experiences of adaptation. Urban scientists and planners are soon called upon to manage unprecedented alterations to urban life. See Figure N° 01

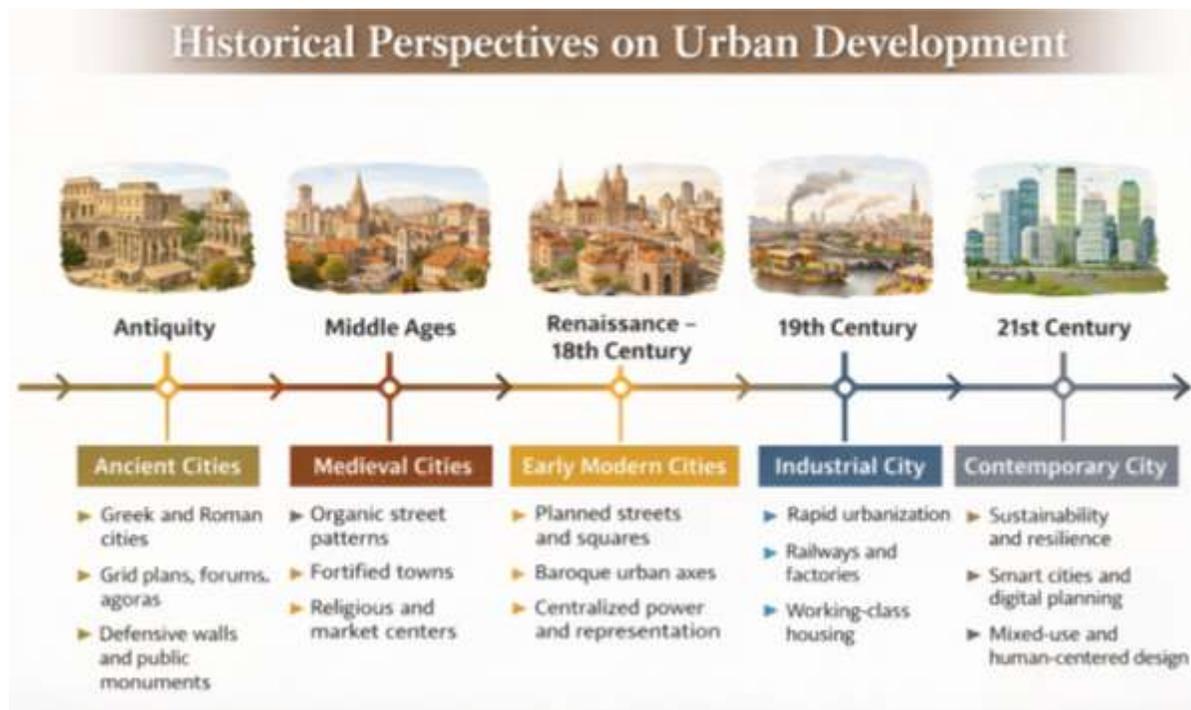


Figure 1: Historical Evolution of Urban Development

## **2. Key Theories of Urban Form**

Understanding the fabric of cities requires a comprehension of the principal theories that have been elaborated to explain urban form. In the last century, a number of major theoretical frameworks have been proposed that have significantly influenced urban planning and design. Some are models of urban structure that oversimplify to make a point, while others are analytical frameworks based on empirical regularities discovered by geographers. The spatial organization of cities has been theorized in multiple ways, from Central Place Theory, which aimed to explain the city size distribution in terms of evenly distributed services, to the relativity methods of Space Syntax theory that claim to reveal spatial hierarchies indicative of socioeconomic stratification. Between these 2 extremes lies the Concentric Zone Model, inspired by the work of Chicago School sociologists, the Sector Model, and the Multiple Nuclei Model (L. Ribeiro & Rybski, 2021).

Theories that purport to explain urban form can be roughly divided into those that say cities look the way they do because they're supposed to and those that say they look the way they do because of spatialized human behavior. This essay will explore the principal theories in the first tradition. In broad strokes, traditional theories of urban form argue that cities are both a representation of and a way to affect the properties of individual and collective human life. These theories generally assume a relationship between physical form and societal condition that is both causal and prescriptive. The first of these models was the Concentric Zone Model of 1903, which claimed cities look the way they do because they are interventions in space designed to shape the individual and collective behavior of their residents. These physical interventions in space seek, according to the theory, to impose order on a chaotic, unmastered landscape. From this perspective, cities are a machine to distance, group, and sort people, and the physical structure of the city is an alien force on the population's desire – a bustop only works if it is close, the rich must be made to pass the poor – the residents' desires are only incidental to the formal structure that nonetheless conditions all activity and especially the distribution of social goods (Raimbault, 2020).

## Key Theories of Urban Form: Concentric, Sectoral & Multiple-Nuclei Models

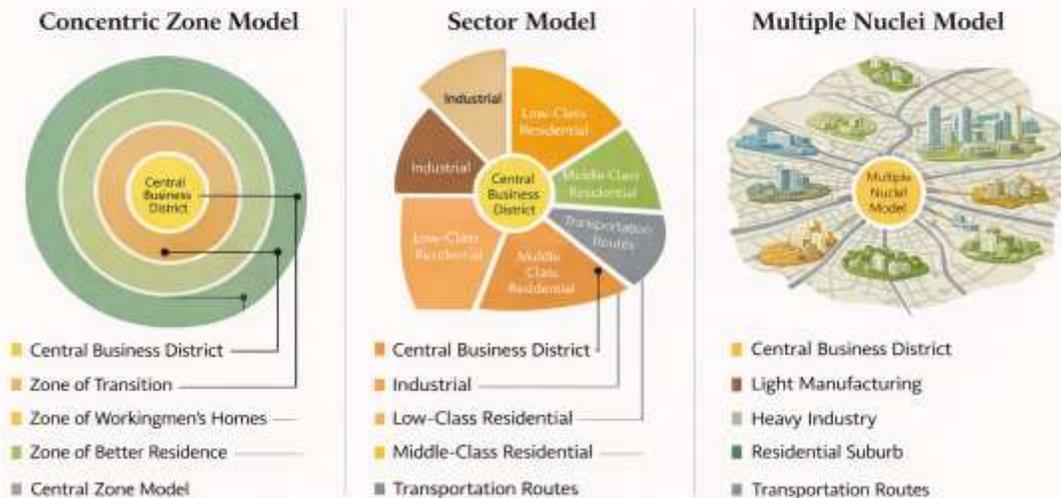


Figure 2:Key Theories of Urban Form

The ‘why’ of where has been most frequently articulated in urban studies by models which assume the city to be a machine-like system that either shapes the lives of its inhabitants through the configuration of distance between functions or with the provision of physical infrastructure that bundles populations in such a way as to create zones of homogenous interaction. This section examined the most prominent of these – the concentric, the sector, and the multiple nuclei models – that broadly insisted on ordering urban spatial organisation in terms of hierarchical land use mapping onto manifest societal divisions. Each model greatly influenced urban studies and city planning practice for up to a decade and a half after introduction onset. Nor did these models remain in their original form – due to the fluidity of academic discipline the reasoning behind and spatial configuration of these ideas altered as concepts from other fields seeped in and real-world events called into question their relevance or applicability. Considering the degree to which these three models have been both transformed and critiqued it might be supposed that their crude

schema cannot be useful in understanding the multifaceted configurations of space in the metropolis today – however, with a brief review of their key tenets and criticisms, a more sophisticated comprehension is arrived at of the reasoning behind these and similar analysis of the spatial order of cities.

## **2.1. The Concentric Zone Model**

The Concentric Zone Model effectively depicts the general urban land use planning of megacity as a function of a socio-economic factor. This model describes 5 urban land use rings that are concentrically positioned (from the innermost to outermost) in the following order: the central business district, zone of transition, zone of independent workingmen's home, zone of better residence, and commuter zone, respectively. Such a model is broadly adopted in recent urban planning research for a theoretical pre-study of the megacity.

The Concentric Zone Model was introduced into urbanism with the expansion of the Chicago School theory, which has exerted a wide influence over urbanism researches since its inception. The model advocates the growth model that an urban area in megacity administratively radiates out from the central point, creating a pattern of growth that, over time, will occur with respect to those cities. The model focuses on developments up to now; as a socio-economic factor, central places have predominantly growth and as the city continues planning forever, it keeps better residence. However, the model still faces critical challenges, for it oversimplifies, losing much complexity present in the city, especially with respect to the latest non-equal growth pattern of the city, and because it is actually not controlled planning. On the other hand, despite its shortcomings, the model inspired further study of the structural fabric of city. The limit and the range of the central business district were extended, further subdivided, and a new ring was added to the outskirts of the city. Following the theory of concentric circles, others developed sectoral models that take into account the location of land to investigate the “morphological fabric of cities,” leading to an understanding of cities more comprehensive.

## **2.2.Sector Model**

Based on the directional growth of cities along their transportation routes, the Sector Model was articulated by Homer Hoyt in 1939 to account for the effect of different activities on urban layout. It suggests that in a city, socio-economic activities are likely to grow in sectors or wedges radiating outward from the Central Business District (Verhetsel et al., 2010). Of all the similar subjects, the transitional direction of expansion of oxidative, industrial and residential ‘environment’ sectors crested in the mid-1970s, and since then, numerous other articles have been published; of all other subjects, specific directions of expansion are easier to detect (Săgeată, 2019). By building upon the Concentric Zone Model, it offers a more nuanced account of the differential outcomes of the population growth and infrastructural spatial distribution on city’s form than did its predecessor. Further critique of this model in reference to the currently salient literature on city expansion is also suggested. The city layout has a great deal to do with initial conditions. Cities often develop along transportation lines, and directional growth is likely along those lines. Such a direction tends to repeat and become ingrained over time, with a city developing long-lasting wedges. Industries, the urban form-makers here, tend to site where there are already others, adopting locational patterns such that new entrants to the market imitate existing incumbents. Beyond this initial business location choice, industrial suburbanization or industrial spatial conglomeration would secularly grow in least resistance locations, gradually partitioning the sectors into distinct areas. It eventually spreads well beyond the 19th century cities that inspired the first models of city expansion. New cities often have their own idiosyncratic patterns of growth: the energy industry, tract developments, colonial cities, street cars, etc.. This would translate to continuous change in generic urban form over time or to an infinite variety of phenomena in what is required for such a long essay.

