Urban Form in the Context of Sustainability and Resilience

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ABSTRACT **Urban form is recognised as a point of convergence, meeting place, and source of theoretical and practical effort; it is a reflection of, and a framework for, scientific and professional activity when drawing up a concept of the regulation and establishment of urban order. Theoretical research into urban environment sees urban form as a heterogeneous and composite urban phenomenon, and its contemporary investigations insist on inter-disciplinarity and contextualisation. Hence, the focus of this article is on the relation of urban form towards social, economic, and cultural aspects and issues of the environment. Contextualisation of urban form is understood as the concurrent consideration of a range of spatial and temporal aspects for the purpose of understanding its complexity. Urban form is observed from the perspective of urban morphology, as inseparable from urban landscape, to understand its composite nature and multiple layers. It is essential to see various aspects and layers of space as urban landscape, and to understand urban form as a temporal design process.**

Because urban landscape is understood as composite, as uniting the urban morphology and visual character of a city, and since it is analysed and interpreted as human habitat, urban form, and physical structure, permeated with and fused by the landscape structure, thriving with human activity, and laden with symbolic value, meanings and messages – it is recognised as an expression of the conceptualisation of the city and as an instrument of research, planning, design, and preparation of the environment to be sustainable/resilient.

KEYWORDS urban form, urban landscape of Banja Luka, spatial order, sustainability, resilience

1 Introduction

In this text, urban form is treated as a constituent of urban landscape, which ensures *optimal spatiality*, i.e. the visual encapsulation of various spatial elements of urban landscape into an *organic, pre-organised compositional whole* (Dobrović, 1954, p. 2). Therefore, urban form is seen as an expression of spiritual, social, historical, spatial, and physical continuity. The continuity and endless succession of urban frames, expressed as various urban forms that originate in different periods and social contexts and co-exist at multiple levels, confirm the existence of a lasting link between human power and the changing social tissue. This will be illustrated through the case of Banja Luka's urban morphogenesis. The concept of urban form is used in an integral sense, combining the objective and symbolic aspects of this complex phenomenon. What does it mean? The physical appearance of an urban environment and its mental and symbolic projections or images, which carry symbolic meanings and bear communicative significations.

1.1 Glossary of Linking Terms

An exposition of the concept of urban form asks for an interpretation of the key terms associated with it – landscape, urban landscape, urban growth, spatial order, urban rules – along with the reasons for their consideration.

Landscape
Landscape (scenery, panorama, vista) – Etymology of this term comes from the Latin *pagus*, which denotes a specific rural area. Aside from its original meaning – a landscape, a certain area as seen by the human eye, whose character is the result of interaction of environmental and human factors, the term is also used to designate a natural setting, the environment or natural surroundings. It also denotes an image, scene, depiction, or representation of an area seen or observed. Furthermore, it is used in the compound "landscape architecture", which concerns elements of landscape, landforms, and the planning and design of facilities and structures of landscape architecture, integrated in the system of city greenery. Finally, it is also found in the name of a more recent discipline, landscape urbanism, representing a strategically devised method of landscape and urban planning and design.

The understanding of the concept of landscape changed through the 20th century, as evidenced by the relevant scientific theories of urbanism and urban and cultural geography (see also John Wylie's *Landscape. Key Ideas in Geography*, 2007).

Historically, the focus of research into landscape, and of landscape design, shifted from the earliest, original understanding of landscape as a clearly demarcated area of land characterised by specific social, anthropogenic, natural, cultural, axiological, normative, and consuetudinary content, to the material, physical properties of space as understood statically, to the more recent interpretations of the meaning

of the term "landscape" as having distinctive visually expressive, perceptual, experiential, artistic and aesthetic content, or that which is subjective and imaginary. Both contemporary urban research into landscape and landscape design practices have treated their subject as a cultural and social product; they are based on the process of evaluation of the effects that landscape produces on a socio-cultural setting, relative to the functioning and patterns of use of landscape in the context of time (Novakovic, 2011, p. 212).

According to Lewis Mumford, the landscape of preindustrial settlements was seen as integrating the natural and man-made surroundings (Mumford, 1988, p. 241). In opposition to that, the industrial city was seen as distinct from landscape, through the lens of the relationship it established with its natural and rural surroundings. In the late 19th and the early 20th centuries, there was a trend in landscape design, which emerged due to the negative consequences of industrialisation, to draw nature i.e. the environment into the "diseased" urban tissue and along its perimeter in the form of buffer zones (green belts and parks). In the first decades of the 20th century, avenues lined with multiple lines of trees connected city parks with gardens and the environment. In that period, the landscape of European cities changed in accordance with generally accepted artistic principles of urban planning, as laid down by Camillo Sitte in his eponymous 1889 book, *The Art of Building Cities: City Building According to Its Artistic Fundamentals* (*Der Städtebau nach seinen künstlerischen Grundsätzen*). There was a tendency to see and plan the landscape of modern cities so as to turn them into parks, solve all the problems of the industrial city and make its relationship with the environment and rural surroundings perfectly harmonious (their full integration into a single unit, a park-city). The concept of landscape was mainly understood as possessing a physical-functional component and a visual component, which led to its geometrisation and formalisation at the level of city organisation. The social component was reduced to the search for the ideal spatial order, expected to result in the ideal social order.

At the level of materialisation, efforts were made for cities to become park-cities – bright and insolated, with clean air and verdancy; commercially efficient, with multi-storey buildings and crisscrossing roads (for example, New Belgrade). The degree to which these and other principles, as incorporated in the Athens Declaration and adopted worldwide, have fragmented the landscape of cities in the second half of the 20th century forced Christian Norberg-Schultz (2006) to state that "its continuity has been interrupted, and it broken into pieces".

Urban Landscape

The term "urban landscape" (city landscape, cityscape, townscape, Stadtslandschaft) is used to mark a unit of landscape – the urban form of a city seen as a single unit, with the natural givens of its physical location and primary identity traits as constituent elements. The term and concept of urban landscape first emerged in Germany and Austria in the late 19th century. Its use became more frequent and spread between the world wars in both Europe and the U.S., as the subject of

urban morphological studies into the process of development of the form and structure of human settlements, first under the umbrella of geography, and then as an independent field of study, called urban morphology, which found its application in architecture and urbanism. In the last decade of the 19th century, German geographers Otto Schlüter and Joseph Stübben observed the city integrally as one with landscape, studied urban structure and its elements, and also studied the differences between German cities that grew spontaneously and those that were built following plans. Simultaneously, the Austrian art historian and architect Camillo Sitte developed the first typomorphological classification of elements of urban landscape in his book *City Planning According to Artistic Principles* (*Der Städtebau nach seinen künstlerischen Grundsätzen*). Schlüter introduced the term *Stadtlandschaft – the landscape city,* that is, *Stadtslandschaft – city-landscape,* which became the focus of research during the interbellum, when cities were typically studied as integral to landscape and which recognised the influence of cultural identity on the morphological characteristics of cities (in addition to the level of their socio-economic and technological development (Đokić, 2004, p. 7).

The term "urban landscape" became a part of the present-day understanding of the city, which we owe to Gordon Cullen (Cullen, 2007), meaning the complexity of spatial relationships between elements and subunits of urban space. It started to be used more frequently in the second half of the 20th century, in the context of postmodern architecture and urbanism, when landscape began to be seen not as something distinct from the city, but integral to it – when the city became landscape. Between the 1960s and 1980s, the city or urban landscape, as inseparable from landscape, was researched and designed under the umbrella of urban morphology. It dealt with it by taking into consideration not only its physical and visual-aesthetic properties, but also the element of cognitive and emotional experience of space, while excluding the socio-political aspects of space as a concept (Lynch, Cullen, Alexander, etc.).

Urban Development (Urban Growth / Urban Stagnation / Urban Decline / Depopulation

Urban development is understood as a process of change that occurs in urban space through time, i.e., during the existence of a city (its past, present, and future). The process of development represents the course, way, manner, and procedure of how changes are effected in physical space, across urban territory, through time: the emergence of phenomena, their existence, alteration (growth / stagnation / decline) and disappearance. The past reveals to us what has led to the current situation, the underlying mechanisms and the paths followed on the way to it. The present is the reality that surrounds us – it is in this reality that we determine and define the spatial relations present in an urban territory, the mechanisms whereby those relations are established and fostered, and the impact they exert. The future is a function of the past and present – it is uncertain and inescapable, and it needs to be researched – to predict future trends in the process of urban development – relevant for the planning and design of urban form.

Spatial Order and Regulation

The postmodern paradigm recognises, in relation to the planning and design of urban space (here: urban form), the importance of dealing with both social space and physical or geographical space in an integral manner. Interaction between social processes and the process of production of space has also been acknowledged and recognised (Lazarević Bajec & Maruna, 2009, p. 71). Spatial order is created through processes of reproduction of various social and cultural values within social order, while regulation serves the role of planning and design of urban form, i.e. urban landscape. It is important, in these processes, to bring into focus *connections between people, types of conduct, objects, places and the city*, as well as research, to understand *what makes urban places special and significant for those who use them* (Lazarević Bajec & Maruna, 2009, p. 57).

Webber also pointed out this peculiar interconnection between social and spatial changes (Webber, 1964), recognising the changeability and dynamics of spatial forms to represent three things simultaneously: the result, content, and framework of urban processes. Lefebvre claimed that social production is a weapon in the hands of the ruling class, which uses it to reproduce its domination. As well as that, he equated the reproduction of the social relations of production with the production of space. This means that space is a social product or a complex social construct, which is based on values and the social production of meaning (Lefebvre, 1991).

Urban Rules

The goals, values and norms of urban communities, as well as the needs and interests of their members, are translated into standards and parameters of urban form, which is the most important regulation instrument. The thread that runs through all these levels and holds the whole process of city development together is the implementation of written rules – norms, standards as well as laws. Rules have existed for as long as human communities, because living in harmony in a community requires compliance with rules that do not jeopardise the agreed and generally acceptable degree of personal freedom of the individual. Building rules were made to specify the rights and obligations of all those participating in the building of a city or living in it. For a long time, rules were established irrespective of planning documents and enforced by means of laws. They were always established by city administrations (individuals, groups, institutions). As socio-economic relations changed, this led to changes in urban planning doctrines or approaches to the building and planning of settlements, meaning that the degree to which rules existed and to which they exercised influence also changed (Minić-Šinžar, 2003, p. 31). Building codes and standards connect the inherited values and meanings of the building heritage with contemporary practices of planning, design, and production of urban space. They may be labelled keys to the interpretation of historical layers of meaning.

2 The Phenomenon of Urban Form

Urban form is seen as a point of convergence, a meeting place, and a source of theoretical and practical effort; as a reflection of, and a framework for, scientific and professional activity when drawing up the concept of spatial order. Such a phenomenon requires discipline, sensitised to various aspects and levels of space, and capable of understanding urban form as a temporal design process.

