

OUR COMMON FUTURE IN URBAN MORPHOLOGY (Vol 2)

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TABLE OF CONTENTS	3
Preface	13
THE PORTO CHARTER	15
URBAN MORPHOLOGICAL METHODS AND TECHNIQUES	17
Urban morphological elements studies: for describing generated urban form <i>Li Q, Ding W</i>	18
Urban morphology of streets in central area of Vitoria (ES) <i>Botechia F, Thompson A</i>	36
Studies and hypothesis on Mdina and Rabat urban form <i>Camporeale A</i>	47
Territory and urban planning in northern Sinaloa <i>Cataldi G, Urios D, Colomer J, Portalés A</i>	53
The memory of informality: the typological cycles in the self-built environment <i>Montejano M</i>	63
The positive dissemination: interpreting a new process for urban form analysis <i>Gonçalves A, Tomé A, Medeiros V</i>	74
The sociability of the street interface - revisiting West Village, Manhattan <i>Palaiologou G, Vaughan L</i>	88
The 'Projeto Orla' (Lake Paranoá, Brasília/Brazil): the creation of an exclusionary lake shore <i>Lembi M, Medeiros V</i>	103
Mapping urban space based on visual perception <i>Zhuang Y, Ding W</i>	114
Changing form of the Baltic cities: resurrection of the suburbs <i>Cirtautas M</i>	121
Mind the gap. Multi-scale landscape approaches <i>Marras F</i>	134
Conurbation in the Porto Alegre metropolitan region <i>Rigatti D</i>	142
Configuration of urban grid and the relationship between apartment buildings location <i>Corrêa A</i>	155
Typological atlases of block and block-face <i>Vialard A</i>	166
Analysis and modeling of spatial changes <i>Weiss R, Santiago A</i>	181
The urban form of the inner port area in Kesennuma, Miyagi prefecture, as source of resilience <i>Abe T, Satoh S</i>	195
Air oriented urban form: to develop an Eco-City in the tropical urban area <i>Mamun M, Begum A</i>	205
Territorial and urban form regulation: from Garden-City to Low Carbon City <i>Mourão J</i>	218
Analysis of tools and 'patterns' for assessment of urban sustainability to promote design quality <i>Otto E, Andrade L, Lemos N</i>	227

Hybrid cellular automaton – agent-based model of informal peripheral development in Latin America cities <i>Santos A, Polidori M, Peres O, Saraiva M</i>	239
Urban street tree modelling using high polygon 3D models with photometric daylight systems <i>White M, Langenheim N</i>	256
The recomposition of urban public spaces. Case study of the historic centre of Noale, Italy <i>Pietrogrande E, Caneva A</i>	268
Landscape design method toward tops of surrounding mountains tops yama-ate in Murakami castle town <i>Sugano K, Satoh S</i>	281
Measuring urban canyons with real-time light based sky view factor modelling <i>White M</i>	293
An approach on describing the street skyline <i>Yang H</i>	305
Urban form and accessibility to rail transit stations: a case study of Auckland <i>Adli S</i>	317
Systems thinking for new perspectives on urban form <i>Stevens N, Salmon P, Taylor N</i>	327
THE EVOLUTION OF URBAN FORM	343
Polish city from conzenian perspective – fringe belt phenomenon in Toruń <i>Deptula M</i>	344
Urban evolution analysis as a means to confirm an outstanding example of a traditional human settlement in Rabat <i>Safe S, Costa S</i>	353
Transformation of the fringe belt units at the perimeter of Avenida do Contorno/Belo Horizonte/MG <i>Simão K, Costa S</i>	370
Urban morphology and architectural design in small towns. The case study of San Vito Romano <i>Ciotoli P</i>	385
Railway as a vehicle of urban transformation. Past and present of the train station <i>Čechová K</i>	388
The impact of Lisbon’s subway development on Avenida da República <i>Sampayo M, Silvestre C</i>	401
Urban chronicles: exploring the evolution of the entrepreneurial disposition of Coimbra periphery <i>Tavares A</i>	415
Spatial fabric of urban cemeteries. Two cases in Lisbon <i>Bazaraite E, Heitor T, Medeiros V</i>	427
U+D urban form and design. A tool of urban syntax to design <i>Carlotti P</i>	440
The evolution of house forms and the change of culture: a Turkish perspective <i>Gokce D, Chen F</i>	444
Athens and military architecture <i>Zaroulas S</i>	458
Transformation of urban blocks and property relations: cases from the Historical Peninsula <i>Küçük E, Kubat A</i>	466

The transformation of the urban block in the European City <i>Oikonomou M</i>	484
Morphology and structure of road crossings of the modernist urban ring of Viana do Castelo in the city's general plan <i>Lopes J, Gulas M, Cavaleiro R</i>	498
Urbanization in the Brazilian hinterland's 'forgotten century': growth patterns in Planaltina <i>Palazzo P</i>	504
Hermann Jansen's Grünstreifen in Ankara and their transformation <i>Burat S</i>	516
Morphological process as an instrument for knowing chronological character: a case study in Tainan <i>Chen C, Lin W</i>	528
The evolution of urban form since post-war period in Taiwan – a case study of Yonghe city <i>Chen C, Tsai C</i>	541
Analysis of the correlated relations between ancient Chinese urban morphology and social culture <i>Dai J, Wang Z</i>	551
Morphological evolution of urban form components in the historical peninsula of Istanbul <i>Kubat A, Kürkçüoğlu E</i>	563
A code for the Islamic cities of the Gulf <i>Petruccioli A</i>	576
From 'a miserable town of 150 mud houses' to 'the city that never sleeps' <i>Geddes I</i>	583
Analyzing the effects of hot and arid climate on the form of historic cities of Iran <i>Daneshpour S, Nedoushan M</i>	597
Island-City / City-Island: Island precincts and evolving urban morphology of Abu Dhabi, UAE <i>Mishra A</i>	607
Restelo neighbourhood: a paradigmatic example of urban form overlapping <i>Almeida P</i>	617
Utopia and reality: from Étienne de Gröer to the late 20th century. Évora, Portugal <i>Monteiro M, Tereno M, Tomé M</i>	625
Campo Alegre: the evolution and persistence of a territorial intent <i>Ramos S</i>	635
Is there a transversal organic pattern? Favela and its diachronic relations <i>Loureiro V, Medeiros V</i>	645
The 'Ilhas' of Porto and the 'self-improvement' urbanism <i>Sena N, Doevendans K, Rousseau S</i>	659
The 'ilhas' of Oporto, a fundamental component of the city's nineteenth century urban morphology <i>Teixeira M</i>	674
AGENTS OF CHANGE	685
Influences of housing municipal policy in slum urban form: the case of Heliopolis (Sao Paulo, Brazil) <i>Antonucci D, Filocomo G</i>	687
The auto representative image as an agent of legitimation and incorporation of urban settlements in the city of Rio de Janeiro <i>Hollanda C</i>	697