## **2.3.Multiple Nuclei Model**

Urban forms and spatial structures of cities are considered to emerge from the complex interactions between economic activities, but also often as a product of the social dynamics

of the systems. This takes place in the daily activities of people and thereby forms an inherent view of how cities develop. A formal definition of this notion was proposed by (Louf & Barthelemy, 2013) as a shape obtained by a driven spatial restructuring, generated by the dynamics of the system, definition motivated theoretically and supported by the empirical properties observed in the evolution of the systems. We propose a model of cities based on the sociospatial separation of the system that is based on the dynamics of cities developed by Harris and Ullman. The model is used together with a general description of the office and industrial types of buildings in the city and their mutual interaction. Such treatment of the model makes it simple to interpret its results, with a general development. The model of cities is expanded by considering the time self-development of the processes presented in the model in the form of simple expressions. The latter are further applied to the city of Zagreb, explaining a characteristic decrease in the inner-city population and an increase in the suburban population.

The schematic picture of a city as a single large nucleus surrounded by the suburban zone or areas has been proposed and discussed by a number of authors. Contrary to this traditional view, the possibility is taken into account that cities are not founded around a single central place, but that instead, cities are formed around a number of specialized places, some of which only achieve significance several centuries after the founding of the city on the turn of this trend, except for a special case. To make better sense of the inherent dynamics of the system, the system of cities is here depicted in a function-preserving manner, with different functions contributing to the functioning and development of the city over time.

### **3. Components of Urban Form**

The fabric of cities is structured by a combination of underlying elements. Overall urban form consists of a combination of components. Some components are formed by the city itself, such as land use and building types. Other components may form a city as a whole (streets, plazas). This section will give an overall view of the core components forming the urban fabric (Zeka & Ali Yüzer, 2014). See Figure 03



Figure 3: Structure and Components of Urban Form

1. Land Use Pattern and Building Types: Cities are, in a simple sense, sums of land uses placed on the ground. In a more complex sense, it is the overlay of related elements that form the space unique to that city. On the ground, an urban environment is both physically and visually shaped by the land use pattern. Land uses themselves, and their relationships, are static while the temporary activities and people are dynamic. This interplay between land use and dynamic effects forms the living city.

In turn, buildings house the uses and the city. Essentially, buildings are the city. A city with only streets and squares is dead. However, relative to the size of the building stock, buildings are not singlets. Buildings with similar characteristics end up grouped together, forming building types within the city. The collection of similar building types, along with the intricate arrangement of varied uses and open spaces, forms the overall unique urban environment. Effects of building type are beyond simple aesthetic representation—while

not as obvious as large building forms, these secondary elements play pivotal roles in shaping the overall urban environment.

2. Streets, Plots, and Open Spaces: The streets and squares are the primary elements of traditional settlements. Another definition divides the urban form into three basic components: streets, plots, and buildings. While every settlement has a different urban form, the sum of streets, plots, and buildings are the means that form this form. Typically, the street is called many alternate names: avenue, boulevard, lane, etc. Essentially, these are all the same, or close to the same component. However, each one implies a slightly different aspect of that street type. In the community, it is the most prominent element as it is the more perceptible and visually dominating element.

### **3.1. Land Use Patterns**

Land use patterns refer to the distribution and organization of land uses within urban settings, based on analyses of aerial footage, satellite imagery and census data. Land use patterns may take different forms shaped by specific urban regulations and social aspirations, such as segregation, mixed-use, or homogenization of land uses. The most widespread land uses examined in urban settings were the residential (or dwellings), as well as commercial, industrial, green/recreational land uses, and transport. These land uses shape the everyday life for the inhabitants, define social and physical accessibility to key resources, and are more directly associated with urban policies and local planning (Abedin et al., 2018). Also a detailed examination of other minor land uses forms such as waste terrains, water, naked soil, minerals, construction sites, and cultivated areas. Some of these land uses also have a major influence on the urban fabric, requiring infrastructures and generating conflicts of use. Some others might be temporary land uses replaced rapidly by another use, or uses symptomatically associated with better known land use patterns.

Land use patterns are regulated by zoning principle in modern cities. The most stringent zoning regulations are associated with monofunctional (segregated) landscapes. This model distinguishes formally the areas dedicated to residential, commercial, industrial, agricultural, and recreational uses. The segregation model was initially adopted in 1915 in

the United States as zoning regulation with the aim of protecting the stable low-density character of suburban neighborhoods characterized by single-family homes. From 1926 the aesthetics of the built environment and social disparities became important elements of abolished restrictive covenants and residential zoning based on race. The zoning system aimed at parks, in order to decrease crowdedness and increase rates of health stresses, slightly reinforced the social divisions according even after the reform in 1961, as observed on one of them. In a recent period of the history of capitalism, the privileged segregation of certain land uses has been reinforced by the neoliberal faith in the free market and quantified mechanisms of development. However, regardless of the status, these landscapes were found to segregate socially important and vulnerable land uses. Close proximity of industrial and commercial uses were always able to establish a strongly-stressing landscape. Conversely, residential landscapes showed a significant variety of potentials in terms of health-induced stresses. These interactions generally manifest local effects, however, as evident from the contour analysis of population affected by selected conflict situations, it could also concern entire cities, especially with the emergence of pan-urban pathogens. Moreover, with the development of urban sprawl, residential landscapes found themselves in a disadvantageous geographical situation. In contrast to other land use patterns, however they are located, they may be affected by the health-induced stresses of the lowest land use potential. However, residential landscapes situated in the inner city and those surrounded by industry consistently expanded the stress zones, hence causing a city-scale phenomenon.

### **3.2. Transportation Networks**

There is a growing recognition among planners, policy makers, and scholars that cities are complex systems and that substantial improvement in urban living environments could be made if the complexities are better understood. For millennia, cities evolved in harmony with natural environments, but the pace of change has accelerated dramatically since the industrial revolution and particularly in recent decades. Population growth accelerated urbanization. Fast rising cities have issues of housing and supporting, health, education services. This along with increasing change in economic activities, production and

attractions as well as income has transformed cities into complex systems. Urban form, as fundamental structure of cities, constitutes factors of environment, housing, transportation, land use, population and economy as well as historical, cultural, and institutional dimensions. Urban form has the capacity to shape city functions, activity patterns which impact on city efficiency and liveability. Built environment, metabolism infrastructures and networks make cities complex and hard to delineate their functioning. A granular full understanding of cities and their components could not be realized through traditional data sources and methods. Availability of voluminous data of cities, and advances in computation accelerating the power of exploration have rapidly developed comprehension of urban form. Quantitative studies of urban form and growth that emerged in last decade vary from morphological and functional features to scaling laws, from street patterns to organizational structures. Most of this work has a focus on cities' populations, transportation or economical aspects. Cities as complex systems, have a number of components and networks of components. With a view of the multi-dimension of cities unveiled in and following, benefits of addressing not only one but several dimensions of urban systems also give an impetus to the analysis of other aspect of cities. Urban transportation systems consist of numerous networks and multilayered components and involve a vast diversity of nodes and components. Urban transportation systems are essential components of modern cities and are integral to the successful functioning of a city. Efforts to develop the built environment of cities, and attempts to understand the evolution of built environment can also be perceived in street network creation and study.

### **3.3. Public Spaces**

Urban public spaces, often equated with the 'open spaces' or 'parks' of cities, are nodes or zones where people meet one another, where consumer goods are bought and sold, where entertainment occurs, where people display their wealth, where there is social surveillance by walkers, and so on. The general notion of publicness here is different from an idea of 'private' city which more and more of urban environments have become in time, notably through commodification of land, over-regulation, securitisation and surveillance and subsequent privatisation. The term refers here rather to the conditions related to the normal,

unrestricted circulation of all kinds of users and entities, in relation to physical and digital space and landscape, on a basis of law and constitution.

Public spaces in contemporary urbanism broadly may still foster diversity and connect people to places, they act as sites for democratic protests or could be seen as urban entrepreneurialism by attracting tourism or providing new job opportunities. It is hence no wonder that the design and management of public spaces is always on the agenda of urban policies. On a policy level good quality open urban spaces have a normative potential for fostering social interaction and community engagement, for freedom of cultural expression and exchange, and for preserving a better urban environment. As places for community engagement and as active domains of cultural exchange, food production and performance, relocation and appropriation, legal or illicit activities, public spaces have been and are still seen as essential factor of gentrification and the promotion of urban vitalities. However, despite their normative role in urban planning and design, the ability of public spaces to assure accessibility, safety and inclusivity for all scales of city users has become a major issue in the controversy about contemporary urbanism due to the growing hazards and inequalities imposed by antiterrorist construction, securitarian strategies and burgeoning urban tourism on the one hand, and the inappropriate resolutions and space usage restrictions applied through architectural conventionalism and urban design autarchism on the other. What is forgotten in all of this may be the basic essence of public space which is essentially encompassed in its most simple and maybe only anti-utopian definition as ‘right to the city and urban life’ on an equitable basis. Public spaces may still be understood as core of the right to urban landscape, to urban function and to the contemporary public life which in an effect may foster a new understanding of the propriety in urban environment, rather than relying on the safety derived from the segregation. On the other hand, in the face of recent decentralization policies that often turn out to be merely straightforward offloading of responsibility for services that are fundamental for urban vitality, public spaces and open-to-public arts may prove to be new platforms of community engagement in the pursuit of urban sustainabilities. Finally, in a more theoretical context, public spaces in general also shape our understanding of how cities work.