Urban form can be generally and concisely defined as an integral part of urban landscape and as a complete structure, composed of physical basement and sociological construct. Physical component is an objective physical manifestation, "three-dimensional space with emphasised functional character stemming from technical aspects of physical reality" (Milić, 1996, p. 44). Sociological construct or upgrade, with the meanings, symbolic values, and communicative character of messages, represents an "image" of the city – mental and symbolic images, respectively, and urban form projection; it is a result of socio-cultural factors and is considered a physical activity driver. Due to this complexity, urban form phenomenon must be seen from many aspects and studied through the interpretation of changes and effects produced by different factors of urban development in a concrete urban form, which is to be presented in the following text through the case study of Banja Luka. The selection of relevant aspects for the urban form study stems from the widest context of sustainability and resilience and is adapted to them: socio-cultural, environmental (ecological), and economic aspects.

Contemporary research on urban form requires an interdisciplinary approach where various temporal and spatial levels are observed simultaneously on different scales. With regard to that, urban form is observed from the perspective of urban morphology, a discipline suitable for exploring various aspects and levels of space, and able to understand urban form as a temporal design process (Figure 2.1).

2.1 Urban Form – What Does It Include and How Do We See It?

This section further defines the notion of urban form, what it includes and what it means. The notion and meaning of urban form will be presented here through a sort of overview of theoretical research on urban form as built environment (approaches, concepts, methods, and cases).

FIG. 2.1 Urban form as a landscape – San Gimignano, Italy

Primarily, urban form, defined as a structure composed of physical fundamentals and a sociological construct, is associated with the *space syntax theory*. According to the main principles of this theory, published by Julienne Hanson and Bill Hillier in their 1984 book *The Social Logic of Space* (Hillier & Hanson, 1984), the built urban structure in its spatial form contains social form determinateness, that is, built objects are at the same time social objects. Built objects are both producers of spatial configurations of forms and of the social organisation of everyday life, and representatives of this social organisation expressed as spatial configurations of forms and elements that we observe or that have the role of being significant visual features (Hillier & Hanson, 1984, p. 9). Changing the scale of spatial levels – buildings in relation to the complete spatial form of the city – is not of importance, i.e., it does not change its complex and, at the same time, spatial and social, content.

Furthermore, starting with the principle of urban form as an inherent part of urban landscape and a representative of urban identity (Simonović, 2014, p. 80), we will refer to the theoretical and practical research of urban form, based on the complete experience of urban form and landscape. Ranko Radović reminds us, in the preface of his book *Form of the City,* (Radović, 2003) that "for us, form of the city is an elementary subject of urban thought and science..." and that *forma urbis* is founded on the basis of life processes of urban development, and is always a part of the overall culture of a particular environment, stemming from a long period, in diachronic transformation; and that we constantly must discover laws of urban form and landscape, "looking for causes of every urban phenomenon, its sense and meaning, the atmosphere of the city ambiences, the nature of their contents, messages of urban structures, functions of parts of the city and city as a whole, connections and inter-influences of heterogeneous urban forces" (Radović, 2003, pp. 4-5).

What is significant is considering the inseparability of natural environment and built fulfilment of urban landscape within the physical city image, understanding formation, development, and their clearly defined urban functions, and that this complex integrated system, inside which exist connected built elements, spaces, and ambiences – urban form, represents a complete ambience and environment of urban life processes.

Continuity and continuous change of urban frames, expressed by simultaneous existence and parallel multi-layered life of different urban forms from different time epochs and social sources, confirm the constant connection between human power and changeable social tissue. Urban form represents a specific basis on which records of human survival in cities have been kept continuously (Radović, 2003, pp. 65-66).

How do we see urban form? Radović thinks that the basic way of connecting man with the world is through experiencing space. The relationship between man and the environment is interactive – people, by their activities and in accordance with their power, shape and form their environment, so that the formed spaces may have influence on the spiritual and material world of man. Experiencing urban form is not exclusively a visual-plastic and aesthetic phenomenon, but its research requires analyses of socio-psychological and physical-biological factors, as well as physical structure of the city itself. Socio-psychological basis is primary, since the process of experiencing city space includes united performance of perceptive power, experience, and creative power of an individual as well as a community. The physical-biological basis shows to what extent basic natural-ecological conditions of a concrete urban environment or city ambience are changed. While discovering and experiencing the physical structure of the city, movement and time are of crucial importance. City space is experienced in the movement, in time sequences and intervals, continually. Therefore, Lynch considers that the "cumulative effect of the whole range of looks and views" is more important for urban form. Experiencing the physical structure of the city or urban form depends on its morphological characteristics; for that reason, Gordon Cullen's approach is recommended as adequate

when analysing city spaces and their influence on observers (Radović, 2003, pp. 46, 47, 82). The physical structure of the city is seen as a substantive, functional, and socio-dimensional multifaceted frame that sends numerous messages, and as a spatial multi-dimensional system. The spatial and functional organisation of the city is the basis of urban morphology – it significantly determines urban form and represents the embodiment of complex relations in urban environment. Lynch insists that it is very important for land to be used for city activities and that the way in which the land is used defines its general physical city form – urban form. Apart from land use, considerably important are functional and substantive connections and relations of particular parts of the city, as well as distribution of activities in each built, urban environment – which altogether make the basic dimension of the city morphology. Furthermore, housing density, basic spatial relations between built and non-built, particular city facilities, and their character, are central features of urban conception of the city and its form (Radović, 2003, pp. 75-77).

Urban form has abilities to last and change – vitality, stability, and constancy. The duration of physical structures is determined by their content, place in the community, and the quality of objects, whereas dynamic socio-economic processes define the changes. The symbolic and spiritual importance that is given to physical forms of the city affects their longevity. Sometimes, it is a function that lasts within them, or physical forms subsist with altered purpose. Duration of undeveloped, vacant space in urban environments is special – regardless of the frequent changes of objects. In addition, the variability and adaptability of physical structures of the city to social changes is constant. Continuity of changes is a fact; therefore, urban form should be understood as "dynamic (flexible, adaptable, variable, and sometimes ephemeral) spatial form", which requires a method of clear and complex differentiation of physical structures of the city according to their longevity (Radović, 2003, pp. 94-97).

Kevin Lynch introduced his theory of urban form in the first edition of his book entitled *A Theory of Good City Form* in 1981, and in 1984, in the second edition, under a slightly altered title, *Good City Form* (Lynch, 1984). The theory of physical environment or urban form is presented through a new, alternative approach, based on the systematic consideration of the interrelationship between urban forms and people's aims – contrary to the current state of theory and approaches that are static and fragmentary (Linč & Rodvin, 2009, p. 304). Considering valid analytical approaches, from descriptive to genetic and historical ones, from solving problems to analysing processes and functions, without challenging them, they offer more a general and systematic form of the theory and technique of studying interrelations between objectives and urban forms.

Analytical system criteria of urban form categorisation must meet the following requirements: have importance at the city level – so they can be controlled and described at this level; include the physical form or schedule of activities, without mixing them; be applicable to all urban

areas; be suitable to be recorded, communicated and tested, and have significant effects on the achievement of people's goals and include all essential physical characteristics.

The proposed analytical system has a developed set of abstract descriptions of quality, quantity, or spatial distribution of various characteristics of models present in some form in all areas. City forms, put into different categories for the purpose of analysis, actually present a unique pattern; it is not always possible to consider the influence of structure without specifying density and size (Linč & Rodvin, 2009, pp. 318-319). Instead of fragmentary records (such as differentiation of a traffic network, separating or combining land use, and organising a residential area), there is a need for general theory of a city urban form as a whole (Linč & Rodvin, 2009, p. 323).

In *Good City Form,* Lynch proposes a theory of urban design based on fundamental human values and explores how such values can lead to the status "good city form", pointing out the significance of connections between human values and physical forms of cities as crucial. Selected characteristics, such as accessibility, equipment, vitality, control, efficiency, sense, etc., have broad meanings and cannot be interpreted in various ways nor reinterpreted in specific contexts and locations. Transforming theory into forms or guides with different types of urban forms that can be successfully used in the practice of urban design, he manages to make a logical and natural connection between theoretical research and application in concrete projects, taking into account three things: human activities, processes and control, and of course, the physical form.

Between other theoretical researches on urban form as built environment, the discipline of urban morphology, with an adequate practical methodology setting of typomorphology, is very important. Apart from architects, typomorphology is used by geographers, sociologists, art historians, and others, mainly concentrated in groups or schools in France, Italy, and England (Kurtović-Folić, 1995, p. 38). They study urban form and landscape through three basic dimensions: time, form, and size. The most famous typomorphological schools are: *Italian* – Saverio Muratori's and Ganfranco Caniggia's, also known as Cannigia's school, and younger generation (neorationalists) led by Aldo Rossi and Gullio Carlo Argan; and *Versailles* (also known as LADRHAUS – *Laboratoire de recherche: Historie architecturale et urbaine-Societe)*, which was, besides the architects, represented by philosophers, sociologists, historians, and geographers – Jean Castex, Philippe Panerai, and Jean-Charles Depaule, who were mainly influenced by Henri Lefebvre. In addition, there was the *English school*, whose founder was M.R.G. Conzen, a geographer and urban planner who came from Germany and after whom the Conzen's school is also named, within which the *Urban Morphology Research Group* was founded at the University of Birmingham in 1974, now branched worldwide.

The Italian school has set the theoretical bases for the planning and design of the urban landscape by harmonising with traditional urban

design settings. The French school set a new trend of research on urban (built) landscape based on criticism of contemporary theories of design. The English school set a morphogenetic scientific approach to the research on built landscape and contributed to its implementation in the management of the city in accordance with its historical development (Kurtović-Folić, 1995, pp. 38-39).

Typomorphology, as a complex discipline, deals with defining the physical and spatial structure of the city, in a way that different spatial levels are seen as the landscape, and the city is understood as a process of forming through time. According to Kurtović-Folić, there are three main characteristics of typomorphology. The first is a type applied in typomorphology, which combines volumetric characteristics of built structures with corresponding open spaces, and which defines a built landscape type. Land, i.e. a plot, as a basic unit of urban tissue, appears as a connecting element of built and open space. The second includes the land as a constituent element in typomorphology, thus enabling the connection between the individual structure and the whole city. The third characteristic defines the urban or built landscape as a morphogenetic rather than a morphological unit, since it is defined by the time when the city was formed, developed, used, and changed.

The oldest Italian typomorphological school was based on Muratori's theory of designing cities (and his follower Caniggia), which was based on the understanding of the development process of traditional Italian cities. Their typomorphological research and analyses were prerequisites for the urban and architectural design of existing cities. Two things were particularly important for Muratori: the principle of historical continuity in the interpretation of urban structure, and application of typological classification of built forms in their analysis.

The constitutiveness of elements of the urban area (physical structure and open spaces), embodied in the urban form of city, is a result of the permeation of numerous approaches, concepts, operations, and tastes; integrally monitored and typologically classified, they enable the expression of the essence of their diverse character. Caniggia argued that spatial objects could be classified in four different spatial levels or sizes: buildings, groups of buildings (built tissue), cities, and regions. These spatial objects of different sizes should fit into each another in such a way that, in the case of planning and designing, all levels and proportions of spatial objects must be considered, from individual buildings to the region (Kurtović-Folić, 1995, p. 38). Traditional and modern cities can be distinguished not only on the basis of the relationship between an individual building and the city as a whole, but also by the way the building itself is designed.

