

# Landscape Typology as the Basis for Landscape Protection and Development

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Janez MARUŠIČ

## SUMMARY

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The research in landscape typology is stimulated by new challenges in the European landscape planning practice. It is the public awareness about landscapes as an important cultural heritage of Europe that is becoming an important point of reference for European landscape planning. The landscape typology classification of the entire territory of Slovenia represents a project that has been carried out over the last years. It has resulted in a sizable collection of slides of different landscape patterns that can be seen in Slovenia. The research, outlined in the paper, started at this point. The photographed landscape patterns have been grouped according to the morphological landscape similarities into different landscape types. The spots, where the slides of defined landscape types had been taken, have been mapped within the GIS environment. The cross-tabulation with various spatial data provided the numerical base for generating the model of the spatial distribution of landscape types. In this way, the areas of certain landscape type could be identified, thus providing the basis for landscape management norms and standardized landscape management/conservation definitions.

## KEY WORDS

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**conservation, landscape conservation, landscape heritage, landscape typology, landscape morphology, planning methodology**

E-mail: [ivan.marusic@bf.uni-lj.si](mailto:ivan.marusic@bf.uni-lj.si)

Department of Landscape Architecture  
Biotechnical Faculty, University of Ljubljana  
Jamnikarjeva 101, 1000 Ljubljana, Slovenia

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# Tipologija krajobraza kao osnova za zaštitu i razvoj krajobraza

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Janez MARUŠIČ

## SAŽETAK

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Istraživanje u tipologiji krajobraza je potaknuto novim izazovima u europskoj praksi planiranja krajobraza. Kako europska javnost postaje sve svjesnija krajobraza kao kulturnog nasljeđa, tako i planiranje u krajobraznoj arhitekturi postaje sve važnije. Klasifikacija krajobrazne tipologije cijelog teritorija republike Slovenije, predstavlja projekt na kojem se radi unatrag nekoliko godina. Rezultat rada na projektu je zamjetna kolekcija slajdova raznih oblika krajobraza koji su prema morfološkim sličnostima krajobraza raspoređeni u različite tipove krajobraza. Mjesta gdje su načinjeni slajdovi određenih tipova krajobraza, objedinjena su u mapama unutar GIS okružja. Kros-tabulacija s raznim prostornim podacima čini numeričku osnovicu za stvaranje modela prostorne distribucije tipova krajobraza. Na taj način, mogu se identificirati područja određenih tipova krajobraza, odnosno, stvoriti podloga za norme i standardizirana rješenja za upravljanje/očuvanje krajolika.

## KLJUČNE RIJEČI

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**očuvanje, očuvanje krajobraza, krajobrazno nasljeđe, tipologija krajobraza, morfologija krajobraza, metodologija planiranja**

E-mail: [ivan.marusic@bf.uni-lj.si](mailto:ivan.marusic@bf.uni-lj.si)  
Oddelek za krajinsko arhitekturo  
Biotehniška fakulteta, Univerza v Ljubljani  
Jamnikarjeva 101, 1000 Ljubljana, Slovenija  
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## INTRODUCTION

A considerable increase in the specific research in landscape typology can be noticed in the last ten years, particularly in the European landscape planning practice (Meeus et al. 1990, Gilder, 1993, Kalaora, 1993, Bruun, 1993). This change seems to be stimulated by new problems emerging in European landscape development. The landscape planning practice was traditionally very much involved in landscape rehabilitation and restoration. Through this, the landscape planning as an activity of preparing physical plans for degraded or potentially endangered areas has evolved. The landscape planning has become that part of physical planning which introduces conservation requests and conservation concepts into the comprehensive physical planning.

It appears that to-day landscape management problems could also be defined in a completely opposite way. It is not only the degradation of the natural qualities that is exposed as a challenge for landscape planners, but rather a rapid return of the nature into the many of the most precious cultural landscapes of Europe. The cultural landscape heritage of Europe is threatened by this process, and the apprehension, that the most important European cultural heritage is going to disappear, if nothing is done, is more and more widely accepted.

The landscape planning activity faces an entirely new challenge. It is not only the challenge for professional activity, but also for the research in this field. It is important to define the methodological problems which are introduced by the mentioned shift in the landscape planning practice.