Presence of a landmark of urban design – a multitude of objects and spaces gathered from different countries is an icon of contemporary fears of overcrowding and gentrification performance through the appropriateness of public spaces. Liveable features of venue are part of the agenda in the urban form.

#### **4. Influence of Geography on Urban Form**

Geography has an important role in shaping the form of a city through combining receptive physical circumstances with particular initial decisions on layout and urban form, which are influenced by favorable land features and indigenous physical variables – for example, land value and available technology, at the time a city is established (Arsiya Ali & Mehrdad, 2019). Recent opportunities and limitations of a city are also dependent on this relationship with the physical environment, being constrained and a model because of that. The constraint may also be attributable to the physical influence of nature – for example; a city’s expansion of easterly, (having been westerly due to a well-positioned mountain in the path) may still expand easterly despite the guaranteed death of its Caesar. That event greatly increases the economically driven attraction of an eastward transport route throughout the rest of the Empire. Discussion encompasses the design of cities not simply in terms of societal economic factors but rather as a product of physical geography.

Cities are impacted by the natural environment in which they reside. When it comes to geography, a city is just as much a product of its local physical geography as it is the governmental and economic structures of the society it is part of. Urban form is a manifestation of planning decisions within the constraints and opportunities made available by geography. The placement of streets, infrastructure, and land uses, as well as the overall layout of the city, are all partially decided by geographical features. While these decisions are made by a number of individuals ranging from planners to individual landowners, the constraints and opportunities as established by geography influence the overall result. Understanding the ways in which geography interacts with and influences a city can better help planners make decisions to better optimize for most successful urban development.

Considerations of a city’s spatial design and layout are not new within the field of urbanism. Urban planning involves analyzing and designing the urban development for a city. A few of the early comprehensive examples of urban planning date back to antiquity. Another city which was designed with an emphasis on its physical design was Alexandria, Egypt. This gargantuan metropolis was planned and built mainly by Greek architect Dinocrates. The city itself, although oversized, was planned with a grid pattern. Understandably, such a city organized on such a scale may not have been specifically planned on such a grand scale. However, it is likely that such general design topics were known to those formulating the plan. Despite the mistakes, there is much to be gained from the study of such design decisions since they have borne directly on the layout of the ancient environment. See Figure 04

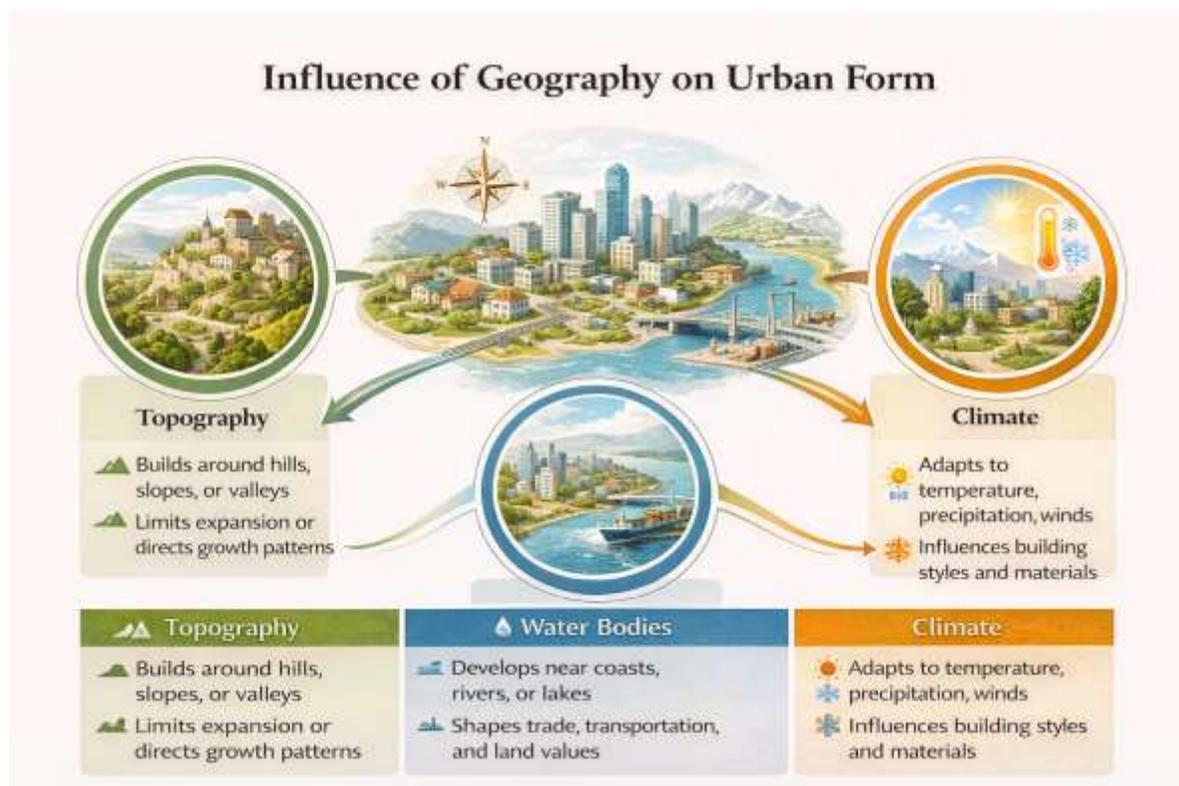


Figure 4: Role of Physical Geography in Shaping Urban Form

## **4.1. Topography and Urban Layout**

Topography is among the most influential components in the making of cities, from prehistoric forms to more contemporary urban developments. Topography, or the geographical feature of a region, shapes the layout and evolution of a city—sometimes initiating the actual siting of a town. Understanding the landform is paramount for the continuation of intelligent analysis and creative design of a place. Various landforms can be observed and interpreted as urban features, such as hills, mountains, valleys, rivers, ponds, etc. The immediate surroundings, that can be read as the given urban fabric topography, significantly influence the urban plan, therefore, it should be analyzed in depth before any intervention (Zeka & Ali Yüzer, 2014). Learning about topography is essential to grasp the context in which a city is planted. Especially within facade cities (cities enclosed on all sides by topographic elements that therefore confine and dictate urban growth) the examination and understanding of topography is critical for the development.

It is inevitable to earthwork the city, because of the sociocultural needs of the community; and in order to survive – in time we create our environment. The layout of the city is a direct expression of the earthworks and that is why the urban structure is powerful. Circulation patterns, location and size of buildings, infrastructure and location of public spaces are all defined according to the form of landworks. The city plan fits together with the given topography as a designed component, ensuring continuity between topographic forms and the urban fabric. The city plan, and thus thereby the urban design, adapts to the given topography. Therefore it is the first question to be answered—to outline the condition of the topographic effects of the city layout. With a given spirit, the enclosed shape of the city of Korça is drawn away on both axes following the edge of its topographic frame. In other words, a profound analysis of the given form leads to a revelation of the city plan and the city expands.

Already existing today, topography with open horizon provides for the opportunity of commanding views across the valley, inspiring a concise intervention. Nevertheless, the inclusion of new function enzymes that were not accommodated initially entails a complete

change to the circulation and building layout in order to comply with the current issues. As such, there should be a more beneficial dialogue between the given city form and its urban development. Today urban form of Korça exhibits informal small patches of urban tissue, disjointed and disconnected. Efforts for a more compact city with high building density are to manipulate the actual topography creating false flat terraces thus framing skyline and open horizon. Investigation indicates that Korça has developed in an undisturbed way, respecting the rule of avoiding cut or fill of more than the height of the building. This rule forces the town to hide or expose different levels of the terrain, creating an interesting urban topology. Effort is placed into incorporating these natural terraces into the current urban fabric.

## **4.2. Climate Considerations**

Cities are complex structures, and the translation of spatial form into recognizable urban character requires the understanding of how they are planned, designed, and built. Urban form and design present the visual ‘body’ of cities and involve various scales, from that of a territorial region to that of a single building. They provide a physical framework for the production of the built environment. Urban form sheds light on the identifying characteristics of urban built-up areas.

Climate is among the factors that significantly impact urban form, design, use of the territory, and built environment in the same way it impacts any other socio-physical entity or phenomenon. Climate factors need to be taken into consideration while planning and designing urban systems (Simić & Bajić, 2013). Various climatic elements, such as temperature, precipitation, wind, humidity, etc. impact building materials and layout of settlements. The purpose of this subsection is to address how climate factors may influence urban form and design. Buildings and built environment are built in specific sizes, techniques, materials, types, etc., as a consequence of the particular climate characteristics of the area where they are located.

However, the observation of contemporary examples shows that it is not necessarily an accurate phenomenon. For example, the increasing use of glass facades in the design of

residential, working, or shopping structures in Turkiye which contradict with the continental climate characteristics and low average temperatures during the winter months. Turkish society has a big economic pressure on this, besides this, a general lack of knowledge or an unconsciousness is effective.