In the mid-1960s, recognising this change in relationships within a modern city as a fact that cannot be changed, a group of architects who called themselves neo-rationalists, including Aldo Rossi, Gullio Carlo Argan, and Carlo Aymonino, among others, approved both approaches to the design process. The first, which belonged to their teachers, Muratori and Caniggia, was based on the principle that

recognised types from the past applied in urban practice, and the second, was based on understanding and developing shapes and forms of space through typomorphological analysis, in which the type is a representative of a particular category with specific features. Neo-rationalism first emerged in Italy, then in Spain, Belgium, France, and Germany, and it indirectly influenced the application of typomorphology in the United States, critically treating functionality as the basic definition of form, insisting on the development of urban form types by respecting archetypes, but also through understanding the complexity of the city as an expression of collective memory and environment identity. Paolo Portoghesi sees archetypes as basic institutions of the language and practice of architecture, which can bring meaning back to architecture and urban planning.

The most famous advocates of typomorphology among neo-rationalists in Britain are brothers Robert and Leon Krier, who, in their theoretical and practical studies, insisted on the importance of typology in understanding contemporary urban phenomena. Within their active participation in the Movement for the Rehabilitation of the European City, they advocated for 1) the idea of urban space as a basic element of urban morphology; 2) typomorphological studies as the base for the new architectural discipline; and 3) the history of the city as a foundation on which guidelines for city space reconstruction are developed. All three of the ideas represent the essence of the urban-morphological research. The importance of typological analyses of city space elements lies in emphasising key features of their recognisability (Đokić, 2004, p. 10). At the same time, with the above-mentioned Movement for the Rehabilitation of the European City (from the 1960s to 1980s), a similar movement, the Townscape movement, was started in the USA by Gordon Cullen, whom we will address later in the context of understanding urban landscape as an experience of environment.

The French or Versailles School put the issue of the city into the interdisciplinary frameworks of human and social sciences, and therefore, the city could be considered as a sociological phenomenon, thanks to the knowledge gained by detailed urban morphological analyses. They considered relations between urban form and social space to be dialectical, and that social forces were embodied in the changes recorded in the urban landscape. This is most clearly seen through historical, morphogenetic layer of typomorphology, i.e. the unification of material and social space. Within typomorphological research of this school, two categories of built landscape types have emerged: 1) the archetypal, traditional urban type, which endures through time and development periods and is always considered in relation to the existing urban tissue; and 2) type plan or prototype (of multiplied repetition of the same spatial form), contemporary and future type, resulting from the integration of basic functional programs and the specific spatial forms, without establishing a relationship with the immediate urban tissue. The above-mentioned categories of type are based on the theoretical research of the Versailles School, directed to urban forms and elements of urban analysis, as well as typology and architectural types (Kurtović-Folić, 1995, p. 39).

In the English school of urban morphology, Conzen's analyses of the urban plan (with differentiated elements of a street, plot, or building) were used to set a methodological basis of typomorphological research. By applying a morphogenetic approach, the principle of time was introduced into urban morphological research. The urban plan, in the form of a two-dimensional mapping performance, consisting of systems of streets, plots, and buildings; urban tissue (building fabric), composed of physical structures and open spaces, in three-dimensional spatial form; and a detailed plan of land use and buildings – were the key elements of the Conzen's methodology (Kurtović-Folić, 1995, p. 39). These elements, plans, and dimensions are intertwined with each other and are subject to the temporal dimension and evolution, which is the essence of Conzen's interpretation of the urban development process. His followers, in 1974, at the University of Birmingham, founded the Urban Morphology Research Group, which is still active and receptive to researchers from around the world, dealing with the transformation of urban forms within the existing types or through the process of forming new types.

On the group's website, there is a glossary of terms, necessary in the research on urban form, which has been formulated by Conzen, along with Jeremy W.R. Whitehand. Today, the group's highlighted topics include morphological regionalisation, plan analyses, management of urban landscape, peripheral zones, and the history of urban morphology. The management of urban landscape has been actualised and presents the dominant approach to the management of the city (especially in Great Britain).

Studying urban landscape through the identification of the physical and spatial structure of the city, and understanding the transformation of spatial patterns through the history of the city by methods of urban morphology, includes research on the significance of the morphological characteristics of the environment, through the experience of urban space. This is because the urban landscape, in its ambiguity, presents the visualisation of environment, whereas human experience has a role in shaping a performance or image of built environment, simultaneously real and imagined. Theoretical works, in which the described ways were used to approach the study of urban landscapes, originated in the United States, and were published between the 1960s and 1980s by theorists who were supporters of the Movement for the Renovation of the City, starting with founder Gordon Cullen, to spatial planners Kevin Lynch, Christopher Alexander, and Christian Norberg-Schulz, and finally to architectural historian Spiro Kostof.

Thanks to these theorists, who worked in the 1960s, space was perceived increasingly as existential, a proposition whose roots are found in the thinking of philosopher Martin Heidegger, who claimed, back in the 1920s, that existence is spatial (Hajdeger, 2009). Space stopped being understood in the Euclidean sense, as an abstract concept or a geometrical category; it was now seen as a relational concept, an existential category, made of multiple, interrelating layers, which are also interconnected through man's treatment of space. The structure

of existential space, as formulated by Norberg-Schulz, consists of layers or levels of different scales: *geographic layer, landscape layer, urban layer, private space layer – houses, and a hand layer- things and everyday items.* According to Norberg-Schulz, layers of existential space constitute the structure of the totality of space corresponding to the structure of human existence (2006, p. 60). Despite identifying the level of landscape with the land on which configuration of existential space is being developed, this Norwegian architect and architectural theorist emphasises the correlation between human activity and topography, vegetation, and climate, as reasons why people have different experiences of the same landscape. The content of landscape is not only physical, yet is created, and filled with patterns of its use by humans, and cultural, symbolic, and other meanings. Settlements get their identity by being shaped according to the landscape from which they grow, but the landscape level is transformed under the influence of ideologies and beliefs, as basic aspects of human orientation: physical safety and psychological identity (Norberg-Schulz, 2006, p. 113). In the review of transformation of urban landscape during significant periods of city development, Norberg-Schulz seeks the key points in which fortresses and temples dominated the traditional European landscape, while the Renaissance and Baroque landscape was geometrical, with the intention to connect with the environment in a well-conceived way and humanise the landscape itself. During the time of the paradigm of modern architecture, he noted the loss of continuity of landscape, that is, he claimed that (natural) landscape had stopped forming the basis of and background on which object figures could be clearly seen, but that they had rather been shattered into pieces, with a general visual chaos as the result (Norberg-Schulz, 2006, p. 114).

Thomas Gordon Cullen united his theoretical assumptions about urban landscape as a way to artistically design a city (which he previously published as an art director in the journal *The Architectural Review*) in his book *The Concise Townscape* (1961). He offered a whole set of recommendations and guidelines for shaping the urban landscape with the primary objective of achieving "the art of relationship" – visual coherence and the organisational integrity of the urban area (Cullen, 2007, p. 6). He presented them in a sort of atlas of perspective drawings – analyses of selected spatial patterns of urban structure, in terms of the experiential-emotional reactions of people to the urban environment in three ways, namely: through the experience in motion, motionless experience, and through the content and meaning of space. By intertwining and overlapping the structuralism perspective with space, perceptual approach, and phenomenological theses of emotional knowledge of space, he studied the various aspects of the experience of urban environment and discovered numerous ways to meet human needs through the daily experience of space, by means of artistic design of urban landscapes based on the art of relationship (Novakovic, 2011, p. 216). Besides the emphasis on the visual and aesthetic component of his approach, components that are based on the analysis of content, meaning, and character, or on the identity of place within the urban area and the relationship with the spatial structure of the city, are also important.

In his book *Pattern Language: Towns, Buildings, Construction* (1977), Christopher Alexander notes that architecture connects people with their environment in an infinite number of ways, and that we can respond to the needs of ordinary people through the application of spatial patterns. He defines 253 spatial patterns used to achieve unification of purpose and enable the creation of architecture that is not static, but that lives and serves man. The first 94 spatial patterns need to be changed in the city design. In his second book, *The Timeless Way of Building* (1979), Alexander complements 'The Language of Forms' and points to a far deeper connection between nature and the human mind, and offers universal truths about how man interacts with the world. According to Alexander, there is a central value, which is a key criterion of life and the spirit of man, city, or building. In order to define this value in buildings and cities, we have to understand that each place is given its character in the form of certain patterns that are constantly evolving. These patterns or occurrences are always connected with certain geometric patterns in space. Every building and every city is composed of these patterns. They represent the atoms and molecules of which the city is made. According to Alexander, these specific patterns that form the city may be living or non-living. The bigger number of living patterns in space – a room, building, or city, the more evident it is, and the higher its value (Alexander, 1979, pp. 18, 157, 351). He believes that people can form objects for themselves, and they have been doing it for centuries, using the language of patterns. The language of patterns gives each person using it a power to create an infinite variety of new and unique objects, in the same way as his ordinary language gives him the ability to create an unlimited variety of sentences. The language structure consists of a network of connections between individual patterns, which is now the language made of a group of patterns. Then, at the end, individual languages, made for different parts of building, can be used to create a bigger structure, a structure of structures, which is constantly evolving, and that is, at the same time, the common language of the city. Such a rich and complex rank of the city can grow out of a thousand creative parts. Because, once we have a common language of patterns in the city, we will all have the ability to make our streets and buildings live, through our daily activities, without force. Language, as a seed, is a generic system that gives the millions of small parts the ability to create a whole. Finally, in the context of a common language, millions of individual objects together will create a city that is alive, comprehensive and unpredictable, and without control.

Through usage, people and space are constantly changing. Form and content of urban space affect the type and intensity of human activity and communication, but at the same time, space gets altered and adapted to human needs and interests, in a real and imaginary way. A structuralist, Nikolaas John Habraken, sees this type of relationship as a so-called "live configuration", which also includes the built environment and the people who formed it and imbued it with vitality and the spirit of place (Habraken, 1998, p. 17). In connection with the study of these mutual relations between people and space, through exploring patterns of spatial use by people and dealing with morphogenetic characteristics, is the theory of territoriality, which Habraken dealt with (space as a

territory), but, in a special way, the poststructuralist analytical space syntax theory (space-like configuration) also dealt with it. However, unlike Habraken's theory of territoriality, which treats space as a social reality and according to which social and cultural meanings are formed through the use or production of space, Julienne Henson and Bill Hillier (1984, pp. 7, 9) believe that these meanings are already contained in spatial forms, as postulated by their space syntax theory.