## PROBLEM

Planning, both for development and protection, can be carried out by two approaches that are basically different from the methodological point of view:

- analytical planning approach, and
- normative approach or, as H. Simon (1981) has denominated it, standardization.

The first of the above two approaches represents an approach, which has been predominant in the traditional landscape planning practice. In this case, the starting point of the planning process is the program of landscape change which embraces the needs of the society living in the landscape. The main task of landscape planning is to locate new land uses, new development and new activities. As all the new activities and land uses are potentially harmful for the environment, the spatial analysis carried out within the planning process should be directed towards searching for sites where the landscape deterioration processes will be eliminated or reduced.

The normative planning approach is based on the assumption that landscape appearance can be defined as the objective of landscape management practice. The conservation activity is predominantly directed towards

maintaining the existing state of the landscape. It is, in fact, a concept that understands the landscape as cultural heritage that should be maintained, rather than the landscape as a living organism which evolves according to the dynamics of natural and social processes.

The landscape conservation based on the cultural landscape heritage concept is, in its most basic methodological form, a normative planning approach. In this case, the objective of landscape conservation appears to be to keep or to maintain a certain visual structure of the landscape. It may be the existent or in some way predefined visual appearance, in fact a standardized landscape scenery.

The basis for landscape standardization is the landscape typology classification. We should be aware of landscapes and their spatial distribution in order to define the landscape appearance which should be protected. The way, in which the landscape typology classification is carried out, is very much influenced by its aim. From the purely scientific point of view this statement seems rather unusual. However, the difficulties in implementing a unique and in every respect acceptable landscape classification support the concept of landscape typology classification that is goal-oriented. For the purpose of preparing landscape planning norms, the morphological definition of landscape type seemed to be most adequate. This definition is very similar to the definition of landscape character. (Beer, 1990, Landscape, 1993) In this respect, the landscape pattern could be defined as the basic landscape typology entity.

Landscape pattern is a specific structure of landscape elements that can be described as a complex landscape appearance. The complexity of the landscape pattern differs according to the scale of landscape perception and assessment.

## LANDSCAPE TYPOLOGY OF SLOVENIA

The landscape analysis of the entire territory of Slovenia has been carried-out on the basis of landscape patterns definitions. This analysis served to provide the basic knowledge of the essential morphological characteristics of different Slovenian landscapes. The identification of landscape patterns has been based on the subjective perception of the similarities/dissimilarities of various landscape structures. This concept of landscape pattern identification was based on the human capabilities of gestalt understanding of complex wholes, on the human capabilities of differentiating complex landscape structures when perceived as wholes. The result of this inventory process was a collection of 400 slides of different Slovenian landscapes, which are representative for the entire territory of Slovenia. Some systems of landscape typology classification have been already proposed (Marušič, 1996, Marušič et al., 1998). They are based, similarly, on the gestalt understanding of the landscape characteristics and their similarities within different landscape patterns. As these landscape

typology systems lack a reliable confirmation by some more accurate analysis, the statistical processing of the collected photographic material has been proposed. It was not only the landscape typology system that needed to be more firmly established, it was also the question, how landscape types are spatially distributed, that emerged.

## SPATIAL DISTRIBUTION OF LANDSCAPE TYPES

### RESEARCH METHOD

The first step of the research has been carried out as a graduation thesis (Križanič, 1998). Karst Landscapes of the Interior Slovenia photographed on slides within the research project Regional distribution of Landscape Types in Slovenia (Marušič et al., 1998) have been grouped according to the similarities of certain morphological features: geomorphology, land cover, structure of agricultural lands and settlement characteristics. A cluster analysis has been used for this purpose. Groups of landscape patterns have been defined as landscape types and coded by numbers.

Once, the landscape type had been identified the question has been raised. Is it possible to define the different landscape type all over the researched region?

example only - the landscape type 58 - as it was called within the research project.<sup>1</sup>

Figure 1 presents one of the defined landscape types in the Slovene Karst area, i.e. the »landscape type 58«. It is the landscape pattern of the flat Karst areas with deeper soil, where patches of fields can be found.

Similar landscape patterns have been grouped and identified as landscape type 58, according to the results of cluster analysis. The spots, where the slides grouped as the landscape type 58 had been taken, were enlarged and mapped as areas of approximately 80 hectares size. They are shown in Figure 2 as the spots identified by capital letter A. As the map is based on 100x100 m raster, each spot is, consequently, represented by approximately 80 cells.