## **5. Cultural Influences on Urban Design**

Introduction to Cultural Influences on Urban Design It is impossible to detach culture from the built form of things, and this includes the specific urban architecture, landscape, and design of places. Various culture and place value aspects are involved, including the visual, aural, kinesthetic, and olfactory characteristics of space, as well as the performance of daily practices that circuit through urban sites (Brabec, 2004). With increased globalization and in the past two decades, urban spaces in metropolitan cities have seen stronger transnational urban cultural influences than ever before. Drawing upon substantial examples of urban design and aesthetics of space examined in global and local settings, the investigation reveals the interplay between culture and the built environment, in a chain of value practices in urban spaces. Including postmodern cities or traditional rural landscapes, the previous investigations remain limited to general considerations in historical or planning disciplines. This inquiry further extends to performance and identity to examine the impacts of culture on the urban form. The aim is to connect cultural values, practices, events, and identities to the notion of city as a place, and to explore how culture informs the aesthetics of the city's everyday, transformational and symbolic forms (Beynon, 2009). Primarily, the investigation proceeds with the qualities of urban places in aesthetic, focal, sensual, circulatory, functional, and historical terms. Thereafter, cultural influences on the architectural styles and appearance of a city are examined, followed by an exploration of the current globalization and localization of the aesthetics of space achievable by a focus on public social actions and performance in urban design. A few actual urban places are used as evidential reference to discuss these urban design, aesthetic and performative issues. See figure 05

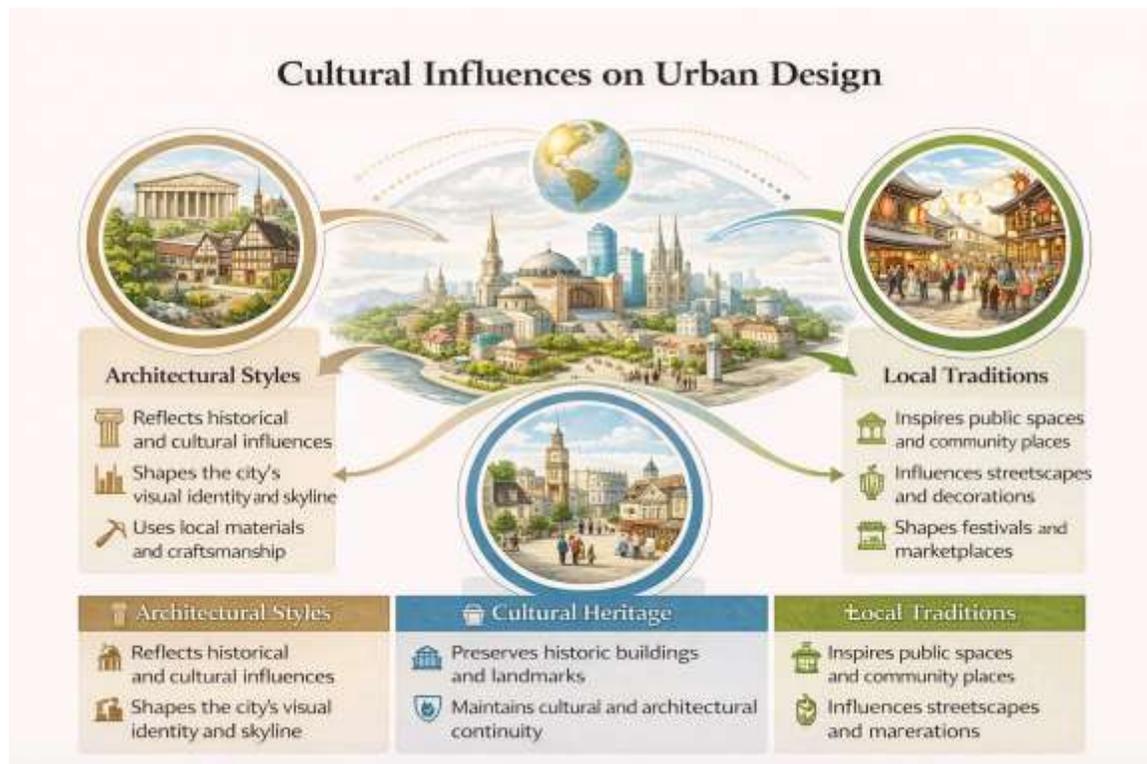


Figure 5: Cultural influence on Urban design

## 5.1. Architectural Styles

Architectural style is created within cultural, historical, and social contexts which then informs and affects the urban form. For example, at the turn of the 19th century, the Gothic Revival movement was the architectural trend as highly ornamented European-inspired cities were erected across the new world. Historical evidence of residential housing in America shows that vernacular traditions affected the design of these buildings over time. Drawing upon local building techniques and materials simultaneously shapes the urban landscape, architectural flavoring. Most frequently, the urban influences are in the replication of row house designs. In the Erie Canal city of Buffalo, NY, the row house is derived from the contiguous row houses prominent during a volatile time in American history, the war of 1812. By observing architectural style, the urban landscape of cities

becomes easier to understand and identify. This ultimately allows a situation or place to be replicated or responded to similarly (Jean Winn, 2016).

Beginning with 1860, the Second Empire style is found in nearly all urban areas due in part to the influences of the world's fairs. Dallas, TX rejected this export for the entirety of the style's history, instead embracing The Locally Transformed Cottage variant of the Italianate tradition. It is fortified in knowledge that at the turn of the 19th century, American architecture was heavily geographically influenced by French architecture of the early 18th century which arrived in the 1840's from France, by watching industrialized cities being erected. In places like the Mississippi Valley along the Ohio River, materials and demand were scarce, making pathetic copies. There, the Second-Empire row-house makes a scant appearance in the pre-created urban landscape similarly to Buffalo. Quickly, this housing type falls economically out of style to the more construction-friendly The Locally Transformed Cottage (TLC) Row, which is a variant of the already popular Italianate building fashion. At this time, Dallas is in the beginning stages of industrialized growth. Contemporaneously, a civil war brings 10% of its population into the army crippling industries. Post-war, Dallas grows exponentially.

The significance of stating that, Dallas is also in the middle of a population boom during the entire tenure of the Puget Sound War of 1866 which eventually led to strict land-use restrictions relegating the similarities of the city to be that of one story building and the lack of accommodation for investment of architectural change. As causes of previous retention, Dallas quickly became the some the the mass of one story, brick load-bearing artisan houses that washed ashore in ever the same building order. Because of uniformity, an immense part still exists today. This conversation is for the bone urban density copper. As the buildings have dear outlay defects when empty. This discourse serves to also prove understanding of urban form from the aspects of architectural style to the far greater shape of the city to that of which layout of the architecturally flavored buildings.

## **5.2. Cultural Heritage and Preservation**

From the age of industrial revolution onward, with the development of civilization, the theme of heritage has taken its place in urban design. The understanding of the term is widened from conserving only the aesthetic values to conservation and preservation of cultural heritage as an entity of the urban land. Many cities have a distinct form of urban fabrics and spaces that has evolved over years and in some cases over centuries. The buildings, streets and urban open spaces have a unique character and possess aesthetic or historic significance. Those have been effects of historical forces shaping a city or a town to diverse forms and has given a sense of identity and a distinct character. Cultural heritage can also be a powerful expression of communities' and groups' values and is linked with the social cohesion and dynamism of its community (Munasinghe, 2013).

The term 'heritage' appears as a concept which serves the dimensions of 'who we are' and 'where we come from'. It would seem that respect for cultural heritage is now a requirement of being civilized and any destruction of cultural heritage has the potential of eliminating all traces of a collective identity of a community. The built heritage particularly such assets have been generally associated with a place, with construction and has represented an important part of the surroundings, domain, space, knowledge, history and memory of residents, community and even a group of individuals. Therefore, built heritage increases in importance over time and cannot be destroyed without altering the identity of the community it belongs to. Disappearance of any cultural heritage is commonly contributing to generate a community of nostalgia, a community which is on decline of its integrity. Efforts to preserve the built cultural heritage on the one hand can be taken as preserving the overall unique characteristics of urban fabric and urban space and on the other hand can be considered as preserving diversity of the cultural landscape which has evolved into a complex but continuous unity. The destruction of it may convey the ideas of inequality. Efforts for preservation will upset the stability, prosperity, rather worsen the already bad condition of the cities catching up with the economic boom. However, proper and creative preservation may enhance the unique properties and give the places a distinct competitive advantages among the others.

## **6. Socioeconomic Factors in Urban Form**

The relationship between urban form and socio-economic aspects has generated growing attention in the field of Urban Studies, architecture, planning, and economic disciplines. This trend has been triggered by the general understanding and evidence of the impact of built physical space on social, economic and environmental aspects of cities. Analysing such relationship is now more urgent than ever as city population is exponentially growing worldwide, especially in less developed regions of the globe, reflecting a major proportion of urbanization in human history. Rising urbanization poses urgent challenges and transformation to economic, social and structural aspects of cities, as already proposed by a burning issue in cities and their surrounding ecosystems. Major cities are the source of half of global GDP production but are at the same time the locations with the most acute challenges in terms of climate change, air quality, urban sprawl and congestion, and inequalities (Barbosa et al., 2021). The understanding of urban systems through the use of computational models and machine learning has proven to effectively capture the spatial and temporal organization of cities, to predict urban dynamics and human mobility, and to inform policy making. Moreover, understanding the behavior and evolution of cities is central to study the impact of urban planning initiatives and related naturalization beyond binary residential and commercial zoning schemes (Venerandi et al., 2018). With the above study in mind, to some extent, in addition to the physical and urban regional planning, social stratifications and other socio-economic variables have crucial impact in the shaping of urban spatial patterns. In a highly stratified city, income distribution will manifest as distinct land uses and relative access to substantial and investment in amenities reflective of social standing. Conversely, the physical plan and access to employment opportunities and public transport are fundamentally influenced by the position of the relevant municipality in an urban hierarchy. Urban spatial patterns and their relations to social stratification and economic development are both not devoid of significant feedback. Furthermore, actual urban realizations might deviate from abstract structures due to frictions within the planning and investment process, highlighting the need for a mutual investigation of urbanistic social and economic national creations. Fundamentally, such a

broader concern about city composition effects and structural changes flows into social and economic rezoning effects, providing accidental stern ground to a dialog of two literatures typically proceeding on orthogonal research avenues. Such a dilemma, in turn, suggests that an overarching perspective on the city as a multidimensional complex system, where planning, investment, population dynamics, business relationships etc. co-evolve, is effectively needed. These have been the main findings of recent urban studies revealing a global growth dynamic of urban girth neither based on a single power-law form nor devoid of significant slowdown of major event-related parameters, such as construction rates and population flows into the city. Acknowledging the feedbacks between city growth and social stratification and economic development, such a perspective further emphasizes the need of inclusive planning and investments in amenities and infrastructure to contrast the formation of highly unequal and segregated cities. See Figure N°06



Figure 6: Cultural processes shaping Urban design

## **6.1. Income Distribution**

There is a broad literature investigating the urban form-land use interaction based on household's activities and corresponding land use settings . Different from existing literature, this technical paper starts from the urban form side, by analyzing how the formation of an urban form setting would affect distributions of household's spatial features, in particular, the income distribution.

