



22nd COUNCIL OF EUROPE MEETING OF THE WORKSHOPS FOR THE IMPLEMENTATION OF THE EUROPEAN LANDSCAPE CONVENTION

Water, landscape and citizenship in the face of global change - Seville, Spain

Вода, предео и становништво у сусрет климатским променама, Севиља, Шпанија

LANDSCAPE APPROACH - perspectives



Nevena VASILJEVIĆ

University of Belgrade

Faculty of Forestry

Department of Landscape Architecture and Horticulture

Sustainable development

.... “development which meets the needs of the present without compromising the ability of future generations to meet their own needs” ...

... the most often quoted definition in the whole debate and has (apparently and at least superficially) gathered world-wide political consensus around the need for a **new approach in almost every sphere of human activity**. But many have argued that this consensus has only emerged because the definition offered, and its many progeny (e.g. Pearce et al., 1989; Pezzey, 1989), is an oxymoron and can mean anything one wishes it to mean

... The harshest critics will argue that Sustainable Development is an over-used, manipulated and debased idea and label ...

Roe, M. 2004

Sustainability is not a scenario with green technologies ... this is the way in which “landscape people” live and work

Sustaining Beauty/Elizabeth Meyer



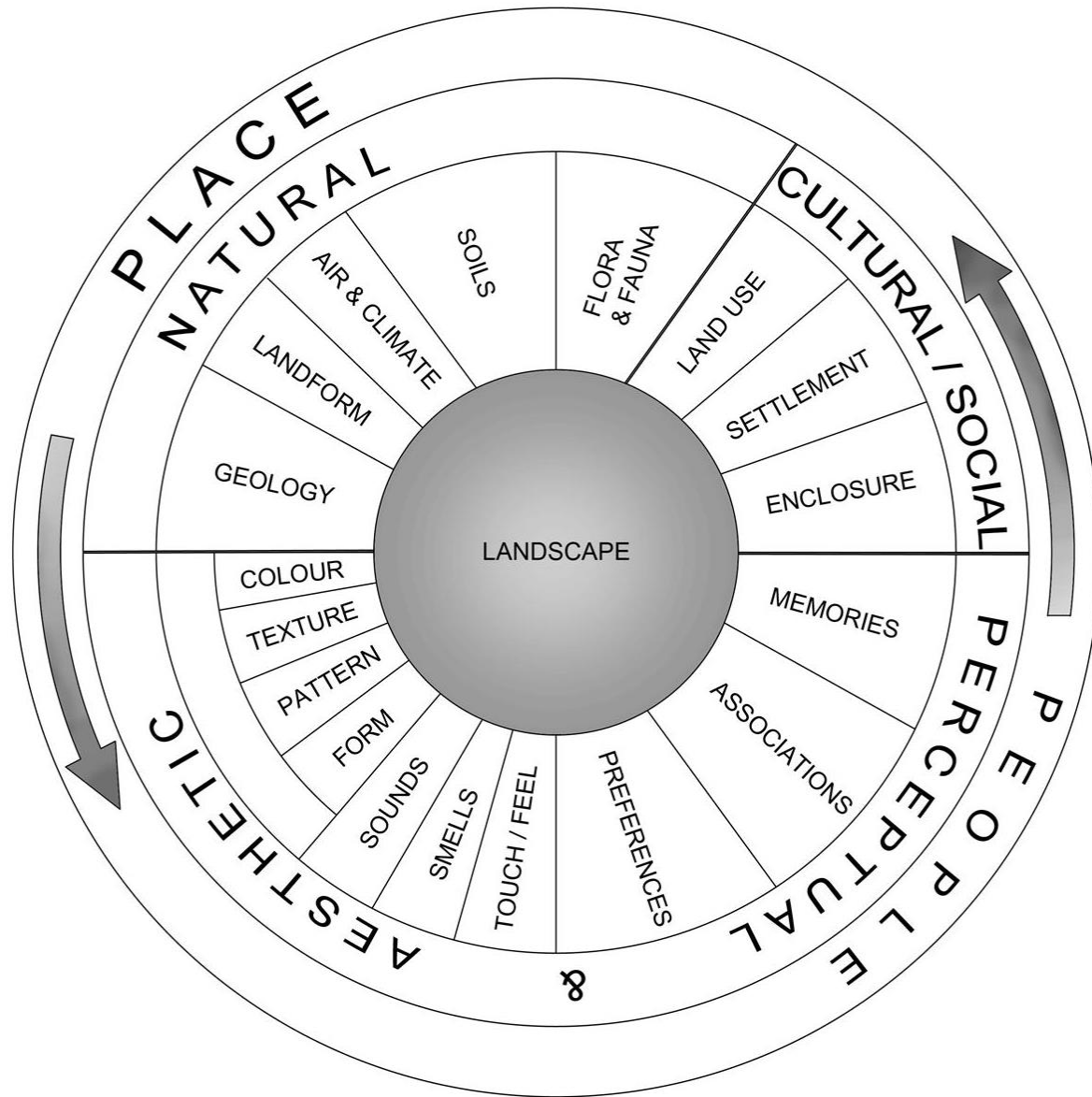
LANDSCAPE

European Landscape Convention



LANDSCAPE APPROACH

Sustainability, holism, landscape ecology, aesthetic, biodiversity & cultural diversity, spirituality, genius loci, landscape character, resilience - green and blue infrastructure, landscape - ecosystem services...