Within the GIS environment, a cross-tabulation provides the information of the amount of various landscape features that occur within the mapped areas. The amount of the landscape feature within an area is expressed in frequencies, i.e. as the count of the cells that bear certain landscape feature and are, in the same time, within the mapped areas. The results of the cross-tabulation analysis of the landscape type 58 are presented in Figure 3. The codes in the Figure 3 represent the attributes of a certain landscape characteristic, e.g.

**Figure 1.** An example of the landscape scenery defined as the landscape type 58

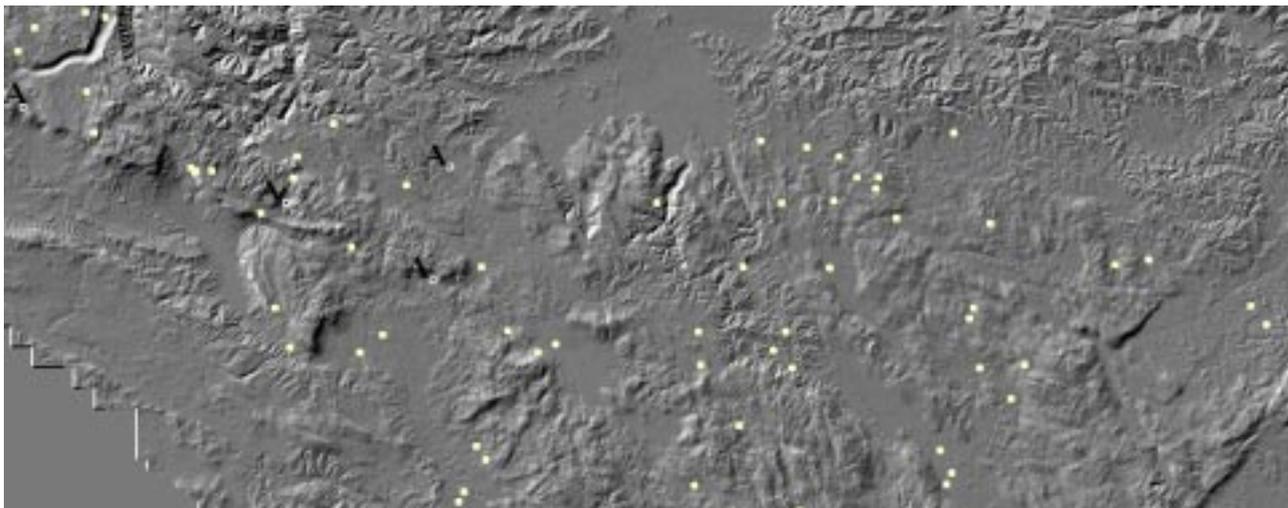


The spots, where the slides of different landscape types had been taken, have been identified within the GIS environment and overlapped - using computerized cartography - by various spatially defined data. The cross-tabulation of various computerized maps was used in order to produce the statistical description of the spots where selected landscape types could be found. The statistical description can further be used as a numerical basis to generate the model of the spatial distribution of selected landscape type. The steps of the process are explained by the following figures, representing one

the northern, northeastern, eastern, etc. slopes, types of geological formations, forest cover, agricultural land use, categories of slope steepness, categories of the topographical elevation etc. In Figure 3 the frequencies are transformed into percents.

The percents obtained by cross-tabulation are taken as the importance weights in the linear landscape

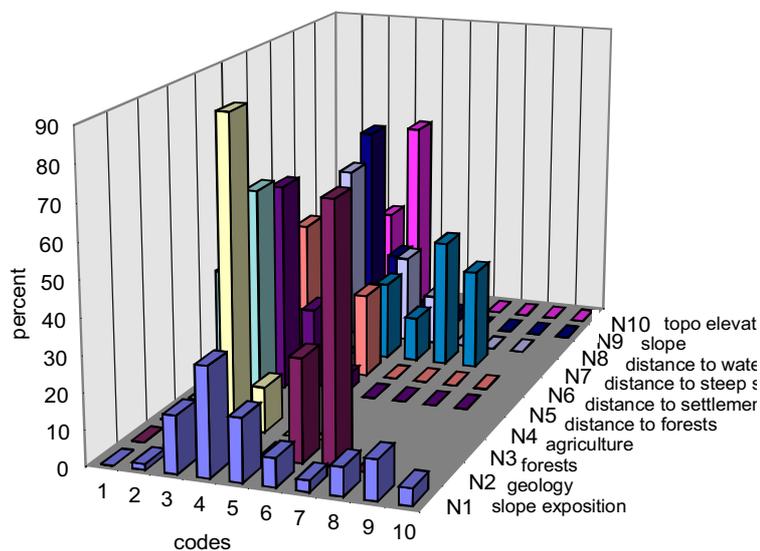
<sup>1</sup> At the presentation of the paper the landscape type represented has been coded as the "landscape type 19".