The prior review of theoretical research on urban form as built environment enabled the creation of a broader framework for explaining the concept and meaning of urban form.In the following text, the definition of this complex notion is adapted to the topic of a broad cogitation of the sustainability and resilience of the built environment, for the purpose of linking education, research, and design (for more about resilience and sustainability, see Vujičić's "Shifting Forward Resilience Thinking", KLABS Book 1, Chapter 7, *Resilience and Sustainability*). We accept the beliefs that resilience and sustainability can be seen as complementary concepts and that "(r)esilience, understood as a desirable system property/state, is a crucial prerequisite for achieving sustainability and sustainable development" (Folke et al., 2002, p. 40).

According to Vujičić in "Shifting Forward Resilience Thinking", "...in literature, resilience and sustainability are defined in different ways – more metaphorical (normative) or more specific, empirical (descriptive)" (Vujičić, in progress). She emphasises that some scientists explore it separately, while others consider it in combination, while to some, resilience theory is a subset of the broader concept of sustainability (see more in Folke, 2016). Others suggest an equivalence of sustainability and resilience, arguing that "resilient socio-ecological system is synonymous with region that is ecologically, economically, and socially sustainable." (Holling & Walker, 2003, p. 2) Beyond that again, some believe that resilience is a new and more advanced paradigm (Cascio, 2009, p. 92). However, while resilience and sustainability have a lot in common and they have similar goals, there are certain distinctions between them. They have different approaches and types of outcomes that result from these (See Table 7.1). Nevertheless, the specified (descriptive) definition of resilience does not necessarily conflict with sustainability; moreover, they could be seen as complementary concepts. Vujičić defines resilience, understood as a desirable system property/state, as a crucial prerequisite for achieving sustainability and sustainable development (Vujičić, in progress). As Vujičić concludes, the resilience concept can be seen as both metaphorical/general and specific/operational, as well as a way of thinking and system property.

2.2 The Four "Pillars" of Sustainability and Resilience

This entire section is focused on the four "pillars" of sustainability and resilience: the social, cultural, environmental, and economic aspect. Our choice is determined by resilient and sustainable approaches and goals. The resilience approach has the following goals: ecological, economic, and social sustainability. The sustainability approach has

some different goals: economic efficiency, human well-being and social justice, and environmental protection. A more detailed elaboration is given on the aspects from which the subject of urban form is observed – through the case study of the urban morphogenesis of the city of Banja Luka. Examination of the influence of relevant factors on the formation and transformation of the urban form of Banja Luka is based on urban and morphological analysis that was published by Simonovich, in the book *Landscape Cities: A Comparison Between the Development of Urban Identities of Banja Luka and Graz* (2010).

The urban form of Banja Luka is a prototype of a linear polycentric city in the natural landscape, which has been developing by moving the core of its development, often changing abruptly and with severe cuts, occasionally losing the human relationship, between the expansion of its territory and the value of the natural environment. Its funnel shape that extends to the north is completely adapted to the topographical features of the region, although different phenomena of modern age can be clearly noticed.

The Socio-Cultural Aspect

The socio-cultural aspect can be interpreted through the changes that have been manifested in the urban form of Banja Luka, under the influence of social factors. Simultaneous existence and intertwining of several cultural codes as well as multi-ethnicity; changes in the socio-economic system and the administrative position of Banja Luka within the countries it belonged to; application of several different models of urban design and architectural expressions – are just some of the complex influences that have been manifested in the urban form of Banja Luka. Banja Luka has always belonged to Krajinas, the border areas. Such position caused ethnic and religious diversity, and frequent changes in the structure of the population, which depended on nationality, as was often the case within the city of Banja Luka. Situated on an area that received influences from different cultural contexts, the structure of the population of this territory was variable, depending on the power of particular influences. This had a crucial impact on the process of urban development and the transformation of the urban form of the city. Sudden changes that took place at the level of the socio-cultural context of the city development directly caused changes of urban form (wars, epidemics, etc.). Gradually, there were changes in the mentality characteristics of the population, their way of life, customs and habits, interpersonal communication, expression, and indeed, changes of character in ways of using space, and culture in general. All of this, over time, has left clear traces on the urban form of the city of Banja Luka.

In the middle development period – the period of Turkish occupation, the urban form of Banja Luka expanded longitudinally, following an imposed oriental model (sequencing neighbourhoods – quarters, along the River Vrbas). For the analysis of the urban form of Banja Luka, specificity has a significant role – the existence of two fortresses (one in Upper Sheher and the other in Lower Sheher), and two urban cores (old and new). The River Crkvena was a significant element of the

urban form of Banja Luka, acting as a border, the line of separation of parts of the city with different concepts of urban design. The town (predominantly the Christian part of the city) stood on the left bank of the River Crkvena, with its approximately orthogonal street network, and the settlement on the right bank, with a geometrically irregular network that spontaneously branched transversely in relation to the dominant linear direction of the Imperial road and around which was formed a cell structure of neighbourhoods. In the final, third stage of development, the influence of socio-cultural factors on the urban form transformation were of crucial importance. The successive application of the Central European concept of urban design can be noticed during the Austro-Hungarian rule over Bosnia and Herzegovina.

The Environmental (Ecological) Aspect

Natural and morphological factors had a decisive role in the formation of the elongated urban form of Banja Luka. In the mature development stage, the urban form of Banja Luka was defined by common effects of natural and morphological, as well as socio-cultural, factors. In the final period of development, the strongest influence on the change in the urban form of Banja Luka were the effects of catastrophic earthquake (1969), then the effects of war, whereas significantly less impact was made later by natural disasters such as floods (the most recent was in 2015). The urban form of Banja Luka had been abruptly changed during the last war, particularly by the demolition of some religious buildings of cultural significance, which resulted in a change of identity. Many dilapidated buildings of environmental or architectural values collapsed completely – in this way, individual buildings or environmental features of architectural heritage disappeared, which had a negative impact on the memory of the city and on its continuity.

In the urban form of Banja Luka, one can see all the cultural layers that have intertwined over the centuries and formed its overall cultural and urban design expression. Morphological structure and interrelations of morphological elements are moderately typologically diverse. Its urban morphology is characterised by contrasts between morphological elements. It is evident that there is an absence of some traditional types of spatial patterns (the closed city block) and the prevalence of a detached house on the plot. Typologically different spatial patterns are combined with each other in mixed types. This is the urban-morphological specificity of Banja Luka (city blocks are formed by interpolation of multi-family dwellings within the peripheral series of plots with single-family dwellings).

The transformation of the urban form of Banja Luka in the longitudinal direction defined its identity of the city with an elongated shape, oriented to the river, and with a strong linear connection; in the most recent period of development was the spread of urban form and deviations from the river. Moving the core of the settlement along the main route of communication, which lasts through the entire process of the morphogenesis of Banja Luka, is the characteristic of urban form in present time, with the centre of development at a distance from the river, showing a tendency towards eccentric positions to the northwest

and northeast. Vital functions of the city have moved away from the River Vrbas, as well as the central city core; the parts of the city on the left and right banks are of different character and identity, and the river is not a place of their merging, but of their separation.

An extremely important segment of the urban form of Banja Luka – open spaces and green structures – were substantially neglected and inappropriately used in the said period (although, in the last few years the situation has been improving). However, there has been a reduction in the capacity of available green areas intended to be used for gathering, leisure time, and recreation in the city area, especially in the central zone. Standards and urban indicators of plot coverage were increased, whereas norms for the capacity of needed open green spaces were drastically reduced. What has been considered a comparative advantage in former practice – enough free, open space in the urban matrix (markets, squares, parks ...) and distinguishing elements of the urban identity of Banja Luka, became a drawback – there is not enough free, green areas within the built plots and city area in general.

The Economic Aspect

In the last two decades, there has been an intensive influence of urban form change through processes of degradation – fragmentation of urban tissue and the processes of upgrading and extending of existing physical structures, which disturbs the vertical regulation and distorts the established city image. Thereby, the mode of spatial distribution of city functions has been partially changed – once segregated functions have begun to blend. A new mixed typological pattern of housing and business is formed, in addition to the existing moderate typological classification into multi-family and single-family housing. The way of using city land has also changed. Traditional, clear classification into public and private space was valid in Banja Luka until the adoption of Le Corbusier's urban planning, and was an important feature of urban identity. Today, there is a drive to establish equality between private and public ownerships of urban building land, but due to the difficulty of denationalisation and privatisation, the process has not yet been completed.

Changes in the urban form of Banja Luka in the last fifteen years have developed some specificities. The tendency to connect Banja Luka and Gradiška through the linear form of specialised production-trade-service moves, effected the further deformation of Banja Lukas urban form and the change of its identity. Then, the urban form was transformed by the abrupt unplanned development of city suburbs, as urban sprawl, which establishes the specific spatial relationships of conurbational, urban-rural, or pseudo-urban form. Spatial relations, which significantly contributed to the recognisable identity of the city, have been changed in terms of ratio, regulation, opening and closing views, focus or continuity of street front, vertical regulation, among others.

During the construction of new typological structures of mixed residential and commercial uses, Banja Luka has a noticeable trend of full

utilisation of the plot, typical of market relations in a transitional period. The most common plots with residential and commercial buildings have provided traffic access and parking areas, but do not have any open green spaces or objects. Besides, there are many ways and forms of adapting the urban form of Banja Luka to economic changes. Upgrade, extension, adaptation, recovery, and replacement with the new are some of the ways to meet diverse interests and needs. What is more, when it comes to Banja Luka, there is often insufficient insistence on the preservation of those values of urban form that testify to its continuity and distinctive urban identity. The consequences of these trends are certainly a distorted compactness of the urban structure and the loss of the authenticity and distinctiveness of the city.

Customising the new urban form to the current global architectural trends and conditions of market principles and private capital, which act without taking the context into account, constitute a global approach that denies the local and regional. This leads to the formation of a disharmonious and blurred image of the city, a heterogeneous physical structure without clear patterns, and compact spatial entities with their own character and human frame.

Values and Qualities of the Built Environment

In order to cover and connect all previously interpreted aspects, in the following paragraphs the concept of value, i.e. quality of the built environment is introduced.

Social or cultural values are what fundamentally constitute identity. They are defined as either implicit or explicit opinions and beliefs, passed on as tradition and commonly accepted within a culture, on what is relevant, right, desirable, true, valuable, and what goals should be striven toward. In that sense, social or cultural values are the core views or sentiments shared by a community, which define priorities, and thereby also the content and structure of the organisation of its life.

Incorporating social or cultural values and significations in the daily use of urban spaces makes physical space social and cultural (Lazarević Bajec & Maruna, 2009, p. 91). Therefore, urban space is a social product and it is based on values and the social production of meaning, while also changeable, owing to the changeability of social structures (Lefebvre, 1991, p. 129). If there exists a social contract regarding the general set of commonly accepted values, then it is within that set that humans act in, and upon, urban space, in the sense of spatial intervention. Still, the social dynamics that Lefebvre wrote about impacts the set value framework and demands that it should be open to change, in the sense of readiness to adapt to actual circumstances. Lazarević Bajec & Maruna (2009) also point out that the processes of translation of the set value framework, as agreed upon at the level of society to the given conditions existing in an actual urban setting, depend on the power relations in those particular circumstances (Lazarević Bajec & Maruna,). When it comes to the profession of planning and designing urban space, it does not suffice to simply rely on general rules and regulations; since urban space is socially and culturally dynamic, it

is necessary to balance social and economic values and negotiate attitudes in relation to various value demands (Upton 2002, as quoted in: (Lazarević Bajec & Maruna, 2009, p. 92)).