“landscape
means an area, as perceived by
 people, whose **character** is the result of
 the action and interaction of natural
 and/or human factors” (European
 Landscape Convention, 2000)

Landscape character means holistic value of:

- pattern (land use);
- diversity;
- identity and spirituality;
- context in time and space;
- natural and cultural heritage;
- genius loci.

What is landscape?

Landscape approach

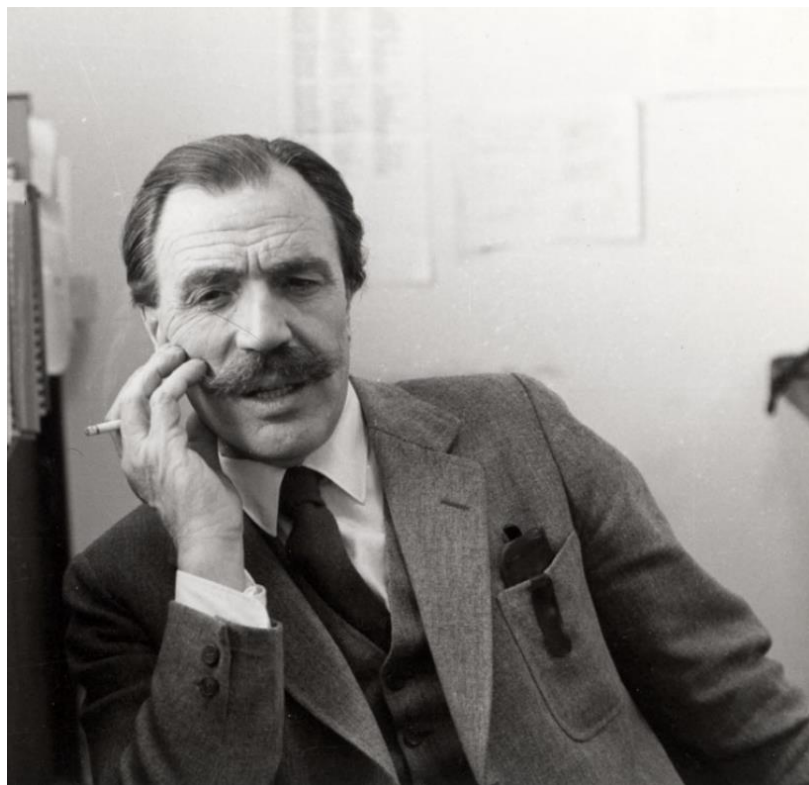
Steinitz model / Geodesign

measuring landscape / landscape metric

landscape / ecosystem services



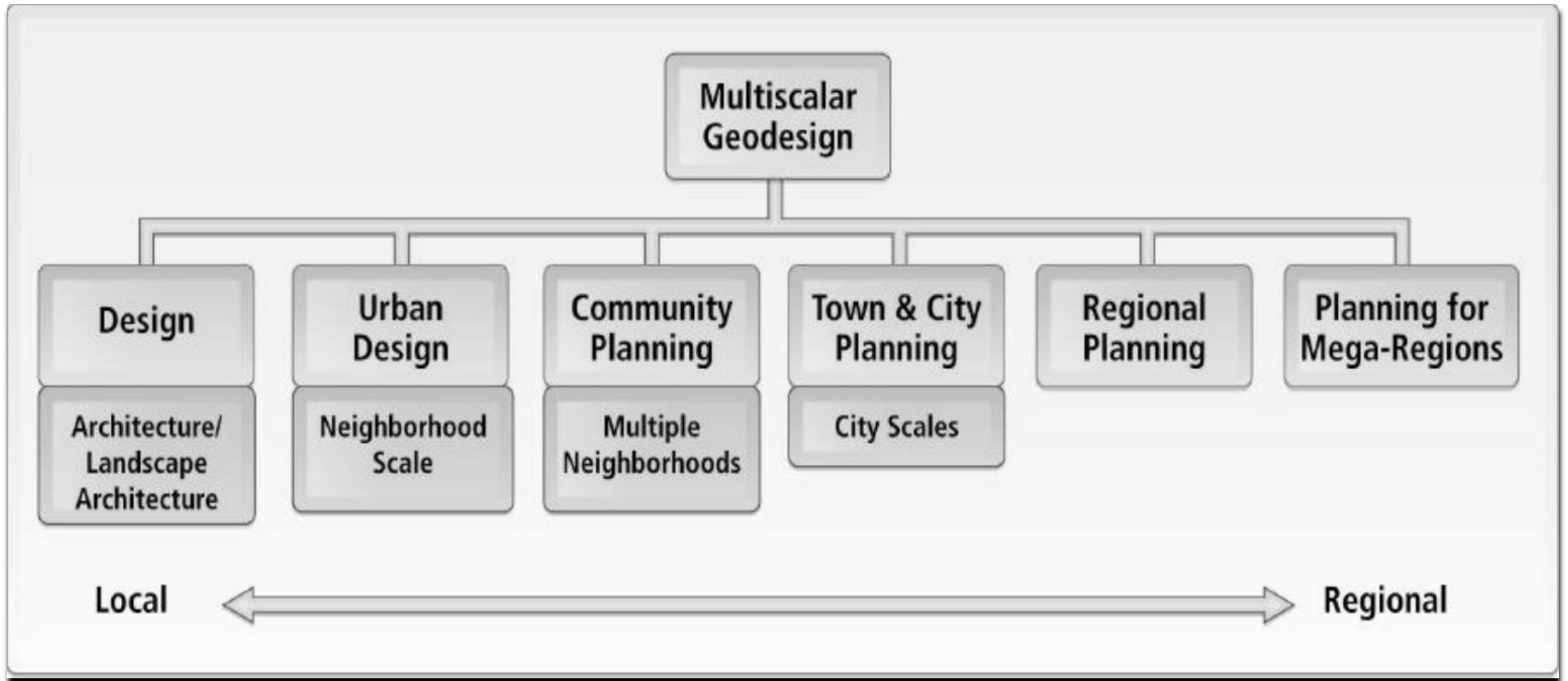
Frederick Law Olmsted
(1822-1903)



Ian McHarg
(1920-2001)



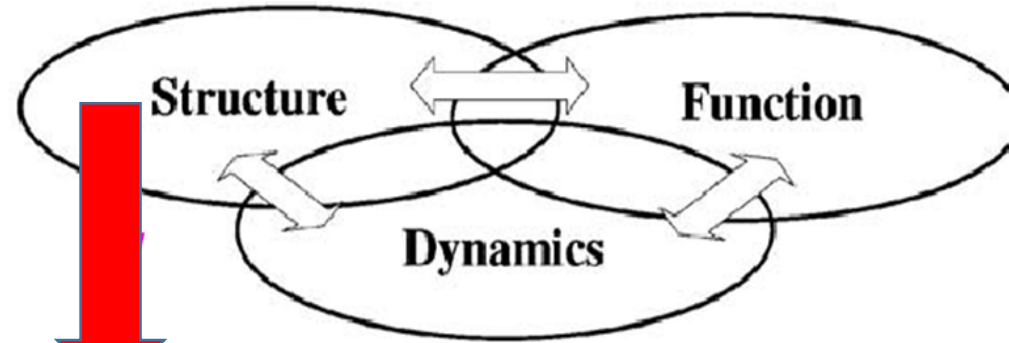
Carl Steinitz (1937-)