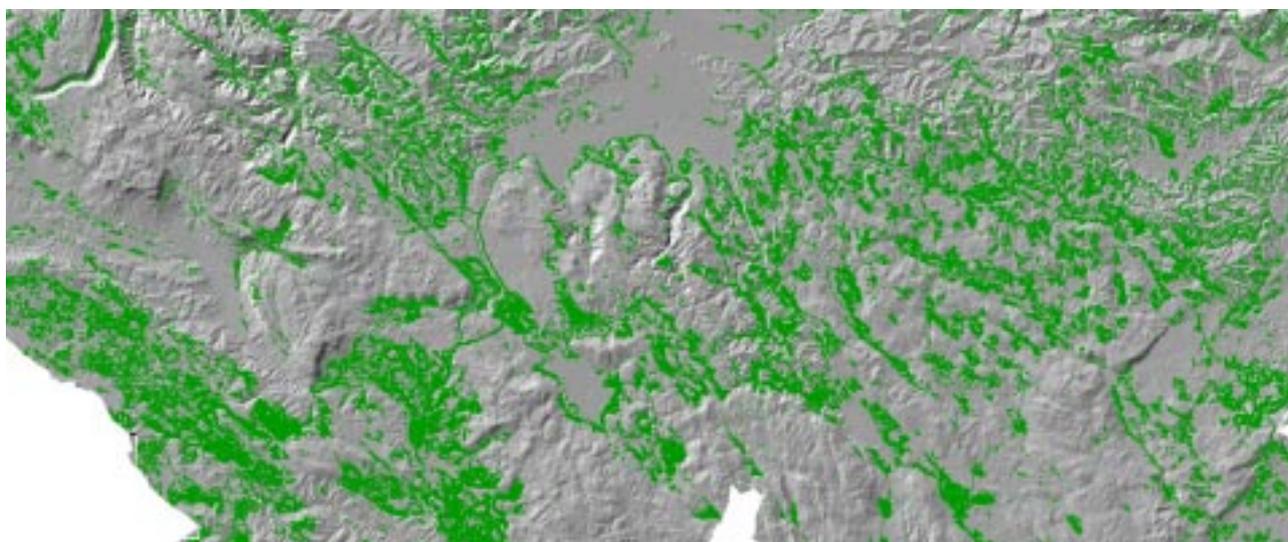
**Figure 2.** Shaded relief of the Slovenian Karst region - The spots are shown where all processed pictures of the landscape type 58 have been taken

**Figure 3.** Frequencies of the selected landscape characteristics within the spots of the landscape type 58

Results of crosstabulation: landscape type 58 - spatial data



**Figure 4.** Results of the model derived from the cross-tabulation figures - The expected distribution of the landscape type 58 is mapped on the shaded relief of Slovenian Karst region



evaluation model. The model should disclose those areas that possess the same or similar characteristics as the landscape type 58.

The results of the model have been normalized in a way that the lowest scores have been dropped away. The normalized results transformed into one value only are mapped in Figure 4. The landscape patterns within the areas that are represented by green patches on the map belong to the landscape type 58. They are quite extensively distributed within the Slovenian Karst area.

#### DISCUSSION AND CONCLUSION

The type of the research carried out is very much connected to the practical problems of landscape management and conservation. After a certain landscape type has been defined, the demonstrated process enables the identification of its spatial distribution and, consequently, the definition of the norms for the landscape management and conservation practice. The very definition of norms is another problem, which involves the questions what landscape heritage really represents in its fundamental meaning, what are landscape values, and how to define them. It is important to add that landscape values should be defined by some kind of consensus among the social groups involved in the landscape development or protection issues.

Only one example from a much broader work has been illustrated in the paper.

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