3 The Complexity of Urban Form – How Is It Explored and Evaluated?

This subsection presents the multi-layered nature of the problem, the space and time of urban form. The concept of urban form is used in an integral sense, combining the objective and symbolic aspects of this complex phenomenon, i.e. the physicality of the urban environment and its mental and allegorical projections or images, which carry symbolic meanings and emanate communicative significations.

Moreover, a brief overview is given of the theoretical research on urban form as the built environment and the relevant approaches, concepts and methods from the previous subsection (2.1), with an emphasis on the need to simultaneously observe various temporal and spatial levels, with changes of urban form thus observed over time and on different scales. In connection with that, the notion or concept of landscape/urban landscape is introduced in this subsection, in support of the position that urban form is considered an integral part – whether observing, evaluating, or shaping urban form.

Urban Landscape
Urban landscape is understood as a composite, something that merges urban morphology with the visual character of a city, and so it is analysed and interpreted as man's habitat, urban form and physical structure, permeated with and fused by the landscape structure, thriving with human activity and laden with symbolic value, meanings and messages. It is recognised as an expression of the conceptualisation of the city and as an instrument of research, planning, design, and preservation of the environment (Simonović, Novaković, & Vujičić, 2011).

Ideas of urban landscape as the subject and method of urban planning derived from Schlüter's concept of *Stadtlandschaft* – the landscape city, and were reaffirmed by Sitte's aesthetic principles of city planning, breathing new life into urban planning as was previously done in European cities, which until then had been typically rational and progressivist. This romantic and rejuvenating movement, foretelling the concept of the modern city, was completely different from the concept of the city and urban landscape that would be framed by the modernist movement a couple of decades later. Reviving the space patterns found in classical cities (squares, piazzette, etc.) and insisting on the quality and artistic content of public spaces in his 1889 book *City Planning According to Artistic Principles*, Camillo Sitte developed an entirely new method of city planning and design grounded in aesthetic principles and a three-dimensional perception of space. He combined Aristotle's principles of how to plan towns – machines intended to make people feel healthy and happy – with Vitruvius' guidelines for

the design of settlements and Alberti's Renaissance ideas of ideally designed streets and squares, and integrated them into fundamental city planning principles firmly insisting on aestheticism in the planning process (the art of city building).

His ideas were epitomised in the summary of the Manifesto of the Austrian Society of Engineers and Architects (1877): "Building a city both as a whole and as individual parts is an act of creation. City plans and urban growth are not only about sovereigns' actions and stylistic preferences; like with works of art, what it takes first is an idea, followed by a deep understanding of the needs of the metropolis and the pressures of modern life, and – even more – a sensual sense of space and an understanding of forms." (Dimitrovska-Andrews, 1994, p. 8)

Because of Sitte's major influence on urban planning in Austria and Germany, a great number of municipalities changed their urban plans in accordance with his theoretical principles (e.g., Brno, followed by Linz). Although it was also his students and the supporters of his ideas who contributed to other cities (e.g., Dessau and Munich in Germany), introducing changes to how they were previously commonly regulated. The late 19th century was a period during which aesthetic and architectural principles guided urban planning in Germany and Austria, known as the "romantic period". However, it also happened in other European countries, even the U.S. Thanks to the U.S. movement "City Beautiful", which was started at the time of the Chicago World's Fair of 1893, artistic principles, such as those of composition, symmetry and accentuating form, began to be applied in the planning of U.S. cities (Dimitrovska-Andrews, 1994, p. 9).

Camillo Sitte was the person responsible for enforcing the use of three-dimensional urban plans (Bebaungsplan), introduced in Austria and Germany after 1890. The *Bebaungsplan* later formed the basis for detailed urban regulation, i.e. zoning according to density and height. Zoning (zonierung) was, in fact, a German invention, defined as a "mechanism necessary for maintaining a certain order and an instrument to protect the public interest in circumstances characterized by urban sprawl and to prevent land speculation, which was a necessity when urbanism was in its early stage" (Dimitrovska-Andrews, 1994, p. 9). However, at the beginning of the 20th century, as contemporary research and urban planning focused on regional aspects, the theory of beauty and function could not be adapted to serve the needs of urban planning of that period. It reduced aesthetic principles of design to recommendations regarding the silhouette and integration of towns in the natural landscape, and to guidelines on how to design the perimeter that separates the urban environment from the natural environment (Dimitrovska-Andrews, 1994, 9).

It was at that time that Ebenezer Howard formulated his concept of the garden city, which was adopted and put into practice in various ways, often in simplified form, throughout Europe. This concept led to the birth of the Garden City Movement in 1898, which played an important role in the building of several new towns in England (Letchworth Garden

City, Welwyn Garden City). In her critical retrospective, Dimitrovska-Andrews notes that the garden city concept, which had a significant socio-political dimension to it, was reduced to the standardised design of suburbs in Austria (Anlagen in Vienna) and to the construction of working class neighbourhoods in Germany ("new towns" for German factory workers), without implementing the new lifestyle concept. Similarly, as noted by the same author, in France, Howard's idea of the garden city was limited to the design and planning of the urban development of suburban areas, despite the fact it was wholeheartedly accepted by the French Association of Garden Cities. This was partly because it was strongly counterbalanced by the comprehensive urban reconstructions carried out in major French cities (Dimitrovska-Andrews, 1994, p. 9).

3.1 Creating a Methodological Platform for Researching the Resilience of Urban Form

With regard to the aforementioned overview and summary of theoretical research on urban form, contemporary research of urban form demands interdisciplinary approaches to this complex matter. To this point, it is recommended that urban form be dealt with from the perspective of urban morphology, integrated with other contemporary approaches and methods – e.g. from perceptual, structuralism, and evaluative perspectives. This provides for balanced relations between the key aspects working to make the built environment sustainable and resilient. These aspects should be selected to address particular issues and designed specifically for each individual case, project, or research. Designing a methodological platform in such a manner, or adapting it to specific situations, also enables the understanding of urban form as the very process of shaping the built environment over time.

Evaluating the Properties of the Urban Environment
This explanation is directly linked to those outlined in the section above, pointing out that the evaluation of the characteristics of urban form should start with a previously created methodological platform: approaches selected and aspects of research formulated beforehand; the specificity of the given urban environment; as well as the final purpose or goals of the evaluation itself. The quality criteria for urban form or the built environment stem, in the broadest sense, from the socio-cultural context, most often representing the experiential starting points of planning, but also applied during the evaluation stage. Evaluating the quality of urban form and urban landscape involves the formulation of criteria and indicators of the quality of their physical characteristics, as well as the quality of complex, non-spatial, axiological characteristics.

The quality criteria for urban form mainly stem from the socio-cultural context and usually represent experiential starting points of planning, but they are also used to study the characteristics and determine the value of the urban identity of a particular city. These criteria are divided into qualitative (non-measurable) and quantitative (measurable), with quantitative criteria mostly used as indicators of the quality of urban

form. Qualitative criteria are more complex (social, ecological, economic, aesthetic, and formative); therefore, their normative elaboration includes quantitative criteria as measurable quantities. Quantitative criteria are converted into urban norms, i.e., social values and social development trends are synchronised with theoretical and practical urban knowledge and the general experience of the needs and interests of citizens, the conditions on which settlements function and the quality of urban life, which settlements are expected to fulfil (Simonović, 2014, pp. 72-77). "A criterion is a means or measure intended for judgement or comparison, containing a number of characteristics and requirements, respectively, qualitative or quantitative determinants. A criterion is considered a characteristic of a thing, which is a measure unit of its evaluation, of the assessment of its quality. Criteria are the requirements which a certain thing needs to fulfil or the qualities that it should have, to be what it tends to be or should be." (Minić-Šinžar 2003, p. 31).

4 The Variability of Urban Form – How Is It Shaped and Regulated?

At this point, it is necessary to interpret a major characteristic of urban form – its variability – and observe it in full awareness of its layered complexity. It is important to explain how urban form, its content and relations change during the process of urban development.

Urban Development and Urban Growth

The term "urban development" is connected with urbanisation as the prominent, comprehensive, and constant process of transformation of contemporary human settlements. The term "urban development" is directly related to kindred terms denoting the characteristic states that contemporary cities may be in at different levels of development: urban growth; urban stagnation; and urban decline or depopulation (so-called "shrinking cities"). It is in this context that we speak of the current crisis of the contemporary city, which does not only affect metropolises, but also small and medium-sized cities. The key problem is that cities grow exponentially, with the possibility of their optimal use simultaneously lessening. With urban growth, cities spread to an extent and at a pace that precludes urban activities from taking place uniformly across their expanded territory, due to which internal connections between individual components are severed. Also, when a city territory expands at an accelerated pace, its connections with the immediate and wider surroundings are also either severed or are not adequately maintained (Ralević, 1997).

At other levels, urban stagnation and developmental decline are also problems that many of today's cities encounter in the process of urban development. According to some recent studies into the phenomenon and problem of stagnation, many municipalities, cities, and settlements in both urban and rural areas of the Republic of Srpska are either stagnating or shrinking, i.e., they do not have the same opportunities

and strength as developed cities or developing cities. The causes of urban stagnation and shrinkage are demographic, social, economic, and sometimes environmental. They include: population decline due to negative population growth rates; aging populations; internal displacement and emigration (internal and external migrations); economic decline due to the closure of pre-war industries; slow and long-lasting processes of privatisation and restructuring of the economy; global economic crises; structural and political overturns; wars; natural catastrophes; etc. (Vujičić, in progress).

Complexity of Urban Development

In a wider context, a range of approaches founded on new methods, models, and techniques are applied when searching for answers to the stated problems. Administration mechanisms are sought to ensure that cities are of optimal size, and a very important condition is insisted upon – understanding the complexity of urban development. What is meant by this, and how can this condition be met? The term "complexity" includes all factors that influence urban development, which arise from social, cultural, environmental, and economic contexts.

Changeability

Moreover, the essential characteristic of development is changeability; on the one hand, this concerns the content, structure, organisation, and meaning of urban form, and on the other, changeability of the social, cultural, environmental, and economic context in which development occurs. Given the permanent feature of changeability of conditions and contexts, the key terms, characteristics or criteria of quality are adaptability, elasticity, and resilience.

As previously stated, the goal of development is to improve quality through quantitative change, which takes place with the help of development potentials. A development potential is defined as a resource category at our disposal that can be developed to a maximum in a number of alternative ways, in order to respond to unexpected circumstances in a timely manner and achieve optimal possible effects. When it comes to small and medium-sized cities (like Banja Luka), they should develop according to a scenario that ensures they are treated comprehensively, in all their complexity and as integral systems; managing urban development in the preferred direction should include the use of new, contemporary, ICT-based methods, models, and techniques. The quality of urban development of a city should be evaluated relative to the effects produced in terms of the stability of the balance created within the bounds of the system, i.e. the city as a system with its surroundings; of the degree to which maximum growth has been achieved by individual city parts and the city as an integral system; and of the extent to which urban growth is opportunely managed with regard to adaptation to changing circumstances. This means that a city's urban development should be influenced through both activation and creation, more specifically, the activation of identified development potentials, bearing in mind the goal to invariably ensure the city is of optimal size (Ralević, 1997).