Representation model: **Landscape Character Metric**

for landscape character interpretation

**Landscape
pattern**



Landscape metrics

Composition
Configuration

Patches - Landscape elements

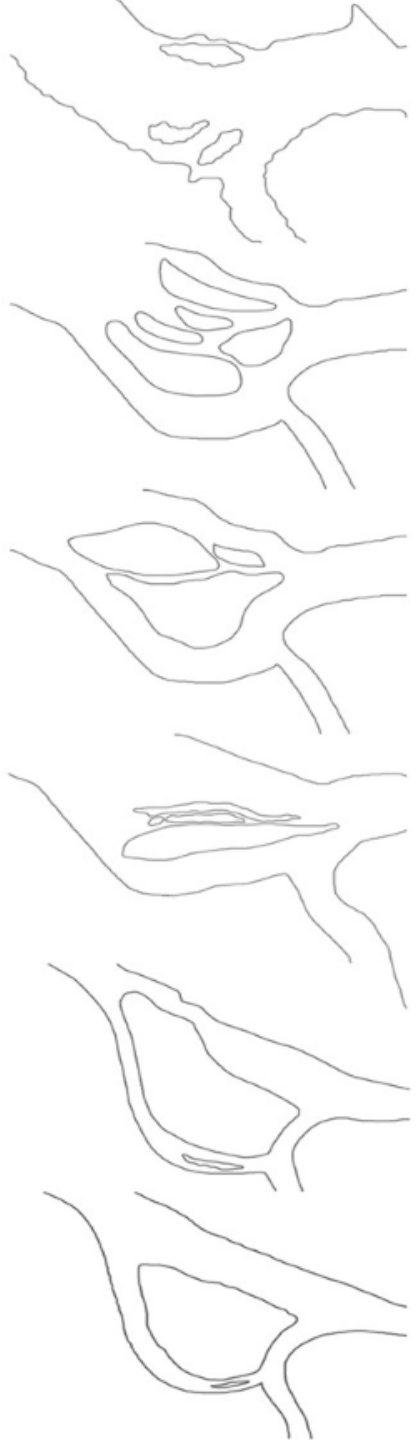
Classes
Landscape

Interpretation of landscape character

Landscape metrics - algorithms that quantify specific spatial characteristics of patches, classes of patches or entire landscape mosaic "patterns"

Landscape approach

Steinitz model / Geodesign,
measuring landscape / landscape metric
of Great War Island in Belgrade
Landscape / ecosystem services



great war island / Belgrade's **genius loci** and the
core of the urban green infrastructure







ГРАНИЦА ИСТРАЖИВАНОГ ПОДРУЧЈА

P=1:25000

Легенда

— Линија границе истраживаног подручја



Земун

Борча

Велико ратно
острво

Нови Београд

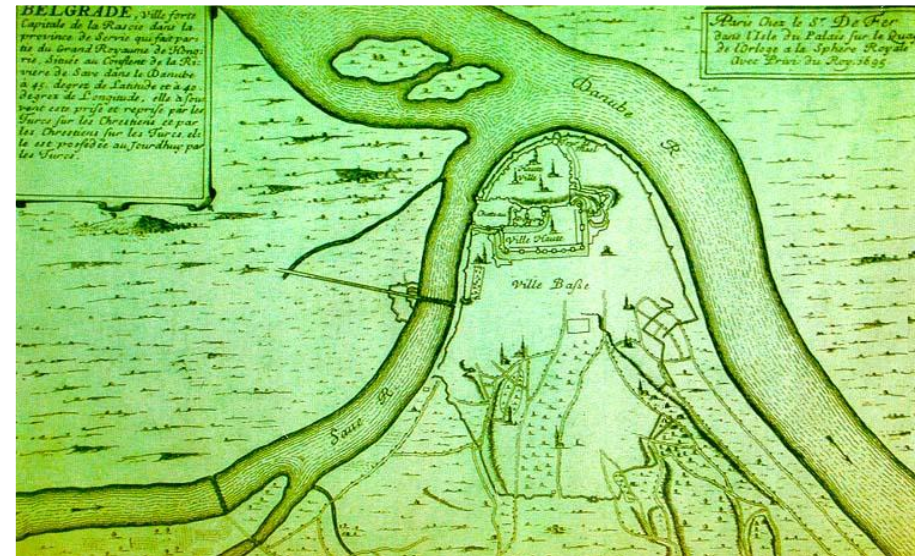
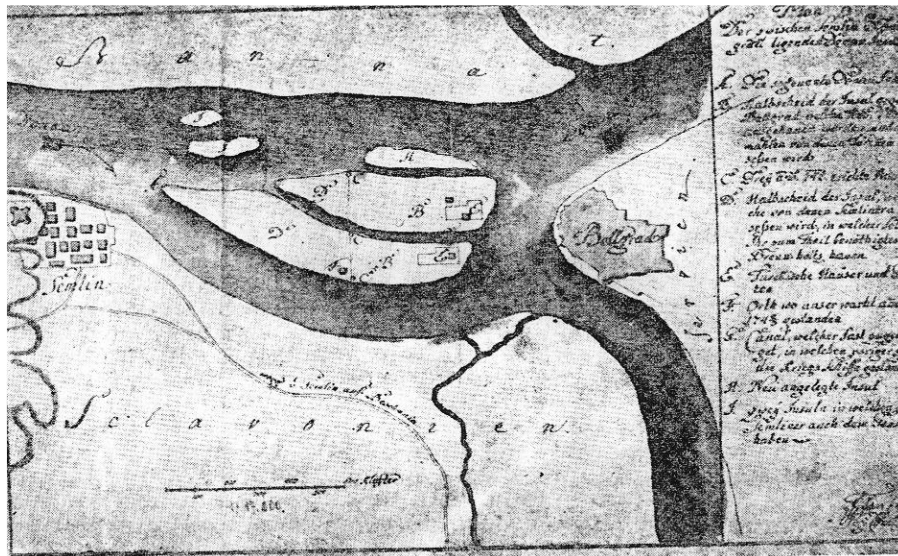
Калемегдански
парк