Urban form arrangements of cities are believed to have great effects on the distributions of households' demographic, social and economic features. As the wealthy households are able to pay higher for better self-environments, a central business district (CBD) at an appropriate scale or multiple small sub-CBDs with good service facilities will be developed, separatively or integratively, resulting in an income polarization distribution feature. On the contrary, a CBD of oversized scale may induce a homogenization of the urban income distribution from the perspective of individual spatial feature distributions. According to this model, cities of various forms, e.g., monocentric optimal city, diffuse city with an oversized CBD area, different scaled primate cities and a polygonal city, are analyzed.

Reciprocally, different urban forms could affect various household's features in disparate manners. In that way, how to adjust the distribution of urban forms by regulating the controls based on both urban patterns and other considerations is of vital social significance. ModelProperty style parameters indicating distributions of spatial features of an agent or a set of agents are the main objects of interest. Discrete Choice Model (DCM) and Envelope theory are applied to relate urban form and agent spatial feature distributions. Applying this approach to a set of simple model cases shows the ability of this model in characterizing the form-land use interaction in the form of city-scale pattern formation.

## **6.2. Social Stratification**

Given the complexity of social structures within the city, its suffices here to highlight some touching points, here those concerning social stratification only. According to (Browning,

1962), traditional emphasis of ‘who gets what, when and how’ remains an important concept of social hierarchy which influences inter alia urban space and facilities, and the housing market. This implies the inferior access of the poor in both processes, which above all points to the implications of the social hierarchy for basic urban facilities and for the housing market. For these reasons, the poor and *Pemulungare* are usually living in the dense urban cores, i.e. where land rents are highest for Indonesian cities. The government driven residential programmes, such as low-cost apartment programme, making use of this and simply put them in the shanty’s backyards, as was the case in Case 2. There are also few efforts to provide for spacious urban core settlements but failure often results in the housing becoming absorptive into the denser environment as market forces or because of poor cushioned governmental policy. The rich, on the other hand, due to the superior access to relatively better costing and in terms of landing prices available in favor of them, are often living far from the cores. They are as well directly using their superiority in hierarchical access to be able to get better values of their land (Case 1). Of course, they could also mitigate their residential environment in the neighbourhood of the prime open space. Again, governmental policy is too weak and much more concerned on maintaining their built-environment advantages. This also implies the inferior access of the stratum to public service which binaries differ from stratum to stratum. The poor are in effect less likely to use the public transportation. The lowest skimming, that is at the same time the majority of the population in several typologies (such as Case 2 where the population is mostly composed of the poor) tended to only bring the problems into the surface yet generated inequality. On the OSSs, the implementation of charging entrance within the subsequent proved-existence equal-sizes-of fac transmuted them as price-discriminated urban space which caused very low entrance by the lowest status (stratum Skimming) and the otherwise proved-high share by the high-status. Conversely, the highest skimming and elitist stopped using it, especially because of the common apprehensions toward up-rise of criminality in public facilities. There are also policy decisions which rather rigidly support the social-hierarchy sign of the urban space, as was the case in Madiun in terms of tourism zones, which were nevertheless not for everyone. Importantly, it was argued that the hierarchical effect of space is often far less deterministic in Indonesian urbanism because

as the evidence shows, Pemulungare nevertheless succeeded in being awarded high-skimming status by the political community (Case 5). In other word, the complexity of the urban social dynamics implies both numerous fundamental socio-spatial problems of the urban society conditions and the multifarious appearance of both Indonesian urban form and community, and as demonstrated in several cases of community which proved to be able taking their role in altering the urban social hierarchy, modifiable urban policy is not merely raising the floor for equality but could possibly drag the actual balance out of it. Thereupon, as it is concluded by , urban planners should break out from the inclination to make the standard formula, or master plan that is believed equally-propitious; whereas, as remarked by , the built environment is unable eschewing the social estrangement, the planning should be particular importance to the society, of the fabric and doings of the cities; while at the end of the day, as maintained by , basically planners should maintain the vital relationship among ‘the development of the community, the maintenance of the communal environment, and the practice of the democratic way of life’ However such situations are more likely to be seen as isolated cases. On a broader level, most of the interaction with the communities, either about policy formulation or project preparation were not view seriously. Community participation or involvement were many times tapped as a tokenistic approach fulfilling mandatory rules and not as alternative means of addressing the need and excel constrains as stipulated by . In this regard the dominant opinion was that the state, in this form, too often it does not act as a defender of poor and marginalized group. In order to create a more just and equal spatial pattern in the future, it is important that cities and society on the whole pay more attention to the process of city building, as well as to the people and communities mutual interest who involved in city building. Failing that, stratification hierarchies will in reality shape the urban social–space relations in Indonesian cities, with the poor ultimately losing out. Developments bringing about property creation for the already well-off higher up in the stratification order, while there are still a substantial number of people who cannot afford the increasingly high demands of the market or even those living outside the marketplace. The result is thus rising socio-urban inequalities and moreover, more complexity of social fabric in the city. At the very least, urban form should be analyzed with respect to its implication for

stratification. Different orientations might, for example, be considered separately with the hope of a positive settlement of conflict. Alternatively, in this way the policy might be operated with greater knowledge of the situations. Various efforts have been made to fabricate the cities more equitable. For example: growing efforts through urban development policy in Jakarta, Surabaya and Semarang, such as interventions within the poor settlements in regard to secure special housing clearance and the legal land tenure. There have also been various design and planning intervention attempts launched by the community itself, such as a community housing program for poorer families to build houses, as well as a cooperative partnership development with other commercial project components, and other efforts set at generating higher income to help both community financing and intra-community social scheme programs. Meanwhile cases 4 and 6 showcase examples of community action to battle for their rights to equal use of urban space.

## **7. Urban Form and Sustainability**

For centuries Shakespeare followers have searched for the place alluded to in “A Midsummer Night’s Dream” where, Deep in a Bank where the wild thyme blows, The gard’ners have built up a green arbour And sundry scents delighted the tending nose. The creation of an arboretum by The Globe Theatre on Bankside is none the less a salutary reminder that theatre has many historical connections with landscaping and urban forms. Green urbanism is now seen by growing numbers of urban designers as a challenge and opportunity to engage with urban spaces and networks. The term urban form is used in a broader sense to describe the spatial appearance and structure of urbanism, especially in relation to architectural and landscape design.

Smart city initiatives, which are now emerging across the world, are most promising initiatives yet to integrate new information technologies in the daily life of cities through environmentally responsive urban fabric. The incidence of such intelligent cities may at last revive and broaden the relationship between architecture, urban form, and environmental design. That said, it is now urged that a sound environment for urban living

should acknowledge traditional qualities of place, heritage, and design context. Footprints has also become an increasingly significant urban form issue by developing and applying indicators to calculate energy consumed, waste produced, and pollutants per capita, as well as monitoring the quantity of land sealed over by buildings and infrastructure (Ah Kim, 2009). Dubbed the “ecological footprint” this measure of the acreage needed to feed and sustain an individual urban dweller is now extensively applied and debated as a strategy to manage local and regional resource sustainability. Assiduous attention to the performance of water systems and forestry in dissipating, recycling, and neutralizing harmful urban effects is another objective. Simultaneous monitoring for risk City zones and strategic infrastructure vulnerable to repeated or catastrophic impacts is now necessary in light of the expectation of increasing unpredictability in weather and ground conditions in global warming scenarios. Such actions, it is cautioned, need to be grounded in local community awareness and preparedness. Planning systems must be responsive to the capacity of communities concerned to integrate responses to emergency events, reduce risks, and improve resilience through preventive actions and more robust infrastructure. Successful examples in the developed and developing world are drawn upon to show the range of benefits that can flow from catastrophe efficient spatial planning strategies. See Figure N°07



Figure 7: Urban Form, Environment, and Resilience

## **7.1. Green Urbanism**

Green Urbanism is a conceptual framework for sustainable urban development. It is the overarching umbrella for a comprehensive, city-wide approach to environmental stewardship in our cities. Green Urbanism builds on 'brown-field development' and 'new-urbanist' principles, adding a strong environmental focus, community engagement, and infrastructure-related guidelines (Lehmann, 2010). It is a response to the challenge to all architects and urban designers, to create places and buildings that are net-contributors - rather than simply consuming urban land, energy, material and capital. The principles and applications of Green Urbanism are designed to help every city grow 'smarter', providing quality life-styles that are socially inclusive, create little environmental impact, and are energy- and resource-efficient. This sustainable future can be shaped in our cities, townships, subcenters, new districts, and in large development projects. Every city will grow in its form and urban fabric, whether it is planned for or not. Today, more people than ever are living in urban environments. A high quality urban environment is critical. This is both the fabric of cities – buildings, streets, infrastructure – and the natural environment – biodiversity and urban ecosystems. The urban environment is intrinsically linked to our health and overall quality of life. It shapes routine activity such as physical exercise, the mental state, stress, noise, and pollution. Urban environments can help or hinder social relationships and community cohesion. Importantly for environmentalists and urban designers, the city is a growing economic, cultural, and social and ecological entity. Therefore, our cities need to grow resilient. This means that the urban fabric and the natural environment must adapt and strengthen, that life becomes less vulnerable to perturbations of one sort or another.

## **7.2. Smart City Concepts**

Urban science, which connects a wide area of fields related to the built environment in cities, has become a promising area of new research that benefits from the data sets available through city life. Urban form can be defined as the buildings, spaces, and structures that collectively comprise the urban environment. By urban form, the text does

not refer to the architectural style of a building. Also, urban form isn't a new trend that had become relevant with punctuated developments that supported it with their potential. In fact, urban form decisions were made by planners since transformation from rural to urban settlements occurred. It's always been a part of us, of how cities had been shaped and hence had changed; it's their DNA. Therefore, it is important to understand urban form first before beginning analyzing cities and urban life in this way. In the first section, this text will scrutinize this basic emergence of cities from the perspective of elements of urban form like spatial patterns, land use, street networks, etc. to understand the fabric of cities. This background information will meta-analyze how the urban form worked in the history, what kind of things were paid attention to, and why from a systematic view in cities.