The origins and pathways of urban (in)formality <i>Rocha M</i>	703
Fernando Távora and the Portuguese urban space design <i>Ferreira C</i>	733
Fourth dimensions urban morphology. Urban geographies of work as a new perspective of urbanity <i>Screpanti D, Carlesi P</i>	747
Change, utopia and ‘the public’: urban transformations and agents of survival in Brasilia and Rio de Janeiro <i>Carvalho T</i>	754
Public involvement transformation for best future of cities in Russia <i>Zakharova M, Gudz T, Meltsova E</i>	766
Unidade Residencial da Reboleira Sul <i>Ferreira B</i>	773
Tenure of urban land: structure, form and transformation of the original urban space of the city of Ribeirão Preto - Sp, Brazil <i>Junior D, Salgado I</i>	788
An introduction to the research on use pattern of Lushan National Park based on its cultural landscape process <i>Xiong X, Liu M, Song F</i>	798
From urban sprawl to a compact city policy: the primacy of process over form <i>Cavaco C</i>	810
Interpret planning gap caused from accomplished roads by identifying building forms <i>Chen C, Liang C</i>	822
Events-driven morphological process: a case study of Auckland's Waterfront <i>Shephard T, Gibson L</i>	833
Assessing the effects of governing thoughts on the form of cities <i>Daneshpour A, Soleimani A, Charbgoon N, Ashnaee T</i>	848
The evolution of neighborhood model as a manifestation of political regime shift <i>Ghonimi I</i>	866
Power, ideology and space re-generation: Istanbul case <i>Özden P</i>	887
Within and outside virtual walls <i>Braga A, Trusiani E, Rigatti D, Ugalde C, Zampieri F, Reckziegel D</i>	902
Analysis of urban morphology on festival space decorated on urban space, focusing reviewing spaces and closed spaces in the case of Chichibu Night Festival in Japan <i>Matsuura K</i>	918
Mi casa es tu casa <i>Scarnato A</i>	921
The role of municipality in urban regeneration: the case of Lisbon's Eastern waterfront <i>Nevado A</i>	932
The re-appropriation of industrial sites in the urban form of the post-communist city <i>Statica I</i>	940
Urban mobility - Urban mutations. Means transport and morphological changes in the city of Belém <i>Andrade F, Silveira I</i>	948
Tracing urban catalysts in ‘Noorderkwartier’ area <i>Waijjer A</i>	955

Managing the mark of the memory <i>Moreira M</i>	967
New University Complexes as a force of shaping the urban form of the medium sized cities in contemporary Iran, a case study of Najaf Abad <i>Nasserian A, Klets V, Kalbasi S</i>	985
Urban black holes: the rural in the urban as liminal spaces from where to build a new city <i>Santos P, Pena-Corvillon D</i>	995
Exploring university morphology. Bergamo as case study <i>Silva L, Heitor T</i>	1001
Aging as an agent of change in the way how we occupy our territory <i>Bordalo A, Matos M</i>	1011
FIFA Confederations Cup Brazil 2013 and urban conflicts in Belo Horizonte, Minas Gerais, Brazil <i>Gonçalves R, Simão K, Araújo J, Pedrosa A</i>	1025
Urban morphologies of alternative spaces: a case study of Tehran <i>Soleimani B, Staub A</i>	1036
REVISITING URBAN MORPHOLOGICAL CLASSICS	1047
Comparative notes on Saverio Muratori and Ludovico Quaroni's urban projects <i>Del Monaco A</i>	1048
Re-thinking city. An exemple of Ilse's multidisciplinary approach to urban morphology questions <i>Nicosia C</i>	1060
The influence of classics on contemporary thinking Louis Kahn and Hestnes Ferreira <i>Saraiva A</i>	1068
MULTIDISCIPLINARITY IN URBAN MORPHOLOGY	1091
The study of urban form versus water management: lessons to a sustainable urban future <i>Marat-Mendes T, Mourão J, Almeida P</i>	1092
Morphology and functioning of the metropolitan urban areas <i>Benaïche A</i>	1107
The city, the river and mangroves: a case study in San José, Santa Catarina, Brazil <i>Monteiro E, Weiss R, Barea G</i>	1122
Urban growth and hydrography: convergences on landscape morphology <i>Peres O, Polidori M, Saraiva M, Santos A</i>	1135
Epistemology of public spaces: a cultural approach <i>Hanzl M</i>	1151
The interaction between urban form and public art. Two examples on Lisbon's waterfront <i>Ochoa R</i>	1160
The impact of urban form on wind energy potential <i>Wang B, Cot L, Adolphe L, Geoffroy S, Mochain J</i>	1166
Heritage, infrastructure, structure and urban form <i>Nascimento A, Silva M</i>	1176
Morphological structure and system community facilities <i>Schäfer K, Oliveira L</i>	1181
Housing development transformations: political directives and post-occupation life <i>Teixeira M, Maciel M, Alonso P</i>	1192