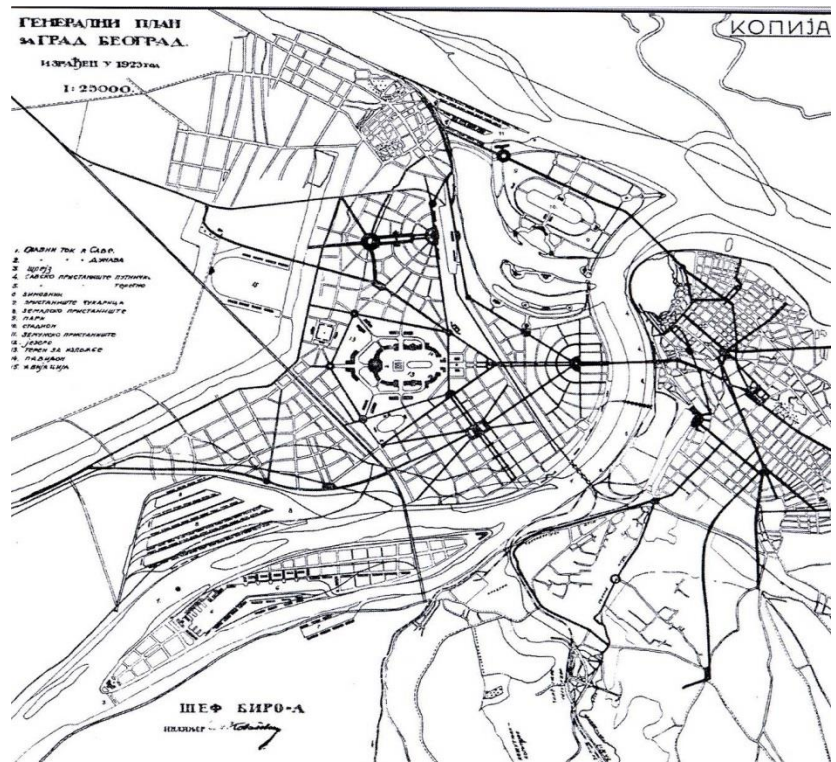
Дорћол





Great war island - copper engravings





План Београда, 1924



План Београда, 1951



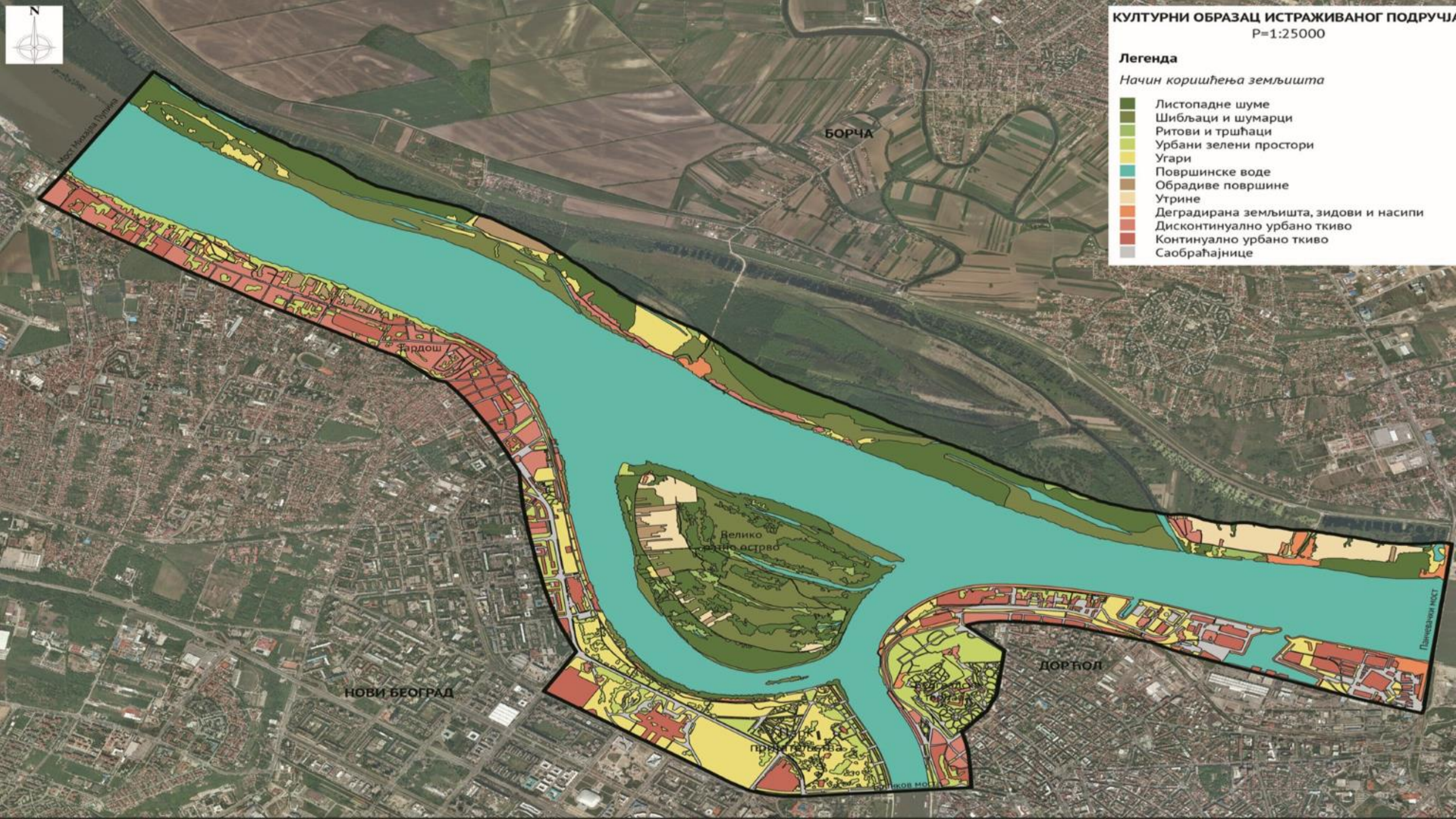
План Београда, 1972



Легенда

Начин коришћења земљишта

- Листопадне шуме
- Шибљаци и шумарци
- Ритови и тршћаци
- Урбани зелени простори
- Угари
- Површинске воде
- Обрадиве површине
- Утрине
- Деградирана земљишта, зидови и насипи
- Дисконтинуално урбано ткиво
- Континуално урбано ткиво
- Саобраћајнице



Landscape Character Interpretation:

Composition & Configuration (Letiao, B.A. et al. 2002)

Landscape character – pattern of landscape elements:

landscape composition:

proportion,
number of landscape elements,
richness,
evenness or dominance and
diversity

landscape configuration:

landscape elements geometry:
spatial distribution of landscape elements,
variation of landscape elements form,
amount and type of edge,
edge contrast,
relative location of patch types in relation
to one another e.g. neighbourhood

Number of landscape patches in investigated area

$$N = \frac{\sum_{i=1}^n \sum_{j=1}^m n_{ij}}{\sum_{i=1}^n R_i}$$

Variation of landscape patches

$$V(N) = \frac{\sum_{i=1}^n \sum_{j=1}^m (a_{ij} - \bar{a}_{ij})^2}{\sqrt{\frac{\sum_{i=1}^n \sum_{j=1}^m (a_{ij} - \bar{a}_{ij})^2}{(N - 1)}}}$$