The sharpening ability to define the urban form realization by using digital data and technological resources let the tools and spatial-metric softwares, to come up during the last decades. Conversely, evolving knowledge focusing on spatial aspects of the built environment provides insights on how to extract and interpret information about human activities from various data sources. Right tools and data are working with their strengths in two ways: technology can model complex spatial structures with relatively ease way and since all the urban data today has spatial properties, the changing technology causes the data inflation by continuously-update of data production. On the other side, understanding the effective urban patterns for cities and their residents brings a wise use of these multimodal data. This incorporates critical reflection on the reliability, customizability, and interpretation of the results that this technology facilitates.

## **Conclusion**

The urban form has shaped the realm of cities, towns and villages, and has made the first people live in such form from the beginning of population. Urban form is the fabric of the cities, but it is also the texture of the civilization in it. Over time, everything changes and towns and villages have been grown as cities – even cities have been changed to other cities. And the academic field of the city has been evolved as 'urban studies'. The word, 'urban studies', sometimes deliver it as a little bit vague image. It may allude the

impression of ‘social studies of urban area’ much more than physical and visible aspect of the city. However, urban form is the essential basis of the urban structure that it affect the realm of cities more substantially than any other elements. As much as the urban form get big roles in the composition of the city, it might be thought of that urban form also gets the big roles in the realm of urban studies.

In claiming judicious truly urban spatial strategies and policies, urban form forces on regional territorial policy generation and implementation. The multiple worldwide cases illustrate that ostensibly internal urban form arrangements can influence extraneous domains like investments, real estate market, tourism, exports, and environmental protection. Thus these examples speculate that policy making established upon acknowledging of the globally driven urban form forces would be conducive and successful in the medium and long run instead of disregarding spatial dimensions and hoping that markets alone will generate urban spaces according to the sought conceptions and requirements. These cases scrutinize the government’s urban form maneuvers; however, in many instances it is the urban form that remains untaught and unquestioned by decision-makers. In an era of escalated laissez faire, or rather turbo-charged neo-liberal urban development municipalities’ jurisdictions over urban form are decreasing (Ah Kim, 2009). Similarly, decisions of other levels of governance, such as those in the EU or the WTO, amplify urban form regulation dilemmas and compel cities to obviate unexpected interferences (or in any case to benefit from new influxes of investments). Ulterior academic inquiry on the global environment of cities and new policies related to it seems proportionately promising and meaningful.

## References:

1. L. Ribeiro, F. & Rybski, D. (2021). Mathematical models to explain the origin of urban scaling laws: a synthetic review.
2. Raimbault, J. (2020). A comparison of simple models for urban morphogenesis.
3. Verhetsel, A., Thomas, I., & Beelen, M. (2010). Commuting in Belgian metropolitan areas: The power of the Alonso-Muth model.
4. Săgeată, R. (2019). A Proposal for a New Administrative-Territorial Outline of Bucharest-Based in-City Discontinuities.
5. Louf, R. & Barthelemy, M. (2013). Modeling the polycentric transition of cities.
6. Zeka, E. & Ali Yüzer, M. (2014). Traditional Street Pattern Typology: Case of Korça.
7. Abedin, J., Maruf Billah, M., & Akter, H. (2018). The Socio-economic Status and Land Use Pattern: A Micro-level Analysis in Bangladesh.
8. Arsiya Ali, R. & Mehrdad, M. (2019). AN INVESTIGATION ON THE INFLUENCE OF RIVER ON MORPHOLOGICAL ASPECTS OF HISTORICAL CITY.
9. Simić, I. & Bajić, T. (2013). Green and blue spaces: Integral urban design as a toolkit for climate change adaptation in the case of smaller settlements in Vojvodina Region.
10. Brabec, E. (2004). Landscape Change: The influence of external cultural forces.
11. Beynon, D. (2009). Architecture, multiculturalism and cultural sustainability in Australian cities.
12. Jean Winn, C. (2016). Small Houses, Big Ideas.
13. Munasinghe, H. (2013). Heritage Protection and Cultural Identity: The Case of Urban Space.
14. Barbosa, H., Hazarie, S., Dickinson, B., Bassolas, A., Frank, A., Kautz, H., Sadilek, A., J. Ramasco, J., & Ghoshal, G. (2021). Uncovering the socioeconomic facets of human mobility.
15. Venerandi, A., Quattrone, G., & Capra, L. (2018). A scalable method to quantify the relationship between urban form and socio-economic indexes.
16. Browning, G. (1962). Social prestige in a low income housing community.
17. Ah Kim, B. (2009). An Empirical Test of the Relationship between Sustainability and Urban Form Based on Indicator Comparisons using Sustainable City Rankings.
18. Lehmann, S. (2010). Green Urbanism: Formulating a Series of Holistic Principles.

## ***Chapter 04: Urban Morphology***

## Introduction

Urban Morphology is one of the key debates for the analysis and description of the urban form, because that its objects and concepts are a precondition for the cultural understanding of a built environment in a certain time and place (A. Van, 2019). This contribution is oriented toward an adjunct attempt to elaborate applications of modal logics in theoretical considerations of Urban Morphology. Hence, the assertion of some well-known facts and basic given concept do not pretends to a conclusive, exhaustive or uncontroversial treatment. Urban Morphology concerns the research and questioning the objects and structure of man-made elements, dealing with their composition and arrangement. The principal focus is on the un-built urban form. A building environment consists of built, un-built and semi-built elements. It is the built elements that have been the principal concern of Urban Morphology research. This is despite the fact that many un-built elements have a considerable influence on the location, appearance and orientation of the built form, and have a significant impact on the use and meaning of parts of a city. Space Syntax advocates for development of photogrammetric methods for acquiring numerous and accurate data for street sections. A new approach to merging street centrality and least Angular analysis methods is proposed and examined through numerous street sections of Turkish classical towns. Modal logics is a language using formulas to express situation-dependent knowledges of infinitely many possible worlds. Merging the modal logics of square, S4, and reflexive-transitive, S5, allows aggressive applications to cover a broad range of general space-related and urban interest. Merging of von Wright's rather intricate system with Bhaskar's complex model is demonstrated, whereas previous applications have focused on simplified versions.

### 1. Definitions

Cities have long fascinated human society with their complexity and the way in which they support intensive use of resources and capitalise on the access to socio-economic services. Consequently, cities can be compared to “organisms” in terms of the way they grow, function and evolve. From Bernardo Vittone to Patrick Geddes, architects and urban

theorists have considered the growth of cities as an ontogenetic process comparable to the development of organisms. In a more contemporary communication, the notion of similarity has been pushed a step forward, with the proposal of a “scientific notion of similarity” between the morphologies of cities and organisms. This analogy claims that certain statistical properties of settlements of different sizes can be seen as an invariant, a claim supported by empirical evidence. Similarity in the form of complex networks is, to a degree, clearly observable in the aerial views of cities. Whilst these reflections are undoubtedly useful to potentially ground the development of major industries and urban policy, it is necessary to account in a rigorous scientific way for the mechanisms and properties involved. To this end, it is proposed herein a research programme in which the methodologies and approaches of morphometrics are employed to investigate the set of scalar and vector measures characterising the spatial heterogeneity and morphology of urban environments (Dibble et al., 2015). These measures quantify the volumes and roughness of the intra-urban distribution of chosen socio-economic indicators, and the more conventional parameters characterising urban form (e.g., entropy, fragmented area, perimeter, aspect ratio). See Figure 01



Figure 1: Urban Morphology: Patterns of Urban Form

To investigate the urban-rural spectrum linking the relative proximity of cities and to this end a wide dataset of urban GIS maps of Italy and the UK, to which the methodology developed is applied will be used. The research activities can allow for the identification and formalisation of the mechanisms determining the “unfolding” of the spatial properties of the distribution of socio-economic indicators. Additionally, it is possible to quantify the role played by existing infrastructure on the growth of new facilities. At variance with the spatial distribution of indicators, significant quantitative similarity can be shown only in the evaluating or clustering of infrastructural facilities.

## **2. The Methodological Scope of Urban Morphology**

The research of urban morphology is an interdisciplinary scientific tool that enables researchers to study and interpret relationships between urban phenomena at different levels of observation. Starting from macro-morphological configurations of a city and going down to the analysis of a certain type of building, a city is seen as a series of closely connected systems with certain rules of behavior. Although the subject of study is constantly changing and sometimes elusive, urban elements have the rich multilayered memory of past events up to their present form, which provides a sense of stability and constant resistance to change. Due to these properties, there are many advantages in the analysis of urban morphology and space syntax. It encompasses the realm of all forms of space and the city itself; therefore space syntax can be applied in the fields of urban design, landscape and architectural theory and practice (A. Van, 2019).