However, changes to natural-ecological, spatio-physical and socio-cultural conditions, which take place continuously and in parallel with urban development, require not only their prediction, but also the construction of alternative response scenarios for the urban system, to allow the timely selection of the best possible response in the face of changing circumstances. What does a timely and adequate response to change mean in view of resilience? It is the ability to adapt to conditions of imbalance, understood as a kind of "immunity", which the urban system should either have or acquire in order to be resilient. Additionally, this concerns monitoring and predicting change, as well as managing the behaviour of the urban system in relation to change, with the aim of its becoming resilient to disturbances and ensuring its uninterrupted urban development.

Spatial Order and Regulation

Spatial arrangement or order, with visual order as one of its components, lies at the intersection of physical and social space, including relationships to identity and collective consciousness. Spatial order requires that spatial patterns of use for all types of space be clearly specified. It is defined in line with the previously created social and legal order, as well as through economic, legislative, and other forms of regulation. These regulatory processes depend on the political process that specifies orders for different forms of regulation and mediates between them. Social groups work hard to arrange space in a way that not only contributes to visibility or social control; regulating physical appearance also contributes to their representing and shaping identity, which brings identity into focus. Another thing to take into account is that administrative limitations play a part in creating identity and various visual representations. Lastly, it should be understood that regulating the visual representation or appearance of a place or area (street, block) – *its image* – also means, for the most part, exerting control over it (Shuffield, 2002, p. 10). In considering spatial order, aside from visual order as its component, collective consciousness is another element of importance – a constituent element of collective space, which has an important role in imposing both visual and spatial order.

Back in the 1960s, Jacobs attempted to redefine how visual order was commonly understood by society; according to her, space should look vivid and be defined by, and in accordance with, local community standards, with social control exerted to maintain this appearance (Jacobs, 1961). Public perception and visibility are at the core of understanding visual order, which is crucial in comprehending the relationship between people and places. This is not an irrelevant issue that may simply be brushed off as visual, or even aesthetic; it has to be regarded as being connected with identity, collective consciousness, and the actions of the social space in which they emerge. Visual order is a constituent part of social space and must be treated as such. All kinds of visual order express specific sets of values connecting individual identities to collective identity; therefore, analysis of visual order must be integrated in approaches to urban space. In addition, one needs to be aware of the fact that it is visual order as representation, as an element of identity, on which people place value (Shuffield, 2002, p. 75).

Codes and Laws

Codes and laws are recognised as regulators of the process of creation and keeping of spatial order, and they refer to its various components and domains. Components of spatial (urban) order fall into the following domains: spatial, economic and market-related, social, political, aesthetic, doctrinaire (ideological), technical-technological, etc. In addition, those components falling into the technical-technological, aesthetic, and doctrinaire domains can change more easily, unlike those that are relatively more constant and related to the essence of a socio-economic system. "Just as the state protects the given mode of material production (economic order), it protects in exactly the same way the given mode of spatial planning and settlement regulation (urban order), as based on the existing social structure (social orders)" (Pajović & Ralević, 2002, p. 96). If spatial creations and phenomena are viewed as the material elements of spatial order, and relations between them as spatial order, whereby spatial structure or organisation is made possible, it is understandable that their changes lead to changes in the existing structure or organisation. The existing spatial organisation reflects continuity or discontinuity as inherent to the applied approach to spatial planning and settlement regulation.

This kind of approach requires bringing spatial order at the state level, on such preconditions as a prior revision and harmonisation of general and special regulations – *codification*, those of importance for spatial planning and settlement development management, which are many in our legislation and which remain disharmonious. This would be accomplished with a codebook on spatial planning and settlement regulation that specifies general principles, which would permanently provide guidance for these activities.

However, when it comes to the Republic of Srpska and Bosnia and Herzegovina, it is impossible to talk about such a set of values, goals, and standards of communities and social groups, agreed upon by society, as is the case in developed countries. "Democratisation of society and the influence of the market economy started trends that changed contemporary urban intervention...", understood as the process of guiding spatial development and environmental design, "... (t)oward socio-economic policies on the one hand, and architecture i.e. construction on the other." Present-day cities have seen local-level administration rise in importance, with numerous stakeholders involved, whose constantly changing standards, needs, and interests necessitate the application of an asymmetric decision-making model (mixed administration at different levels of space and re-examination and estimation of policies, strategies, and goals defined according to them) (Lazarević Bajec & Maruna, 2009, p. 124).

Urban Planning Norms

Urban planning norms represent, in fact, an instrument of continuous harmonisation of social development and urban planning theory and practice and make a balanced system, which corresponds to the level of development of a community. These norms – technical, economic, design, etc. – determine the living conditions in a settlement and define

social needs on the whole, and they are complex in nature due to their technical, economic, and dimensional content. They undergo adaptation to the conditions that exist in a community, which makes them *orientative* and *optimal*, as well as *developmental*. They embody and epitomise the knowledge and experience of the needs of members of a community and the conditions under which a settlement functions. By establishing norms, a range of expected or preferred criteria, requirements, and functions of settlements are defined. Eran Ben-Joseph proposes taking into consideration local traditional experiences and the influence of the actual conditions and special characteristics of an area, instead of schematised and uniform procedures, used in accordance with the principle "one size fits all". On the contrary, these procedures should be followed using common sense and having a common purpose, with a consensus achieved based on the outcomes/effects/performance of standards defined or reached through experience, instead of enforcing generally applicable rules (Ben-Joseph, 2005, pp. 21-24).

One good example of this type of practice is the approach the modernist architect Juraj Neidhardt applied in planning working class settlements in Bosnia and Herzegovina (1938-1942). He adapted the applicable urban planning norms to serve the specific modern-day needs of the occupants of these new settlements, while also taking into account traditional principles of settlement siting and organisation (Grabrijan & Neidhardt, 1957, p. 457).

It is building codes and standards that connect cherished values and the significations of historical layers with modern practices of planning, production, and design of urban space, in light of the ever-changing social and cultural context and unforeseeable circumstances that might challenge cities in the future. They may be called legends for interpreting historical layers of meaning, or the *DNA of our cities*, the "...(o)ne intelligible and comprehensive explanation of the genetic basis behind the places that we inhabit", as claimed by Andreas Duany in his review of Eran Ben-Joseph's *The Code of the City. Standards and the Hidden Language of Place Making* (2005). Codes, standards, and building rules exist or are applicable for different periods: some are applied continuously across contexts and in time acquire universality; some last for as long as the given social system/order or cultural context; finally, those that last the longest reflect the essential local or regional particularity and significations. Today's technologically advanced countries apply standards and codes to ensure their societies are fully operational at all levels of their complex structures. These numerous rules, even though they are not truly universal, are widely applied across local settings and environments, which is the result of the uncritical application of uniform, doctrinaire approaches to urban development. Such approaches did not come from how the given natural and social contexts were initially treated, or from the connection with the local conditions; in time, codes, standards and rules broke away from the conditions they had stemmed from. In order to ensure our environment is planned and designed as sustainable, desirable, and resilient, it is necessary to apply flexible rules and standards that reflect

the conditions and peculiarities that genuinely characterise local and regional social and cultural contexts.

Only those norms based on a logical, socially accountable and value-oriented treatment of context have the capacity to create the kind of spatial order that will ensure sustainable spatial and social development of communities. "For what is appropriate to be built and design should be found not in the vision of an ideal average and social homogenization, but in the facts of cultural distinctiveness and in what is normal given the circumstances of place," claims Ben-Joseph (2005, p. 24).

In the Middle Ages, between the 12th and 14th centuries, European cities set up city committees to manage urban development (such as the independent and free city-states of Siena, Bern, Venice and Dubrovnik). These committees and city architects were guided in their decision-making by regulations, decrees, guidelines, or recommendations for planning, design, and construction. In Bern, building rules (codes) were clearly specified and adhered to, resulting in the building of row houses with ground floors connected with series of arcades. This gave Bern a unique appearance, making it one of Europe's most beautiful cities to this day. The same building rules were enforced between the 13th and 19th centuries, permitting the reconstruction of the city's street fronts in the modern era in new ways that were consistent with the spirit of the time, while also respecting the existing proportions (Dimitrovska-Andrews, 1994, p. 8). In the Renaissance as well as later, with the use of perspective, a great number of towns and cities planned and designed their physical appearance down to the last detail, putting into practice Alberti's ideas of ideally designed streets and squares.

In the second half of the 19th century, the romantic revival of the ideas of ancient Greek and Roman and Renaissance architects, that order should be brought into the city composition and appearance, led to the development of modern planning strategies. It was implemented in cities across Europe and was based on new principles, with city building seen as an art that should follow aesthetic rules. In that period, Camillo Sitte combined Aristotle's principles of urban design with Vitruvius' recommendations for the building of cities and Renaissance aesthetic principles in his *City Planning According to Artistic Principles*, formulating the fundamental principles of urban design. Sitte succeeded in enforcing the use of three-dimensional urban plans (*Bebaungsplan*) after 1890, as a basis for detailed city regulation and height zoning. This was a period in which aesthetic principles as applied in architecture had an influence on urban planning not only in Austria and Germany, but also in other European countries and the U.S. In the U.S., the *City Beautiful* movement (1893) helped incorporate into urban planning the artistic principles of composition, symmetry, and accentuated design, as well as zoning (Dimitrovska-Andrews, 1994, p. 9).

Quite importantly, zoning as a traditional instrument of urban regulation is still used for managing spatial development in many European countries, and especially in the U.S. As previously stated, it first appeared in the German rules and regulations as far back as

the late 19th century, with the division of cities into zones as specified by codebooks and subject to different rules of land use, design, and construction. Zoning was used to plan industrial neighbourhoods in Great Britain at the beginning of the 20th century, and, since the 1920s, also in the U.S., where it is still a major tool of urban planning, used to divide land into zones according to use, building height, and building density. It can be understood as the territorialisation of rules for building cities and neighbourhoods, i.e., as the division of city territory into zones – into subunits having certain characteristics regarding land use and the form and manner of construction of the physical structure (height, form, density) – *volume zoning*. It allows the division of single land use zones into several subzones permitting the construction of different types of structures of different volumes – building types, height, and density (*bulk zoning* in the U.S.).