Unsustainable empty by inadequate use of urban space <i>Carvalho M</i>	1202
Interactions between agricultural-systems and urban forms in Sardinian villages <i>Dessi A</i>	1215
Study on the sustainable development of urban fringe at the background of urban and rural co-ordination in China <i>Ying W</i>	1227
Contributions to the study of urban morphology <i>Dias F, Campos M</i>	1238
A construction perspective of urban morphology study in Shanghai Alleyway House <i>Ni J, Liu G</i>	1257
The effects of urban form on levels of integration of housing schemes and social interaction among residents <i>Lay M, Lima M</i>	1269
Characterization of the relationship between commercial plots and building patterns <i>Jiang J</i>	1281
Municipal average building capacity <i>Rebello E</i>	1293
The morphological sense of commerce <i>Saraiva M, Pinho P</i>	1307
The systemic focus on walkability and urban form <i>Barros A</i>	1322
By São Paulo sidewalks: urban form and walkability <i>Degreas H, Katakura P, Santos C</i>	1331
The elements of urban morphology which influence residents' leisure walking activities <i>Mao J, Chen Y</i>	1338
COMPARATIVE STUDIES OF URBAN FORM	1349
Urban transformation in meeting places: the cases of Bursa & Yazd <i>Eslami S, Kubat A</i>	1350
Environmental evaluation method of urban spaces <i>Teixeira E, Romero M, Cantuaria G</i>	1364
Comparing urban rules for urbanizing villages in Hong Kong, Macau and Shenzhen <i>Tieben H, Chu J, Soares N, Chungyim E</i>	1374
A study of urban space form in areas with different economic development level <i>Xiong G, Cao B</i>	1389
Gilberto Freyre's work: between urban morphology and building typology – first approaches <i>Aragão S, Marques A</i>	1399
Meeting of minds: investigation on the common concepts and different approaches of the major schools of urban morphology <i>Costa S, Netto M, Moraes L</i>	1409
Urban analysis techniques and role of morphology in post crisis urban design <i>Delsante I, Bertolino N</i>	1413
Past and present: an architectural survey of Birnin Lafiya, a Dendi village <i>Pinet J</i>	1422

Urban form and its implication for the use of urban spaces <i>Reis A</i>	1433
Application of morphological concepts to characterize German immigration's nucleus in Brazil <i>Andrade B, Taveira E, Almeida R</i>	1444
Exhibition of city. The case of Lisbon 1940 vs Rome 1942 <i>Pegorin E</i>	1457
INTEGRATED APPROACHES	1469
Study on regeneration of downtown area through riverfront development as urban catalyst <i>Aitani K, Arima T</i>	1470
Diaspora typo-morphology analysis: a study of post-colonial city in critical approaches <i>Huang P, Kuo C</i>	1483
Morphological analysis of the informal city. The 'Villa 31' in Buenos Aires, Argentina <i>Amato A, Corvigno A, Bandieri G, Catanzano G, Maretto M, Boggio N</i>	1492
Urbanization in the Ave Valley region: more than a sum of building projects? <i>Travasso N, Casas Valle D</i>	1502
Integration of public spaces into the urban environment in case of Perm <i>Kuznetsova A, Maximova S</i>	1521
A planning method for identifying viewing spots and area for landscape control by utilizing spectator's experience of a Japanese traditional festival <i>Yamamoto D, Kawahara S</i>	1527
Urban form and orientation in urban space <i>Kantarek A</i>	1535
Urban form and social output <i>Krafta R</i>	1544
Mapping and typo-morphological inferences in low-lying coastal Tianjin <i>Wang L, Li L, Gong Q</i>	1555
Industrial-housing ensembles at Lisbon – morphology and specialization <i>Antunes G, Lúcio J, Soares N, Julião R</i>	1569
An urban taboo <i>Falsetti M</i>	1575
European spatial paradigms. Urban infrastructural morphologies <i>Triggianese M, Berlingieri F</i>	1580
TEACHING URBAN FORM	1589
Teaching and seminar of urban morphology in Peking University, China <i>Xiong X, Song F</i>	1590
THE RELATIONS BETWEEN RESEARCH AND PRACTICE	1601
Making a case for the broadening of the urban morphologist's battlefield <i>Firley E, Frey A</i>	1602
Towards a flexible definition of limits in urban planning: controlling urban form under uncertainty <i>Moreira B</i>	1610
Interpretation of morphological data to inform design 'Bridge to Bridge: Ridge to Ridge' urban design workshop <i>Sanders P</i>	1620

Urban form study for better future of the city <i>Kantarek A</i>	1634
The morphological dimension of planning documents: case study Belgrade, capital of Serbia <i>Niković A, Đokić V, Manić B</i>	1642
Future urban changes through design guidance: new principles <i>Sepe M</i>	1652
Density, urban form and quality of life <i>Beaurin C, Raymondon G, Andersen I, Dias S</i>	1661
Study on relationship between urban morphology and policy in China <i>Gao C, Ding W</i>	1676
A subtropical urban taxonomy: the tension of research informing practice <i>Richards P</i>	1693
Shaping the city. Public space in the (re)construction of Portuguese contemporary city <i>Coelho R</i>	1706
Empty vacant. Redefining interior's block voids in Guimarães <i>Dias J, Ochoa R, Suárez M</i>	1710
Reviving the heart of a historical metropolis <i>Ismail K</i>	1722
Urban design guideline for upgrading environmental quality of Niayasar <i>Lari S, Dehkordi N</i>	1741
Urban morphology of historic fabrics and contemporary architectural design. The case study of Lazio <i>Strappa G</i>	1756
Typomorphological methods in planning practice <i>Pattacini L, Samuels I</i>	1763
SPECIAL PARALLEL SESSIONS	1783
CHINESE NETWORK OF URBAN MORPHOLOGY	1784
Spatial patterns of urban growth in Xi'an, China: a fringe-belt approach <i>Ren Y, Fu K</i>	1784
THE MIDDLE EASTERN CITIES AND ISFAHAN SCHOOL OF URBAN MORPHOLOGY	1795
Isfahan School of urban design: a morphological perspective <i>Arefian F, Estaji H, Jabbari M, Koledova A, Fatemi M</i>	1795
Discussion about the similarity of the forms of the cities of Porto (Portugal) and Qazvin (Iran) <i>Jabbari M, Ramos R</i>	1808
OPEN SPACES AND THE NEW BRAZILIAN URBAN FORM	1817
Open space systems and the constitution of the contemporary Brazilian urban form <i>Queiroga E, Macedo S</i>	1817
Open spaces and urban form: a systemic relation <i>Campos A, Queiroga E, Custódio V</i>	1827
Landscape units as territorial analysis procedure <i>Montezuma R, Tangari V, Isidoro I, Magalhães A</i>	1838