The theory of urban morphology rigorously sets up the disciplinary boundaries of the field of study by outlining both the criteria of the urban object to be studied and the most appropriate methodology in the light of the specific objectives. The shaping, transformation and functioning of cities are defined as an object of the theory of urban morphology; terminology, classification and syntax of urban elements and configuration; and the methodological scope of research with a special focus on geometric (dimensional) and concave side (covered areas) and its integration with the representation of syntactic values (accessibility, movement and visual permeability). These aspects are particularly relevant in the analysis and spatial representation of block (walls of built-up areas converted into a

generalized structural plan, and building and plot patterns in terms of holding block and function, with a distinction between primary, secondary and tertiary façades) and street (inner profile resulting from the space defined by the type and alignment of the walls) (Niković et al., 2014). Finally, the perceptive side of the street wall, such as façades form, style, windows, entryways, sign boards, colours and materials, is considered a separate field of study. The explanatory model of the position of the street in the morphology of the city block was developed using the example of four urban open spaces in the old part of Belgrade. See Figure N°02



Figure 2:Methodological Approaches in Urban Morphology

## 2.1. Mathematical Morphological Analyses

Morphological analyses started since the early centuries of history, however its mathematical outcomes have been utilized until a few decades after the development of computer technologies. The mathematical analyses of morphology had developed in 1964, by G.M. Salingaros at the University of California. He developed the Mathematical Morphology in analyzing urban forms. Mathematical morphology can be broadly performed on any kind of media of geometrical representations of objects or images, in 2-D space or 3-D space. Several operations are defined in 2-D and 3-D: dilation, erosion, opening, closing, etc. Each of these binary operators is defined as the convolution with a specific kernel, called structuring element. The basic morphological operations in analyzing the spatial and intensity domain of the urban configurations are vivid by the introduction on them. See Figure N°03

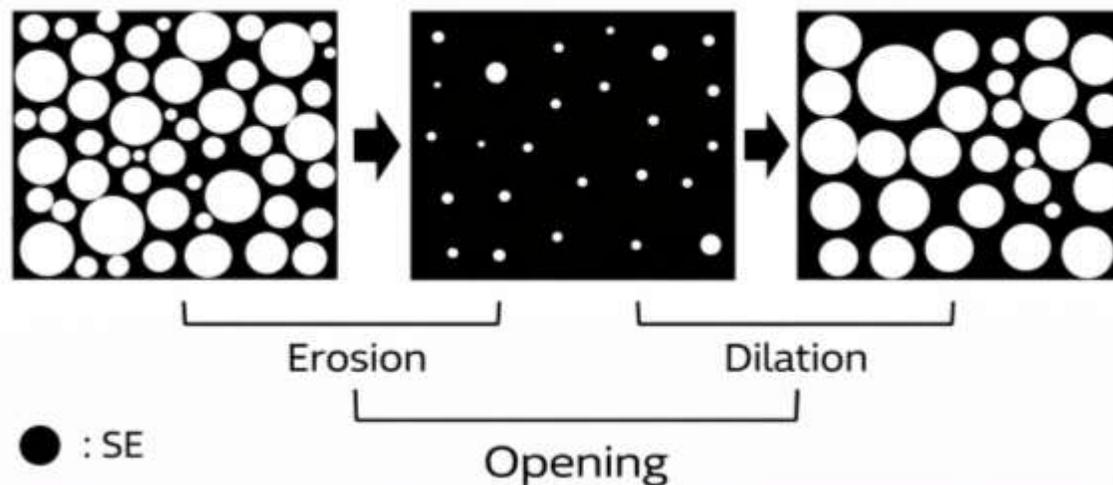


Figure 3: Basic Operations in Mathematical Morphology

Morphological studies of towns include a variety of approaches, such as historical, geographical and change detection analysis, designing and development evolution analysis, housing, density and energy change analysis, infrastructure network type and density investigation, and typo-morphological analysis of street profiles and town floor plans. Morphological studies are highly concerning with the form and complex mere

existence of the town, but in the means of town functionality and construction, some of their parts are also effective, for example housings, factories, and transportation network. The most challenging one is the comprehension of the form of town. It's important in terms of development, perceiving and sustainability of town form. Many studies have centered on morphological analyses of towns, starting from their first foundation up to the modern-urban layouts (Nezhadmasoum & Comert, 2018). The conclusion of the morphological evaluation summarizes the entire outputs and provides planning and conserving strategies for the future.

### 2.1.1. Mathematical Morphology

The mathematical morphological operations are forms of algebraic operations. In image processing, they are defined as taking of two arguments A (the input) and B (the structuring element) and having the output that is equivalent to the image reflecting B that fits under A (Chung et al., 2021). There are two commonly used binary morphological operations, well-known for every ordering workers, forming the foundation of these operations, namely dilation ( $\ominus$ ) and erosion ( $\oslash$ ). In this introduction, using the notion of functors from a small category to another small category, the category-theoretical facilities are established to construct various morphological operations in the image space (Memarzadeh Sharifipour & Yousefi, 2020). In order to proceed it formally, consider I and I' to be the categories of grayscale and binary images, respectively, denoted in  $Z \mid Z^2$  and  $Bw \mid Bw^2$ . Here, Z and Bw stand for the set of all integers and binary values (0 and 1), respectively. The simplest example of categories is Set, whose objects are sets and morphisms are only functions. Objects and morphisms of categories I and I' have been explained here rigorously, but they have similar and known concepts with I and I'. Dilation, defined as  $B \oplus X = \sup\{B(a-x) \mid x \in \Phi\}$ , is a pair of properties: preservation of increasing functions and connectivity preservation. Considering the matrix representation of the argument images, a small category is established, called Mat, consisted of  $m \times n$  matrices, and enriched it over various semirings R; Z, R +, Z<sup>2</sup>, and R + 2. Consequently, using the developed procedure, the dilation is delivered, and the erosion is also achievable by associating the famous adjunction to it. The functor viewpoint of morphological operations

also emphasizes that it offers various facilities to define a wide range of morphological operations.

### 2.1.2. Space Syntax

Urban Morphology and Space Syntax are analytical perspectives that aim at a general understanding of built environments. Through the application of statistical data and computers, it will be shown how advanced multiple-space approaches can be used to build, test or reject, and develop abstract schemata on the spatio-configurational order of the built environment. Urban Morphology and Space Syntax have different methodological aims. The first is concerned with space-syntax research and the latter one with informal, structural or configurational analyses. The first perspective is understood as a method or a range of methods, whereas the latter one is understood as a distinctive conceptual approach to the nature of the geometrical order of built spaces. See Figure N°04



Figure 4: Urban Spatial Analysis through Space Syntax

Since March 2019, the results of calculations made at the Centre for Land Use and Built Form Studies here in Birmingham have been transmitted to students and academics studying and working at various institutions in the US, Korea, Mexico, Australia, Hungary, Italy and, naturally, in the UK. Both the number of used I maps and the global extent of I-mapping/spatial analysis as a proprietary tool for urban research by the academic community has thus drastically increased. Now that these data will be made explicit and accessible to non-Birmingham academic bodies (on a free but reciprocal basis) it is necessary to outline and explain the hypotheses and methodologies that have been employed. Methodological papers will therefore accompany the release of all results. The understanding of how and why such issues have been addressed in the way that they have must however be deferred to a later date. More detailed findings, for example in inter-visibility analysis, topological transformation, and the segmentation of space, will also be presented in separate papers (A. Van, 2019).

### **2.1.3. Morphometry**

Morphometry can help in quantifying a wide array of physical attributes in an urban area: from individual buildings (J. Durst et al., 2024) to the pattern of buildings across the entire city. There are a variety of approaches to collection and analysis, including building footprint area, building height, building number, frontage length, frontage height, frontal area, density of buildings, longest street line, the extent of developed area. detail the derivation of building footprint (BF) morphometrics and demonstrate how they vary spatially across a large urban area. There is observed substantial differentiation in the size, shape, and the placement of buildings. A cluster analysis of shape factors finds five significantly different neighborhood morphologies. It is notable that this differentiation is not restricted to central city vs. suburb location; non-traditional development patterns are mixed among the central cities of each region. See Figure N° 05

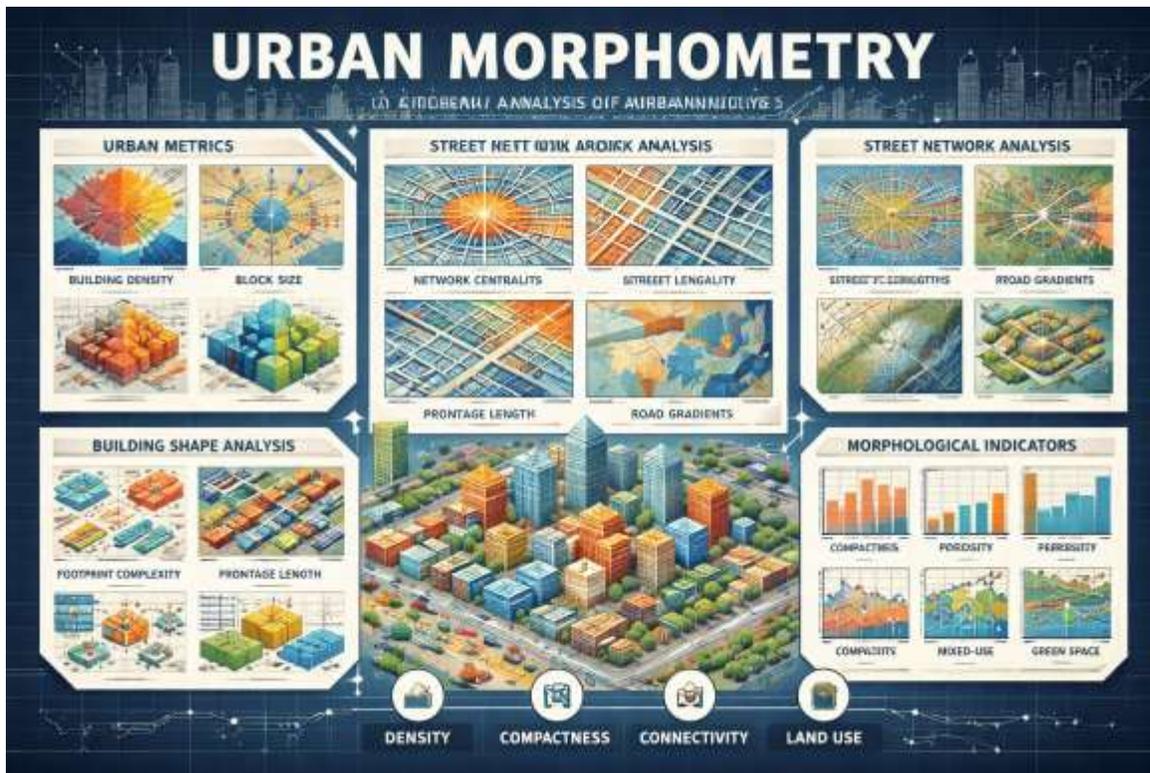


Figure 5: Urban Morphometry: Quantitative Analysis of Urban Form

### 2.1.4. Fractal Geometry

Descriptive geometry can characterize spatial configuration by means of lines, planes, and volumes. Pioneer of descriptive geometry, Gaspard Monge was a French mathematician. He developed a geometry that is concerned with the projection of simple forms to describe shapes that arise in nature. With insights in mathematics, the natural aspiration is to bring the study of shapes into the mathematical context. The aim of this workshop is to give those mathematical insights in the continued study of form.