Standards

It is common for standards or norms and parameters, as regulation instruments, to define the relationship between the preferred and possible in planning documents, laws, and codebooks (Minić-Šinžar, 2003, p. 21). A standard can be described as any measure or benchmark stipulated by law; as something serving as a model, a pattern; something recognised as classic. As defined by Nikezić, "[s]tandards are applied to place a view about what is good or adequate within a framework of specific circumstances and define the relationship between the preferred and possible" (2007, p. 64). Urban planning standards are the most important regulation instruments for quantifying phenomena and are normative by nature; they are found in different kinds of planning documents and their special parts (they may be found in codebooks specifying the design and construction of physical structures), as well as outside them. The norms and standards regulating the construction on, and planning and design of, land in cities and settlements are adopted based on parameters as analytical measures for natural and man-made conditions; they are employed as technical measures, stipulated with the aim of achieving the expected quality levels. They are rules or regulations that need to be conformed to in the realisation stage, over the period during which the norm is applicable (Minić-Šinžar, 2003, p. 24).

A standard is a benchmark reached on the basis of a tradition or the expected level of (well-being of) individuals, groups, or communities/ society, and it is expressed by means of data and indicators. A criterion is a benchmark or measure used to determine the value, i.e. the quality of a standard or norm planned or achieved (Minić-Šinžar, 2003, p. 31). A standard or norm is a formal or informal measure, which more precisely defines, for the sake of determining the quality of a thing, the extent to which a specific criterion has been met or is applied. Standards or norms are indicators whereby criteria are made concrete (Nikezić, 2007, p. 64).

Urban Rules – Design Rules

Urban rules present a link between physical and social space, between quality and quantity, the immeasurable and the measurable, and the

hidden characteristics that are manifested in urban form. They become the means of shaping/designing urban form – design rules. Building codes or standards are those that connect the inherited values and meanings of the building heritage with contemporary practices of planning, design, and production of urban space. They may be labelled keys to the interpretation of historical layers of meaning, or the DNA of our cities, as Andreas Duany does in his review of the book *The Code of the City* (2005) by Eran Ben-Joseph (for more details, see the section above). For a more detailed consideration, see the conclusions of Alex Lehnerer's 2009 book *Grand Urban Rules* (Lehnerer, 2009).

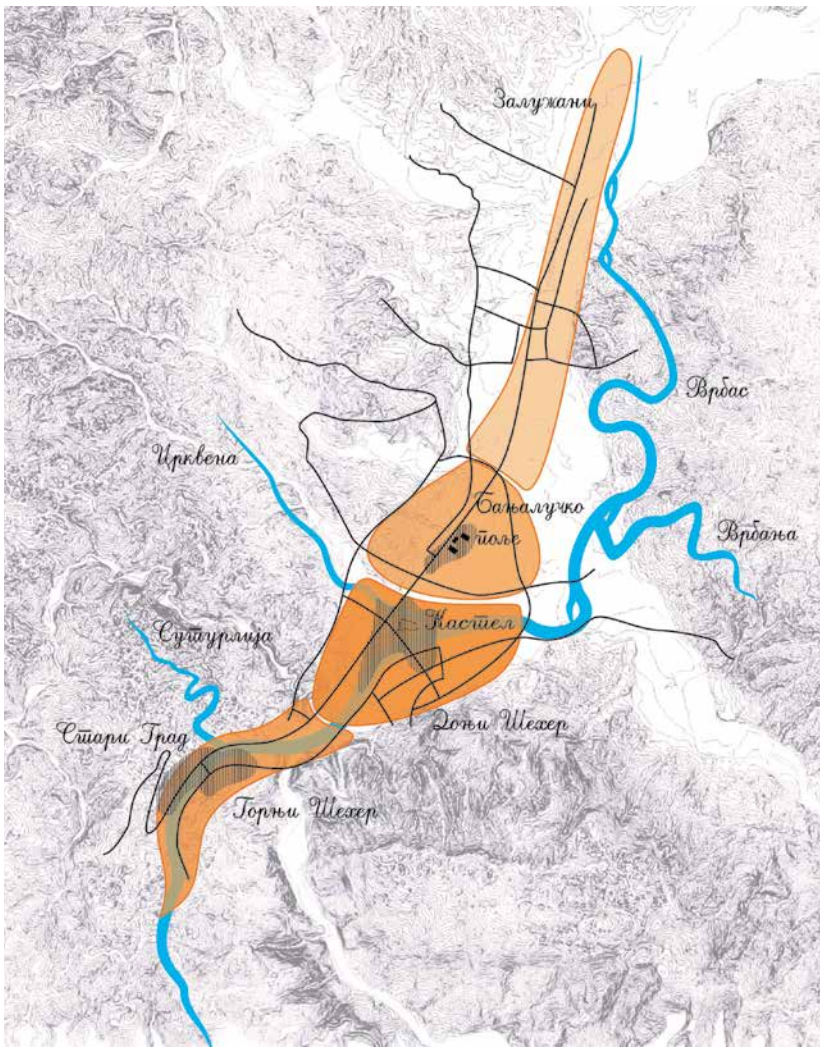

FIG. 4.1 Different spatial designs within Banja Luka's urban form with their own urban cores

At this point, this treatise will benefit from examining the urban development of the City of Banja Luka from the perspective of the history of urban regulation. It will provide insight into the evolution of the codes and standards used, as well as their impact on the design, creation, and transformation of its urban form and urban landscape (Simonović, 2014). According to this research and a subsequent analysis of the approaches used in the planning and regulation of the city of Banja Luka (content analysis of planning documents, legislation, and

regulations, as well as public state interventions), the conclusion is that the given spatial (urban) order reflects a discontinuity between the new and the former (Figure 4.1).

Moreover, there is a noticeable "absence" and "postponement" of regulatory interventions as instruments and mechanisms of imposition of spatial order across the city territory. In addition, different approaches in dealing with urban goods have been used simultaneously by the stakeholders involved in the city spatial planning and development management (including strife between them to be in control of those goods) (Simonović, 2014, p. 140).

5 A Case Study of Banja Luka's Urban Form

To what extent were Sitte's principles incorporated into the building laws and regulations that were put into effect in the special circumstances of the feudal society of Bosnia and Herzegovina in the late 19th century, and what effects did they have on land? This is revealed through analysis of the formulations found in the legislation and regulatory documents adopted, and the implementation mechanisms used by the Austro-Hungarian administration in Bosnia and Herzegovina with the aim of imposing order in city construction (*Bauordnung*, or the Construction Order Act, 1880). Analysis of the contents of these documents confirms they contained many of "Sitte's requirements". The height and density zoning rules were implemented by strictly controlling the height of buildings (the minimum and maximum number of floors permitted), depending on the category and width of the street or road. The code insisted on buildings being in "harmony with the adjacent ones" and contributing to the "architectural quality of the appearance of the whole street"; they also took into consideration the "major views of public buildings, squares, and streets, which need to create architectural units (wholes)", as well as to "local specifics" (Bauordnung, 1880, § 23, § 34).

The concept of Banja Luka as a garden city was framed and took root owing to the decisive influence of urban planning ideas and concepts that focused heavily on urban landscape. The greatest influence, in the sense of the development of Banja Luka's urban landscape taking a particular direction, with the result of its character and identity becoming prominently that of a landscape city, was exerted by ideas integrated in the *Stadtlandschaft*, the landscape city concept. This played a crucial role in the urban planning and design of European cities, more precisely, Central European cities, in the period preceding the emergence of the Modern Movement, as well as the period during which modernist ideas of urban planning started taking form. The concept of city landscape, which impacted the ideas underlying the urban planning and design of traditional European cities, enriched with principles of artistic urban design (the late 19th and early 20th century), was incorporated in Bosnia and Herzegovina's building regulations under Austro-Hungarian administration. Thereby, the contents and meaning of the concept were indirectly integrated into the planning

and regulation of Banja Luka's urban landscape. With changes that occurred in the historical and social context in which this concept took root, a development management model corresponding to the city landscape concept was only partly implemented, and later abandoned because urban landscape strategies changed under the new socio-political circumstances.

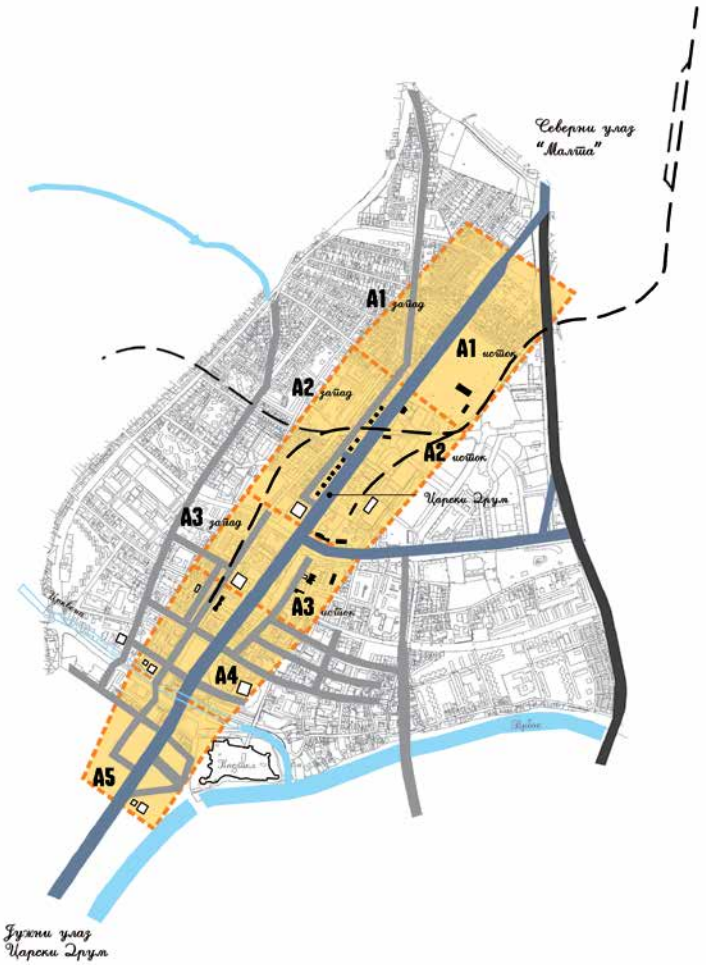

FIG. 5.1 The main city passage with a series of distinct urban and architectural settings from different periods

A comparative analysis of the Construction Order Act (1880) and the Construction Act (1931), and of their corresponding codes and regulations, reveal similarities and common features in the two documents. Despite a fifty-year gap, both pieces of legislation included all the latest urban standards and principles of the science of town planning and construction. The building code adopted in the late 19th century remained in effect and was observed in the Kingdom of Yugoslavia until 1931, with some adjustments to respond to the new circumstances. The two codebooks both had a degree of flexibility because of the need for them to be applicable across a vast and diverse territory; accordingly, this allowed their easy adjustment to local conditions and requirements, as needed. Both pieces of legislation were grounded in the principle of functionality and placed importance on structural aspects, visual and aesthetic aspects, and design and

perceptual aspects. These aspects were: image of the city and image of the street; criteria concerning the quality of the built environment, such as harmony, integrity, and singularity; and the principle of protection of public interests and common or public goods. They both strongly insisted on preserving as much vacant land as possible in high-density housing areas, as well as on having architectural design in compliance with aesthetic principles and particularities of the site and surroundings. Evidently, it was possible to interpret the stipulations as formulated in the two documents to meet the requirements in ways that were sensitive to specific contexts. This appreciation of the importance and value of local particularities, of recognisable features of concrete places, and respect for the local building code legacy, lead to the conclusion that the key elements of identity of places regulated by these acts were effectively preserved thanks to the flexible formulation of the codes contained therein (Figure 5.1).