The landscape of sprawl: relationships between natural and urban dynamics in the Western Portion of the Metropolitan Area of São Paulo <i>Coelho L, Macedo S</i>	1849
Integrated approaches in Vitória workshop: a study on open space system and the urban form in Brazil <i>Mendonça E</i>	1863
BRAZILIAN MORPHOLOGY	1885
The urban form of the housing policy <i>Minha Casa Minha Vida</i> in the metropolitan area of São Paulo <i>Donoso V, Queiroga E</i>	1873
Open spaces system: describing the urban morphology of Vila Mariana's district <i>Degreas H, Macedo S</i>	1885
Urban form and multidisciplinary: contributions to the São Paulo Master Plan revision <i>Queiroga E, Meyer J, Macedo S</i>	1896
Public policies towards river and streams restoration: perception and appropriation <i>Galender F, Campos A</i>	1905
Morphologic transformations of public spaces in the surroundings of Nova Lima's churches <i>Maciel M, Teixeira M</i>	1918

The morphological dimension of planning documents: case study Belgrade, capital of Serbia

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Abstract. *The aim of this paper is to present one of the main issues and tasks of the ISUF – the importance of introducing concepts of urban morphology to professional practice, in a systematic and coherent way, to achieve a better built environment - in the specific context of Belgrade. A review of relevant up-to-date research topics and developed concepts found in the current theoretical discourse presented in the Urban Morphology Journal and ISUF, such as: morphological dimension of municipal plans (Oliveira), the issue of boundaries (Whitehand, Larkham and Morton), the question of scale and key concept – block or tissue (Kropf, Samuels, Hall) will be conducted. A number of major themes in the agenda of the morphological debate, will be examined to establish how existing morphological criteria in the Master plan of Belgrade and related planning documents correspond. It was determined that the morphological dimension of those criteria is questionable and that the real form-based approach in Belgrade's planning documents and procedures were absent which had a detrimental impact on the quality of physical and urban structure. It can be stated that there is a need, firstly, for a detailed theoretical elaboration of relevant concepts of urban morphology and then integrating them into planning documents and procedures in Belgrade and Serbia. The principal conclusion reached is that urban morphologists should have a key role in the prescription of future changes through coordination of design guidance, codes and plans at different scales.*

Key Words: Belgrade, urban morphology, urban form, planning, designing

Introduction

This paper builds on the existing researches dealing with the morphological dimension of urban plans in specific contexts of urban planning, the results of which are a part of contemporary urban morphological discourse exposed within the ISUF research database. The title of the paper directly refers to Oliveira's investigation of morphological dimension of urban plans for the city of Porto (Oliveira, 2006), pointing to the similar method and theoretical background to be used in case study of Belgrade, the capital of Serbia. Linking up and building on the results of past researches in the field of urban morphology provides multiple contributions. On one hand, urbomorphological investigations offer a significant theoretical base and direction for improving planning practices in Belgrade. On the other hand, international framework of urban morphology is expanded and a number of issues are examined in the specific context of discontinued development of Belgrade that is thus put in relation to continuous development of western countries whose experiences are primarily represented within ISUF (Whitehand, 2012.).

In Belgrade, over the past decade significant morphological changes have occurred due to huge pressures for increasing of building capacities, either through planning new or reconstructing the existing physical structure. The pressures mostly come from private investors driven by their economic interests, which become dominant in the decision-making processes. The resulting quality of the built environment is highly unsatisfactory, leading to erosion of character of the existing urban entities. The problem is particularly evident in the central zone of Belgrade which includes the historical city core, the center of New Belgrade and Zemun. In all these parts of the city that have different and specific historical developments, uncritical

interventions have been emerging not taking into consideration the existing urban forms and building typologies.

The existing planning documentation for Belgrade – primarily the current Master Plan of Belgrade 2021 (Urbanistički zavod Beograda, 2003) which acts as the planning basis of a higher level compared to detailed urban plans – recognizes the significance of preservation of the character as well as the opening of possibilities of new development within the existing urban entities. However, the planning guidelines do not offer the way towards achieving these goals, neither can they follow and control the undergoing urban transformations. The problem lies in an insufficient or inadequate direction for the detailed building level, through the planning recommendations that neglect the aspects of the resulting urban form. The question that arises is: in what way would it be possible to enhance the planning documentation and consequently the practice, by using the concepts of urban morphological discourse and recent experiences in linking these theoretical concepts with the practice? The unanswered question is: what happens in case of successful improvement of planning documentation in this way, how to ensure its successful implementation, where the key role of urban morphologists in coordination of design guidance and codes in plans at different scales can be recognized.

Context of the research

Oliveira (2006) puts his research in the context of the attempts to integrate the urbomorphological methods and concepts into the practice of urban design and planning, performed by the members of the contemporary British morphological school – Karl Kropf, Tony Hall and Yvor Samuels – as co-ordinators of urban plans and studies for several settlements in France and England. Then, he conducts a comparative analysis of these documents to the methodology applied in developing the plan of the city of Porto co-ordinated by Fernando Ça who builds on the morphological theory of Gianfranco Caniggia.