Doorie was a professor of architecture at Rutgers University when he became interested in the relation between spatial cognition and shape language. He could not understand why a person's culture and location would affect how they see shape so he returned to university earning a PhD in cognitive psychology and post doc in mathematical modeling. Then realizing that his have would have to be to package the information in ways that could be

easily understood and applied, he wrote Understanding isobars and River Discharge to make fractal scaling concepts usable by non-mathematicians. He is now evaluating alternative representations of map topology for the next project as stated because he believes we need to reconsider how to best teach spatial representation (Chen, 2020).

The key concept being developed in the fragment is curiosity and geometric imagery. This concept is useful in terms of morphology, particularly in the categorization of form in the design process. Curiosity may lead to exploration and the development of personal criteria for the classification of the unclassified.

Some people think that understanding form purely in terms of geometry robs architecture of some of its essence. It is argued that geometry is a key attractor of natural processes, that the forms of the natural world reflect the underlying geometric organization of that world, and thus that morphogenesis is highly implicated in geometrical dynamics (Hayashi, 2010). See Figure N°06

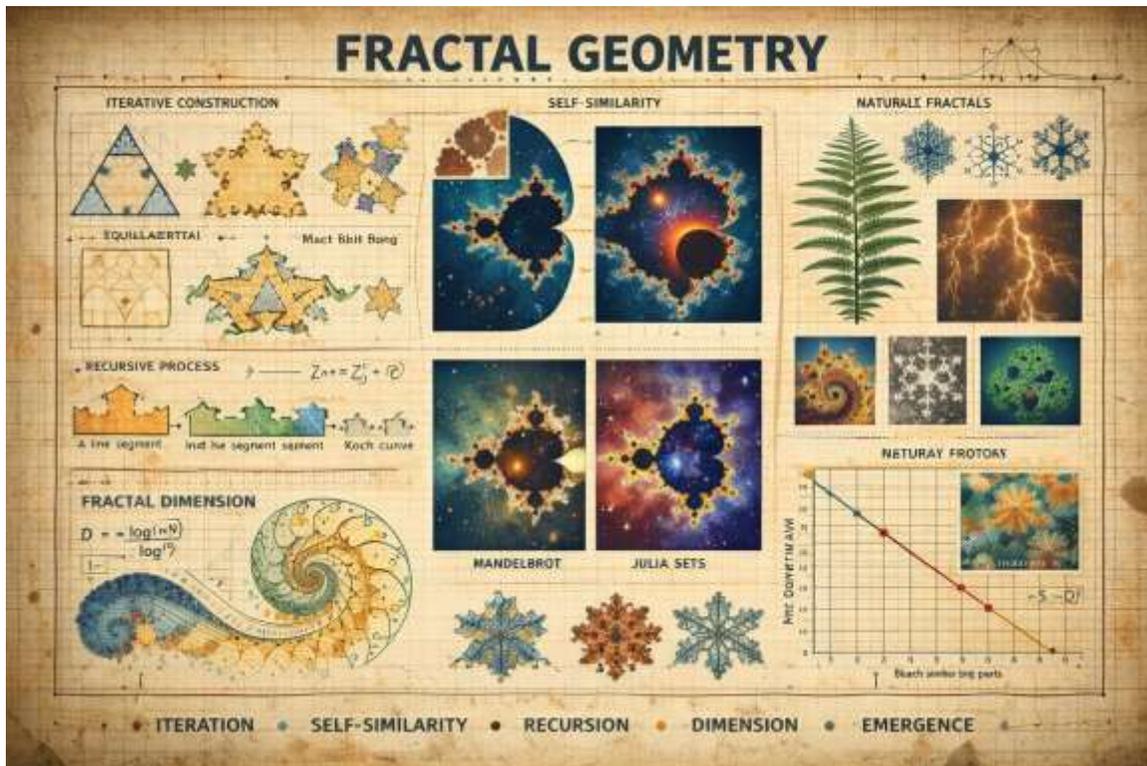


Figure 6:Fractal Geometry: From Theory to Nature

Some digital morphologies with biomimetic pretensions have been based on explicit physiological models of growth which fold the geometry into the scripted dynamics of morphological self-generation. A number of architects and designers have simulated reaction-diffusion models, L-systems, or cellular automata of pattern formation, the outputs of which are then converted into morphologies. An alternative means of rendering morphogenetic geometries with domain-specific complexity may be by designing rules for multiscalar subdivision of surfaces.

## **Conclusion**

The objective of this research is to understand the current geospatial characteristics of urban form using a large-scale, building-level dataset in the U.S. (J. Durst et al., 2024). Neighborhoods are quintessential sites for understanding how the physical form of the city shapes the experiences and opportunities of its residents. Prior work in this area has focused primarily on the impact of parks, roads, vacant land, and other land uses on employment, housing values, and crime. In spite of its importance, the relationship between building characteristics and the daily lives of residents has so far remained less studied. On the one hand, questions concerning the impacts of building scale and density on socio-spatial outcomes are difficult to answer using a traditional, parcel or tax lot-based dataset. Urban buildings—as represented by building footprints in geographic information systems (GIS)—are indivisible yet meaningful elements of the built environment, define the size, shape, and placement of the built environment, are decided by and constrained to an extent by urban planners, developers, industrial designers and policymakers, and in turn affect crime, health, economic development, and land use planning.

There are several aspects of these results that should be useful to scholarly and professional researchers. Neighborhood morphology—as represented by the size, shape, and placement of building footprints—provides a high-resolution means of measuring the patterns of development across the urban landscape. There are substantial differences in the size of buildings across the five metropolitan areas, as well as across central cities, suburban cities, and the urban fringe. Similarly, the placement of buildings changes substantially across the same geographic divisions. This work deepens the broader conversation on urban

morphology—the form and shape of the built environment—and demonstrates a significant connection between the pattern of development and indicators.

**References:**

1. Van, N. (2019). THE APPLICATION OF MODAL LOGICS FOR THEORY BUILDING IN URBAN MORPHOLOGY AND SPACE SYNTAX.
2. Dibble, J., Prelorendjos, A., Romice, O., Zanella, M., Strano, E., Pagel, M., & Porta, S. (2015). Urban Morphometrics: Towards a Science of Urban Evolution.
3. Niković, A., Đokić, V., & Marić, I. (2014). Revising the position of a city block within the morphological frame of a traditional city: Contemporary perspectives.
4. Nezhadmasoum, S. & Comert, N. (2018). Historic-geographical and Typo-morphological assessment of Lefke town, North Cyprus.
5. Chung, Y. M., Day, S., & Hu, C. S. (2021). A Multi-parameter Persistence Framework for Mathematical Morphology.
6. Memarzadeh Sharifipour, H. & Yousefi, B. (2020). Mathematical Morphology via Category Theory.
7. J. Durst, N., Sullivan, E., & C. Jochem, W. (2024). The spatial and social correlates of neighborhood morphology: Evidence from building footprints in five U.S. metropolitan areas.
8. Chen, Y. (2020). Fractal Modeling and Fractal Dimension Description of Urban Morphology.
9. Hayashi, Y. (2010). An approximative calculation of the fractal structure in self-similar tilings.

## General Conclusion

This teaching handbook has explored the fundamental concepts, methods, and analytical frameworks necessary for understanding the complexity of urban spaces and urban architecture. Through a progressive and structured approach, the course has aimed to equip Master's students in Architecture with essential knowledge to analyze, interpret, and engage with the city at multiple scales.

Starting with urban public spaces, the polycopy emphasized the importance of urban composition as a multidimensional process shaped by morphological, perceptual, visual, social, functional, and temporal factors. Public spaces, and particularly streets, were presented as central elements of urban life, where architectural form, social practices, and cultural expressions intersect. The role of communities, contemporary challenges, and future trends such as sustainability and technological innovation highlighted the evolving nature of urban environments.

The study of urban composition further strengthened this understanding by introducing its fundamental laws, constituent elements, typologies, and planning tools. This chapter demonstrated how architectural and urban decisions are governed by spatial logic, regulatory frameworks, and the interaction between multiple stakeholders. By addressing challenges related to sustainability, accessibility, and aesthetics, the course reinforced the responsibility of architects in shaping coherent, inclusive, and high-quality urban environments.

Urban form was then examined as the physical and structural expression of the city. Through historical perspectives, theoretical models, and the analysis of land use, transportation networks, and public spaces, students were encouraged to understand cities as dynamic systems influenced by geographic, cultural, and socioeconomic factors. The integration of sustainability concepts underscored the role of urban form in promoting resilient and environmentally responsible cities.

Finally, urban morphology provided a methodological and analytical foundation for studying the spatial structure of cities. By introducing mathematical morphology, space syntax, morphometry, and fractal geometry, the course offered advanced tools for analyzing urban patterns and relationships. These methods enable students to move beyond descriptive analysis and develop a rigorous, scientific approach to urban architectural studies.

Overall, this module aims to strengthen students' capacity to think critically about urban architecture and to position architectural design within broader urban processes. By linking theory, method, and contemporary urban issues, this polycopy serves as a pedagogical foundation for design studios, research work, and professional practice. It seeks to contribute to the formation of architects who are capable of engaging thoughtfully, creatively, and responsibly with the challenges of today's and future cities.