With the arrival of new, alternative ideas of how to plan a city landscape under the new socio-economic circumstances, which required new ways of dealing with increasingly more complex problems of industrial cities, the time was ripe to abandon the traditional approach to city planning as an art project. In addition, it was time to embrace the ideas of the European Modern Movement in the late 1920s, which emerged on the international scene with Le Corbusier's work and the CIAM (Congrès Internationaux d'Architecture Moderne – Internationale Kongresse für Neues Bauen) movement.

This led to significant changes in the architectural and urban planning discourse in the Kingdom of Yugoslavia. It was a result of the adoption of the modernist paradigm of the functional city and Le Corbusier's discourse on urban landscape, *le paysage urbain*, which had a major influence on architecture and resulted in the construction of modern cities and city quarters around the world. When it comes to Banja Luka, between the world wars these influences were primarily reflected in the building of modern architectural buildings and facilities. Modernist strategies of urban planning and design had a decisive role in Banja Luka's development after the Second World War, when it was planned as a functional city and its urban landscape designed according to modernist discourse (Figure 5.2). Changes to the modernist strategies of urban planning in the socialist Yugoslavia that occurred with the changed socio-political circumstances in the 1950s and 1960s, and then again in the 1970s and 1980s (after the devastating earthquake that hit Banja Luka in 1969), led to changes in how Banja Luka's urban development was managed in this period.

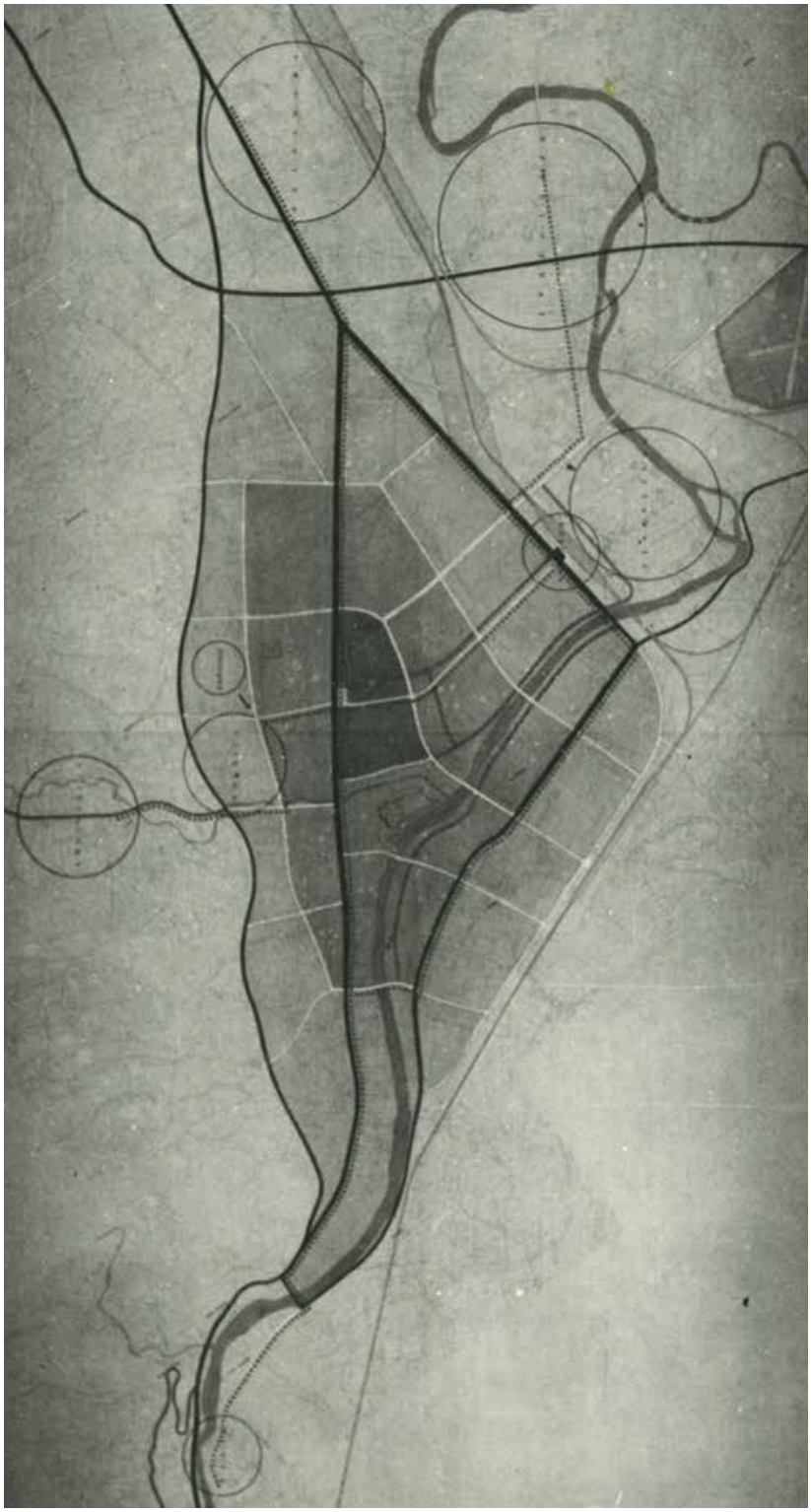

FIG. 5.2 Banja Luka's urban form according to Kirjakov's General Urban Plan (1952)

Le Corbusier's discourse of *le paysage urbain* was the theoretical cornerstone for all the major concepts of urban landscape implemented in post-WWII Yugoslavia, developed by Yugoslav urban planners in an attempt to follow theoretical trends and solve practical problems in the field (also present in Bosnia and Herzegovina). This concerned reconstruction projects of places destroyed in the war, and planning

new towns, according to principles reflecting the socialist social system in physical space, on the basis of the congruence of its ideas of, and aspirations for, a classless humane society, with those advocated by modernism, of a better life for all social orders. According to available data, construction projects in Banja Luka after the liberation from Austro-Hungarian rule (1918) in the Kingdom of the Serbs, Croats, and Slovenes, and also in Yugoslavia after 1929, do not mirror modernist ideas of urban landscape, precluding the possibility of a trend carrying on to the post-WWII period, when those ideas obviously shaped Banja Luka's urban landscape.

The most drastic change to Banja Luka's urban landscape induced by transformations of the social and cultural context was effected during the period of intensive urbanisation and regional economic development in the socialist Yugoslavia (Figure 5.3).

FIG. 5.3 Banja Luka's urban form in the post-WWII industrialisation and urbanisation period

The key change compared to the time before was that building in the city was now directed through town and spatial planning, as opposed to the implementation of building codes in line with plans. Another important factor was the nationalisation of private land, which was appropriated by the state; municipalities became the sole owners of construction land and made decisions single-handedly with regard to land boundaries, types of land use, and terms and conditions of land use. Spatial and urban plans of towns and cities in the Socialist Federal Republic of Yugoslavia (SFRY) treated land as a planning resource, and the state used planning to control and direct urban development.

6 Conclusions

This subsection considers the complex phenomenon of urban form from a number of aspects (socio-cultural, environmental, and economic), relying on the results of previously conducted research on Banja Luka's urban form. Among the conclusions of this research, one of considerable significance concerns the long-term functioning of a specific adaptable model of "open" regulation of Banja Luka's urban landscape, through which the phenomenon of interest is placed in the context of resilience and sustainability. In addition, this "adaptable model of open regulation" builds on and responds to the conclusion reached by Vujičić at the end of the chapter "Shifting Forward Resilience Thinking", in the first of the KLABS series of books: "To become an adaptive urban system, a city, i.e., society should build its adaptive capacities through the application of a resilience framework and planning and governance."

Based on the above, the conclusion is that the response of the present-day city to the requirement for adaptability to change, i.e., for creating a resilience interface – lies in the integration of different methodological approaches, aspects of urban development planning and regulation of settlements and ways of creating environments. Creating a resilience framework for the management, planning and urban design of cities is adapted to the most recent tendencies in developed areas, but it also needs to be compliant with the contextual requirements of a particular city. Building the adaptive capacity of a particular urban environment means consolidating universal (global) and specific (local) anticipated responses, or scenarios, in relation to a range of possible changes, threats and circumstances it may encounter. The management, regulation, and creation of urban form, in the context of resilience and sustainability, requires the definition of general (universal, common, related to a global framework) and specific (particular, concrete, related to the local context, and spatial identity) principles at various spatial levels and in different proportions. This is the basis for the proposed principles of management, regulation, and design of urban form and landscape in the context of resilience and sustainability:

- **The principle of codification** concerns the establishment of spatial order at the national level and compliance (at the regional and local level) with the general principles formulated in the Code on Spatial Planning and Regulation of Settlements, which is in line with the principles of international conventions (the global level).

- **The principle of asymmetric decision-making and management** is associated with strategic planning at the local level and implies a dynamic relationship aiming for the harmonisation between how local-level spatial order is defined and the previously defined national- and regional-level principles.

- **The principle of quality** concerns determining the general principles and qualitative recommendations for the regulation and creation of urban form and landscape, which needs to be additionally specified through urban regulation standards.

- **The principle of integrity.** The application of this principle is necessary at all spatial levels; adhering by the principle of integrity and completeness at the level of the constituent parts of the whole – ensembles, segments, strips, etc. – is essential for ensuring integrity and completeness across urban landscape, as the highest level of spatiality.

- **The principle of identity** commands that we respect the principle of specificity and adaptation of research and spatial intervention to each specific and individual situation.

- **The principle of continuity** concerns the selection of measures, instruments, and strategies of regulation in the function of resilience, which should be carried out in accordance with previous practice, in order to comply with lasting social, civilisational, and traditional values, which guarantee long-standing and continuous development.

- **The principle of harmony or contextuality** is associated with an integral approach to spatial interventions and research in the function of resilience, and insists on harmonisation with the characteristics of the local context.

- **The principle of flexibility and adaptability** is the most important principle in the creation of a resilience framework in planning and governance. It implies the simultaneous application of the normative and performance code in establishing regulatory mechanisms, switching from one mode to another, constant revision, predicting changes and adjusting to concrete circumstances, development conditions, the legacy, and identity.

- **The principle of value and meaning** insists on the appreciation of values and meanings of micro settings, segments and strips and of patterns of their use, with continuous reconsideration when intervening with the aim of making and keeping urban form resilient, by means of regulation used to convert common or accepted values into urban form and landscape standards.

- **The principle of diversity** is associated with the principles of adaptability, identity, quality, integrity, and the principle that applies to the values and meanings of urban spaces. In the context of the creation of a resilience interface, diversity concerns not only the urban-morphological and functional diversity of the urban environment, but also a variety of responses and scenarios of adaptation to changing conditions of development.

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