Introduction of the specific morphological criteria creates a methodological framework for protection of the existing historical and regional values, as well as for the formation of the new fabric. Based on the comparative analyses of the selected plans, Oliveira notices research topics and issues that are relevant for discussion and establishment of relation between the urban morphology and urban design. He especially highlights the issues of city character, typomorphological approach to zoning, the concern for urban tissue and levels of resolution as well as the question of boundaries.

Oliveira implies the possibility of improving the content of plans by including illustrations of acceptable typologies of plots, buildings and architectural details based on the morphological analyses of surrounding sites. Although these elements are not legally binding, if taken into consideration during implementation, they can contribute to the quality of the built environment because they take into account the relation between the existing and the new urban forms, thus preserving the character and the continual development of the specific areas.

Issue of boundary and scale – character and homogeneity.

The issue of boundary represents one of the key indicators of morphological dimension of plans because it addresses an important planning standpoint – which area is delineated, how and why (Larkham and Morton, 2011, Birkhamshaw, 2006). In accordance with linking urban morphology and planning practice, the boundary that encompasses the subject area should be based on morphological analyses of urban and physical structure. It should display the scope of the area with the homogenous morphological characteristics for which the spatial policies, planning guidelines and design rules have been defined.

Key concept – block or tissue

One of the basic interests of urban morphology in making its knowledge applicable in practice is the definition of the key concept. In that term, Kropf talks about urban tissue as the basic growth and transformation unit (Kropf, 2006, 2011.), while Hall and Samuels suggest block structure (Hall, 2008, McGlynn and Samuels, 2000). The concepts of tissue and block are related in terms that the tissue can be defined as the series of blocks of homogenous structure interrelated with street network. By morphological analysis of a particular area, a continuous expansion of a specific type of block can be identified together with its variations which generate the area of homogenous characteristics. This generative boundary is of special importance in contemporary morphological studies because, unlike the administrative boundaries of municipalities or designed boundary made up for the purposes of design brief, it recognizes morphological – intrinsic qualities of urban structure. In the Conzen's terminology, the generative boundary stands for „fixation line“ (ISUF Glossary). The use of this approach in defining the boundary helps avoid the frequent problem of administrative boundaries intersecting with parts of urban areas with similar morphogenetic characteristics (Whitehand, 2007).

Planning regulations

The design rules can be given explicitly, in the form of quantitative indicators which are obligatory for obtaining building and use permits, or implicit, in the form of qualitative descriptions that offer possibilities for different solutions in designing (Tieben, 2011). The way in which the design rules are formulated and used most directly influence the quality of the built environment. They link the different scales of professional activities, i.e. macro-scale of planning with the micro-scale of designing.

In accordance with the theoretical discourse of urban morphology, the morphological dimension of planning documentation implies the presence of morphological methods and concepts which address planning guidelines to resulting qualities of urban and physical structure. The paper is particularly concerned with the abovementioned topics in the agenda of the morphological debate in order to establish how existing morphological criteria in the Master Plan of Belgrade 2021 and related documents correspond.

The case of Belgrade

The system of planning in Serbia is similar to those in most countries that use the approach of comprehensive planning and principle of hierarchical linking from larger scale of spatial/regional plans towards smaller scale of urban plans. According to the scope of the subject area, urban plans have their own hierarchy to be obeyed: from master plans, via general regulation plans, to detailed regulation plans. The regulatory framework for the planning system is the Law on Planning and Construction (Zakon o planiranju i izgradnji, 2009), Rulebook on the Content, Method and Procedure for development of Planning Documents (Pravilnik o sadržini, načinu i postupku izrade planskih dokumenata, 2010) and Rulebook on General Rules for Land Plotting, Regulation and Building (Pravilnik o opštim pravilima za parcelaciju, regulaciju i izgradnju, 2011).

According to these documents, the integral parts of both spatial and urban plans are the rules of regulating, building rules and graphic part of the plan. The rules of regulating contain the concept of urban development of characteristic zones and entities, urban and other conditions for regulating, building and developing public areas and infrastructure network, measures for protection of natural, cultural values, energy efficiency, standards of accessibility etc. The building rules contain the type and use of structures that can be erected in specific zones, permitted urban parameters, maximum building height as well as conditions for forming a

buildable plot, positioning of buildings on the plot, building other structures on the same building plot and providing the access to plots and parking lots. The graphic part of the plan shows the planned use, regulation and leveling, infrastructural systems, protection of the environment, natural and cultural goods etc. It is done on notarized underlays – cadaster-topographic, cadastral or topographic maps or on updated ortho-photo underlays.

The building procedure starts with the request for issuing the location permit which contains the information on the possibilities and limitations for building on the given plot. The information is excerpted from the detailed regulation plan for the subject area – if it exists. However, since the city territory is not completely covered by detailed regulation plans, the Law enables the issuing of location permits based on the planning documentation of higher degree, such as the Master Plan of Belgrade 2021. Although it is defined as a comprehensive strategic document, it contains the regulatory elements that enable the issuing of location permits for those parts of the city that do not have detailed regulation plans (Fig. 1)²⁸⁷. Besides, the comparative analysis of the planning guidelines from the Master Plan of Belgrade 2021 and the Detailed Regulation Plans for several entities in the inner city centre show that legally binding elements – maximum permitted values of urban parameters – have not been reconsidered while developing more detailed planning documentation in order to adjust it to the specific context of the subject area. The domination of economic interests of private investors always dictate the attaining of maximum building capacity on the plot (Nikovic et al., 2012). The most common situation is that the maximum permitted values of urban parameters are directly and uncritically transferred from the Master Plan to Detailed Regulation plan. Thus, the rules of regulating and building rules defined in the Master Plan of Belgrade 2021 often directly influence the resulting urban and physical structure. Therefore, it is important to question its morphological dimension, considering the exposed objectives, priorities and planning recommendations. It is also possible to assess its influence on the built environment in view of the period when it was adopted.