Sum of Perimeters of patch w (class: waterfront) and patch f (class: forests)

$$I_{w+f} = \sum_{i=1}^n w(p_i) + \sum_{i=1}^n f(p_i)$$

Multiplication of Perimeters of patch w (class: watercourses) and patch f (class: forests)

$$I_{w \cdot f} = \sum_{i=1}^n w(p_i) \cdot \sum_{i=1}^n f(p_i)$$

Interpretation of the composition and configuration of landscape elements/diversity of landscape elements

	Број ПЕ			Укупна површина (m ²)			Минимална површина (m ²)			Максимална површина (m ²)			Аритметичка средина		
	Тип 1	Тип 2	Тип 3	Тип 1	Тип 2	Тип 3	Тип 1	Тип 2	Тип 3	Тип 1	Тип 2	Тип 3	Тип 1	Тип 2	Тип 3
Листопадне шуме	/	2	19	/	49.407	1.258.818	/	7.036	1.070	/	42.371	365.385	/	24.703,5	66.253,4
Шибљаци и шумарци	/	6	17	/	25.586	719.293	/	584	223	/	9.635	308.368	/	4.264,3	42.311
Ритови и тршћаци	/	/	11	/	/	71.323	/	/	2.059	/	/	14.819	/	/	6.483,9
Урбани зелени простори	160	255	/	484.329	744.460	/	18,6	127	/	262.042	61.502	/	3.027	2.919,5	/
Копнене воде	/	/	11	/	/	149.280	/	/	601	/	/	48.500	/	/	13.570,9
Дисконтинуално урбано ткиво	28	66	8	127.279	563.158	67.549	720	47	441	23.143	70.235	56.251	4.546	8532,7	8.443,7

Тип 1- „Стари Београд“

Тип 2- „Нови Београд“

Тип 3- „Трећи Београд“

Interpretation of the composition and configuration of landscape elements/the length of the riverfront edge