Morphological dimension of Master Plan of Belgrade 2021

Master Plan of Belgrade 2021 which is still in effect was adopted in 2003. Its development was explained by the needs of a new social system which “develops gradually and requires a new plan that directs its urban development”. The earlier urban plans were qualified as static because they didn’t provide the answer to the dynamic planning process where the priorities needed to be continuously re-evaluated. It is also emphasized that from the period of the 80-ies of the 20th century the loss of control over urban development occurred. It was manifested through different informal and illegal building activities which were taking place not only in the outskirts but in the central zone as well.

The content analysis of the Master Plan of Belgrade 2021 points out the goals that refer to the improvement of quality of the built environment. The urban development of Belgrade is targeted towards achieving the etiquettes such as “urbanistically regulated city”, “city of complex memories”, “city of unified appearance”, “connected and accessible city”. The relevant chapters which are further analyzed in order to find the elaboration of these objectives are as

²⁸⁷ Total area covered by the Master Plan of Belgrade 2021 is 77602 ha, where 84% of that is urban buildable land – 65185,7ha. Fig. 1 shows the scope of detailed regulation plans where: plans adopted by 2003 include the area of 12986,4 ha, which amounts to 19,9% of urban buildable land. Plans adopted after 2003 include the area of 5502,9 ha which amounts to 8,4 % of urban buildable land. That leads to the fact that about 71,7% of the urban buildable land area is not covered with detailed regulation plans, with the notion that for one part of this area obligation for developing detailed regulation plans is set out by the Master Plan. Additional attention should be payed to the fact that the areas ‘not covered’ by the plans are not continuous, they appear as gaps that need to be „filled-in“ and are present in all parts of the city including the most attractive central locations. That additionally calls upon typological approach to zoning and defining the urban rules according to analyses of the existing urban form.

follows: “Boundaries of the Plan, Spatial Entities and Zones”, “Protection of Space”, “Spatial Zones and Urban Entities with Same Building Rules”, “Urban instruments for implementation of the plan” and “Rules for Building and Renewal”.



Figure 1. The urban buildable land of the Master Plan of Belgrade 2021 with the areas covered by Detailed Regulation Plans.

The remainder of this paper examines how existing morphological criteria in the Master Plan of Belgrade 2021 correspond to the underlined urban morphology issues: the question of boundaries and scale of plan units, key concept – block or tissue and the way of defining the urban regulations. For each of these questions, we firstly describe the relevant elements from the plan, secondly we comment on these elements in terms of existence or absence of its morphological dimension, and finally give the recommendations for its adjustment to urban morphology.

Issue of boundary and scale – character and homogeneity

According to the Master Plan of Belgrade 2021, the encompassed territory of Belgrade is divided into 4 spatial zones: Central, Middle, Outer and Edge, that are further split into 57 urban entities. For each entity or group of similar entities spatial distribution and scope, as well as a short summary of characteristics, potentials and role of the entity in the city are given. The program elements are not methodologically treated in the same way in all entities, but are rather given in the scale of general recommendations for group of entities up to detailed guidelines for specific location. It is emphasized that the main operational purpose of this part of Master Plan is to provide a kind of program reminder for the key developmental issues in specific parts of the city in order to preserve its identity. At the same time, based on the graphic part of the plan entitled “Spatial Zones and Urban Entities with Same Building Rules“ it can be assumed that these urban entities should correspond to the definition of the Conzen’s ‘plan unit’ (ISUF Glossary), i.e. they should be a part of urban areas with homogenous morphological characteristics and distinctive character in comparison to the surroundings. Besides, the division of the plan’s territory into spatial zones and urban entities (Fig.2), can lead to the conclusion that the urban development of Belgrade went on continuously through concentric expansion of

its urban and physical structure from the center towards the outskirts. However, examining of both of these assumptions ends up with its denial.

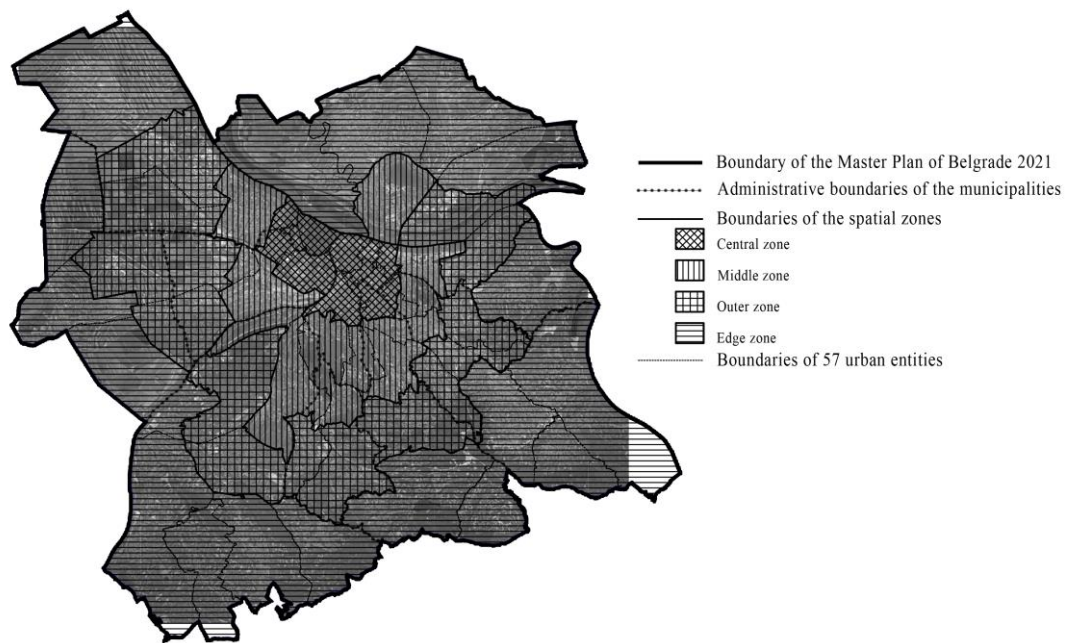


Figure 2. The territory encompassed by the Master Plan of Belgrade 2021 and its division into spatial zones and urban entities.

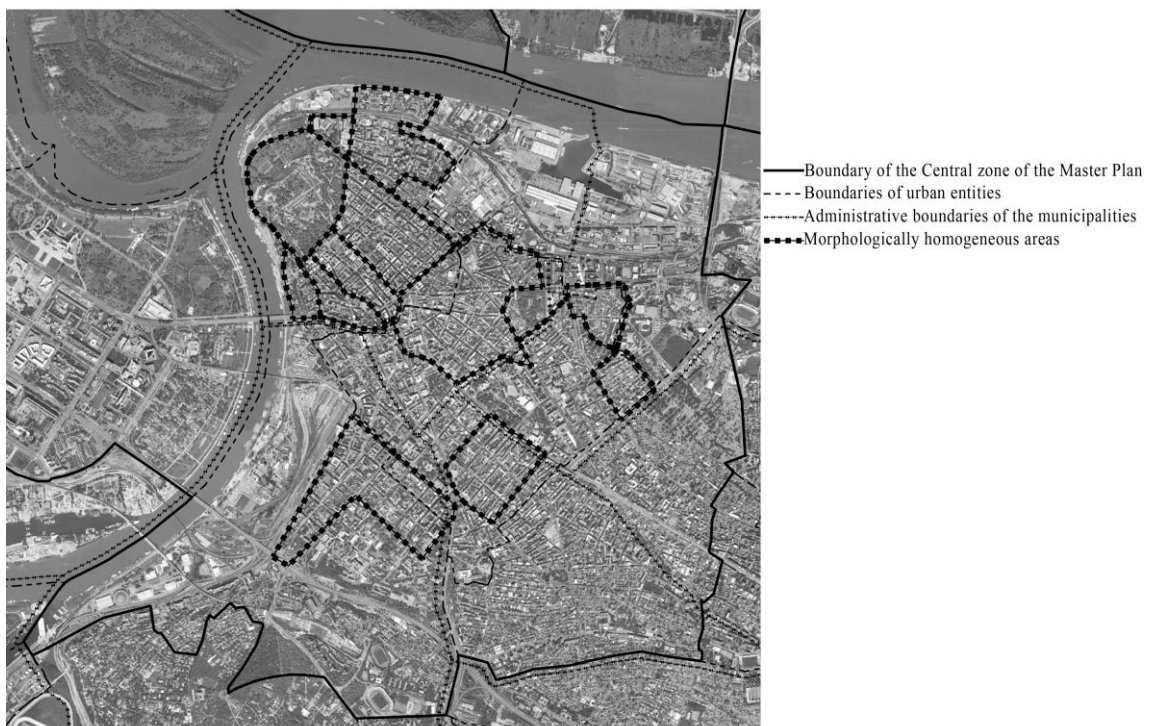


Figure 3. The relation of administrative and plan boundaries to the morphologically homogeneous entities.

Firstly, based on the projection of boundaries in the ortho-photo images as well as via direct observation, it can be noticed that within designated urban entities there are elements of urban and physical structure with heterogeneous morphological characteristics, and that the boundary between the urban entities is frequently cutting through morphologically homogenous areas (Fig.3). One of the explanations of this situation can be found in the plan itself, where it says that the boundaries are partly following the administrative borders of municipalities due to the use of data that are processed at the level of their statistical circles. It is denoted that therefore boundaries can be the subject of future changes.

Secondly, opposed to the assumption of continuous development and concentric expansion of the urban territory, Belgrade's urban development can be described as a set of fragmented interventions, the part of which is evidently aimed towards bypassing the legislation and planning guidelines. Due to illegal construction, the city has for years expanded beyond its limits, for the purpose of building in the cheaper zone, while the central parts remained undeveloped and neglected (Stojanović, 2008.)

The Master Plan of Belgrade 2021 defines urban areas, buildings and conditions that cannot be subject to changes – defined as fixed elements and permanent values of the city. However, this part of the plan has a descriptive character and given recommendations are not obligatory. The protected areas are displayed in the graphic part entitled “Permanent Goods” - not in the main body of the plan but within the documentation basis and are not linked with the abovementioned division to urban entities for which specific building rules are defined.

It can be stated that the division into spatial zones and urban entities, for which the same building rules are applied within the Master Plan of Belgrade 2021, should be reconsidered and upgraded with the urban morphological approach. The boundaries of the urban entities should be generated based on the morphological analysis of the subject area. The scope of the bounded area, i.e. its scale, should be determined by the extent of urban and physical structure with homogenous morphological characteristics, which give the specific character to the urban entity. Also, there is a need for establishing the relationship between the goals of urban design and aspects of physical structure, in which Hall's investigation on the physical manifestation of the planning objectives can be helpful (Hall, 2008).

Key concept – block or tissue

Within the Master Plan of Belgrade 2021 the notions of „tissue“ and the application of morphological criteria can be found in the chapter entitled “Typology of the Residential Tissue” where it is explained that the “types of residential tissue – blocks, included in this MP, are defined on the basis of the morphological criteria”. Accordingly, the planning guidelines for residential use are given on the ground of the following typologies: compact urban blocks, open urban blocks, individual housing blocks, suburban housing blocks and mixed urban blocks. The plan uses the term “residential tissue” for all plots and buildings that are intended for residential use with accompanying public facilities. Since the residential use covers almost 50% of the land intended for building, it can be concluded that proposed typological approach has considerable impact on urban and physical structure of Belgrade.