	Број ПЕ			Укупна дужина (m)			Минимална дужина (m)			Максимална дужина (m ²)			Аритметичка средина		
	Тип 1	Тип 2	Тип 3	Тип 1	Тип 2	Тип 3	Тип 1	Тип 2	Тип 3	Тип 1	Тип 2	Тип 3	Тип 1	Тип 2	Тип 3
Листопадне шуме	/	2	19	/	3.301	26.450	/	571	196,5	/	2.730	5.799	/	1.650,5	1.392,1
Шибљаци и шумарци	/	6	17	/	2.692	24.385	/	106,1	69,6	/	1.124	7.431	/	448,6	1.434,4
Ритови и тршћаци	/	/	11	/	/	6.642	/	/	286	/	/	1.158	/	/	603,8
Урбани зелени простори	160	255	/	43.597	84.913	/	23,8	59,5	/	12.800	5.157	/	272,5	333	/
Копнене воде	/	/	11	/	/	14.729	/	/	124	/	/	4.069	/	/	1.339
Дисконтинуално урбано ткиво	28	66	8	57.512	34.722	2.547	108,2	55,1	86,3	755,4	3.172	1.322	320,3	526,1	318,4

Тип 1- „Стари Београд“

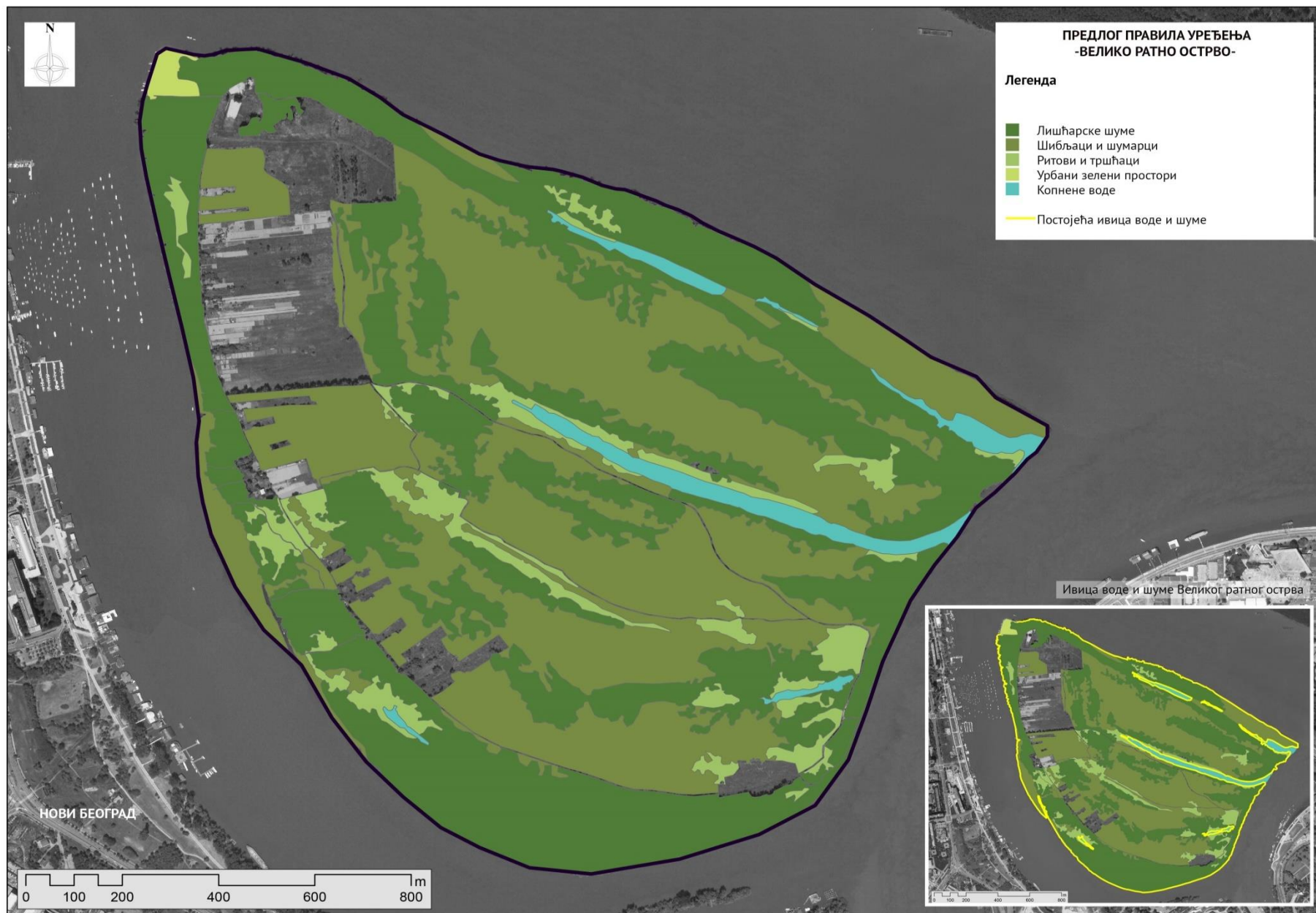
Тип 2- „Нови Београд“

Тип 3- „Трећи Београд“

Principles of urban landscape planning and design



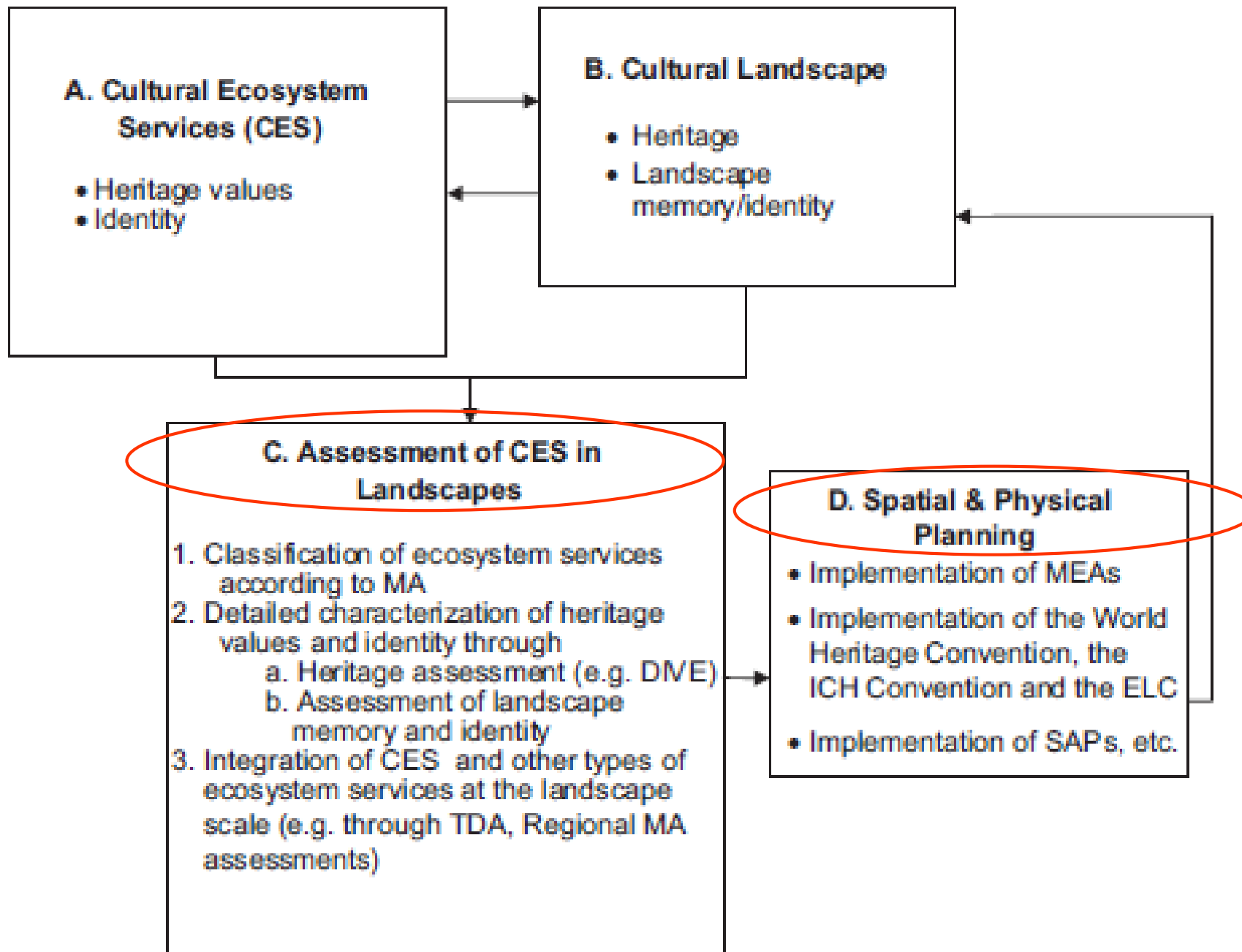
Principles of urban landscape planning and design



Landscape approach

Steinitz model / Geodesign,
measuring landscape / landscape metric

Landscape / ecosystem services



Tengberg A. et al
(2012)

Cultural ecosystem services provided by landscapes: Assessment of heritage values and identity

Fig. 1. Conceptual model of the linkages between Cultural Ecosystem Services and Cultural Landscape research.

Project 2019 / 2022

Landscape typology for the purpose of sustainable development of the Belgrade city in accordance with the principles of the European Landscape Convention

University of Belgrade, Department of Landscape Architecture and Horticulture, Faculty of Forestry

The Secretariat for Environmental Protection / Belgrade City

Thanks for your attention

Nevena Vasiljević
University of Belgrade
email nevena.vasiljevic@sfb.bg.ac.rs