If the established plan typology of residential tissue is compared to the existing built environment in Belgrade, one can notice numerous flaws and incoherencies between the terms and methods used in the plan with their meaning and application in the urban morphology discourse. The plan shows the tendency to link the planning guidelines with the typology of urban and physical structure, suggesting the type of block as the key concept. However, the proposed typology is too general, based on few characteristics of block structure - the way of grouping and the type of building within a block. Some important block characteristics as elements of typology are avoided. For example, according to recent morphological studies, the shape and the form of block indicate the possibilities of urban development (Siksna, 1997), so it is very important to make a distinction between compact blocks in various parts of the Central Zone of the Master Plan. There are important differences between small square blocks in the

inner city centre and huge elongated rectangular compact blocks on Savska Padina (Perovic, 2008). According to the plan, they both belong to the same type of compact blocks in the central zone intended for residential use. However, their morphogenesis and the existing physical structure differ significantly and require different approach to planning. Also, similar conclusion has been reached when comparing open blocks in New Belgrade to open blocks in the Middle and Outer zone of the Master Plan. This kind of approach to forming the block typology, that doesn't sufficiently take into account the diversities between different parts of the city, leads to the conclusion that the real typological approach to zoning in the plan is absent. The terms such as "morphological criteria" and "tissue" are used in an inconsistent manner. This terminological inconsistency is additionally emphasized by using terms "housing" and "apartment" in accordance to the Habitat Agenda, which has completely different theoretical background.

Morphological criteria in area descriptions and development prescriptions, as well as the used terminology can have proper purpose if they are used in accordance to the urban morphological approach and its methods and concepts. The term of "tissue" should not be linked to the use but to the specific urban entity and its physical characteristics that reflect the homogenous structure of blocks. Also, when defining the typology of blocks it is necessary to conduct a detailed morphological analysis that should result in producing the data on various developmental and physical characteristics of blocks. It is especially important to take into consideration the morphogenesis of blocks, shape and size of blocks, position in wider city entities, topography, etc.

Urban planning regulation

In accordance with the common legislative practice in Serbia, the Master Plan of Belgrade 2021 uses quantitative indicators for determining the building capacity – the Occupancy Index (OI) and the Construction Index (CI) of a lot/block. The permitted values are assigned to specific locations based on the planned use, the position within the city area whether in the central zone or outside the central zone, and in the case of residential use, depending on the type of block. Other guiding indicators for detailed plan elaboration include: population density, employment density, users' density, the ratio between Gross Unfolded Building Floor Area (GUBFA) and commercial use, normatives for open and green areas per inhabitant or per block area.

Apart from determined urban indicators, parameters and regulative elements, in chapters referring to building rules, the Master Plan provides recommendations that are directly linked to the possibilities of energy efficiency, the use of alternative sources of energy, formation of highly standard urban spaces in terms of hygiene and ambiance, establishment of the system of green areas etc. However, these recommendations are not obligatory requirements to be met in designing procedures, as is the case with the permitted values of the OI and CI. Planning guidelines which refer to the elements of urban and physical structure directly connected with qualitative properties of urban space, especially spatially-experiential and visually-aesthetics aspects which are crucial for the city of "complex memories", "unified appearance" etc. are not a decisive factor for the implementation.

The absence of morphological criteria when conceiving the boundaries and typologies of urban and physical structure leads to the application of general rules in the settlements of different character. The application of the Rulebook on General Rules for Land Plotting, Regulation and Building is obligatory only if required by the planning document based on which the location permit is issued. In other words, modification and adjustment of these rules to the specific location is possible in accordance with the conclusions made based on the analysis of the location possibilities during the planning process, reconciliated with the higher level planning documentation. It is necessary to improve the regulation in terms of obligation to respect the specific planning and designing context, i.e. examining the effects of application of general rules on a specific planning area. Within the planning documents, there is an open possibility for including the elements which are not legally binding but can be used to the benefit of the good professional results in practice (Oliveira, 2006). This primarily pertains to

the the integrated graphic analysis (McCormack, 2013), through which different solutions of spatial arrangement can be examined and valued. In that way, the insufficiently analyzed solutions, based on overgeneralized or partial approach or one-sided interests can be alleviated, which consequently improves the quality of the built environment.

Conclusions

Theoretical solutions to the problems of relating the qualities of urban form to the planning practice in Belgrade which can be found in urbomorphological discourse of ISUF, have already been recognized in scientific investigations in the field of urbanism in Serbia (Djokic, 2007, 2009). Additionally, it is necessary to bring closer the formerly consolidated knowledge of urban morphology to the professionals in practice. By applying urban morphological methods and concepts to plans, its morphological dimension can be achieved. In the case of the Master Plan of Belgrade 2021 it implies the connection of the promoted goals of character preservation and the identity of urban areas, to typological approach to zoning (Kropf's definition). The special emphasis is given to the recommendations for improving the Master Plan of Belgrade 2021 in accordance with urbomorphological concepts which refers to defining the following: the identification of area boundaries, since the existing division of territory does not recognize the morphologically homogeneous areas in which unified building rules are applied; the key concept, since the proposed typology of residential tissue is too general and does not include important morphological characteristics of the area as the elements of the typology; the building rules, which are explicitly defined in the Plan, in the form of quantitative indicators that mostly influence building procedures.

In addition, urban morphology glossary should be accepted in order to use precise and consistent terminology in planning documents as well as in theory, thus improving the correspondence between theory and practice. Prior to introducing the morphological dimension into the planning documentation of Belgrade and real form-based approach, which can be a long-term process, urban morphology theory can contribute to improving planning practice through raising awareness with regard to the importance of interrelating the various scales of professional activities – planning, designing and building, as well as the possibilities that can be achieved by the existing planning documents. Firstly, there is a proposal to introduce plan elements that are not legally binding but contribute to foreseeing the effects of the implementation of planning guidelines in the subject area. Secondly, through education it is possible to affect the procedures for adopting plans and obtaining building permits to include the elements which are not obligatory, but are related to the quality of space that is planned and built. In these activities, the coordinative role of the professionals, i.e. of urban morphologists, is recognized, in terms of predicting future development, through coordination of planning guidelines and rules in plans of various scales.

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