

# Analysis of the aesthetic value of the cultural landscape in the territory of the Olomouc Archdiocese

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# Introduction

- The **aesthetic values of the landscape** are an important element of the perception of the landscape as a place to live and, above all, to shape the emotional relationship of a man to landscape and nature.
- All contemporary cultural landscape is made up of natural or anthropogenic elements with a certain natural, cultural or historical value.
- Currently, we are observing a growing demand for cultural services linked to increasing average income and free time that can be dedicated to recreational activities and tourism (*MEA, 2005*).
- Plieninger et al. (2013) have recently proven a very strong public interest in cultural services, indicating aesthetic inspiration as the most demanded.
- Based on the European Landscape Convention definition, aesthetic inspiration accurately bounds the spatial setting in which social perception of cultural service occurs.
- Importance of this cultural service is confirmed by the intensification of research aimed at assessing and mapping landscape aesthetics (Lothian, 2013)
  - → aesthetic appreciation is linked to high frequency of natural features in a landscape



## ... Introduction

- The aesthetic value of the landscape consists of a harmonious combination of landscape elements with a predominantly positive perception and can also be considered an **intangible cultural heritage**.
- The basic division of landscape elements or structures in terms of their aesthetic values is according to their perception:
  - **positive** - positive perception determining the places sought, visited, preferred for housing, stay or visitors' destinations,
  - **negative** - negative perception attributed to localities without housing and stay preferences, no need to visit, not sought out, only allowed.



# Aim

- Create a map that would sort the landscape of the Archdiocese of Olomouc in to specific types as a result of applied research of aesthetic values of cultural landscape with historical elements - elements of their uniqueness.
- This research was focused on including an aesthetic attitude as one of the important factors in attitude towards cultural landscape and on identification of common features of the particular.



# Method

- Two key tasks of the map creation
  - mapping elements with positive and negative aesthetic value
  - advanced spatial analysis in the GIS environment
- Four steps
  - Identification and mapping of elements with positive and negative aesthetic value
  - Quantification of aesthetic value at the site of localization
  - II.3 Analysis of the visual impact on the landscape
  - II.4. Synthesis of aesthetic value of an element and its visual impact



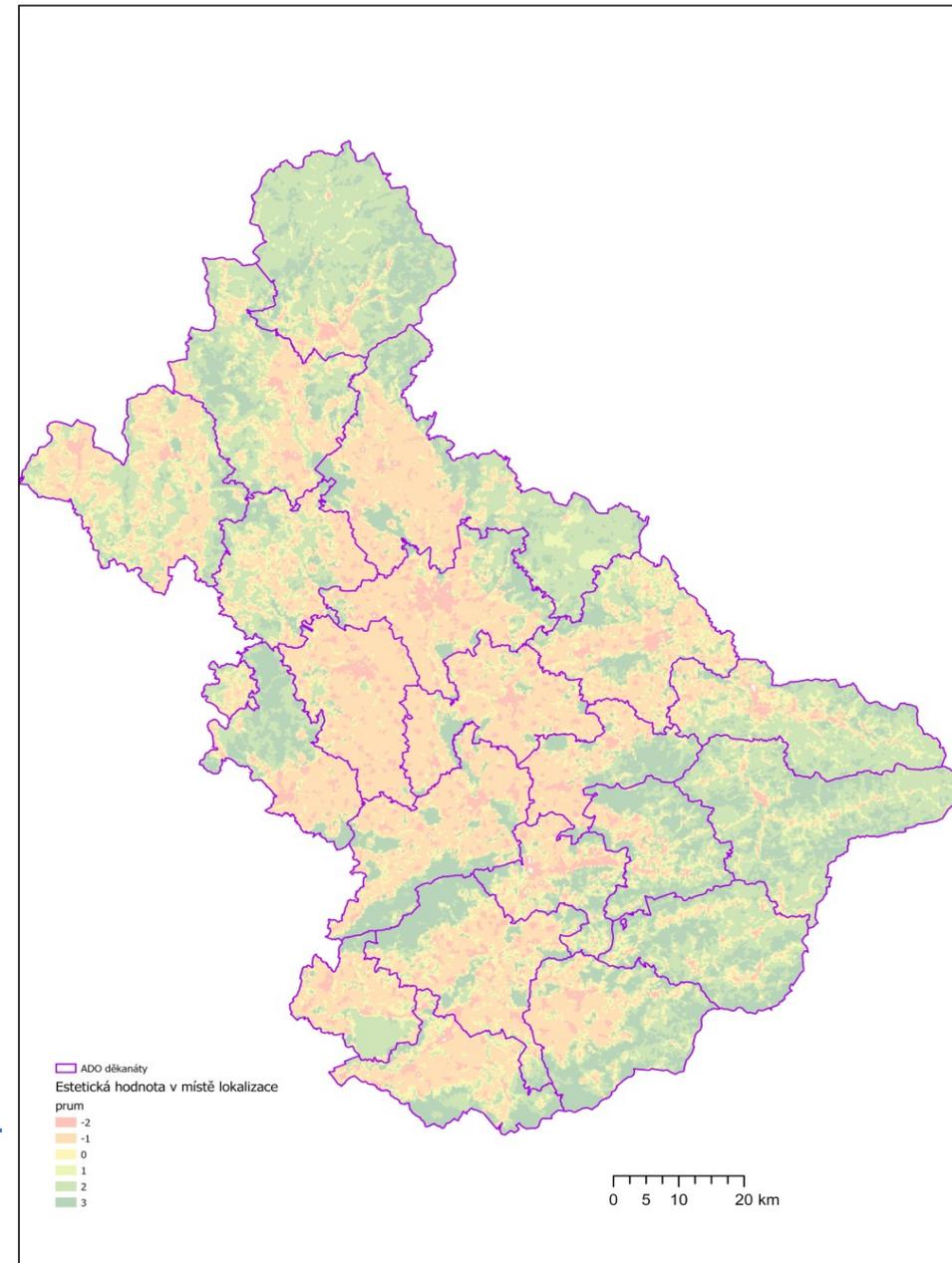
# Identification and mapping of elements with positive and negative aesthetic value

- **Natural elements** such as memorial trees, alleys, and **selected anthropogenic**, such as ruins and castles, objects of historical and spiritual value, e.g. sacral buildings - temples, churches, chapels, objects of historical and technical value, such as wind and water mills, iron mills, or objects with a combination of the values mentioned above, e.g. memorials, mounds, UNESCO monuments, composed landscapes, etc. **are considered as positively perceived elements of the cultural landscape**
- **Anthropogenic objects**, usually without historical, technical and cultural characteristics, but with purely economic and practical functions, e.g. industrial zones, shafts, power plants, airports, quarries, prisons, logistic centres **are negatively perceived elements**.
- *Data sources*
  - field surveys, ZABAGED database, (Open Street Map) and the National Heritage Bureau database
- *Procedure*
  - identified elements were created / transferred to the geodatabase
  - thematic and geometric attributes were revised and supplemented according to the field survey and colour aerial imagery.



# Quantification of aesthetic value at the site of localization

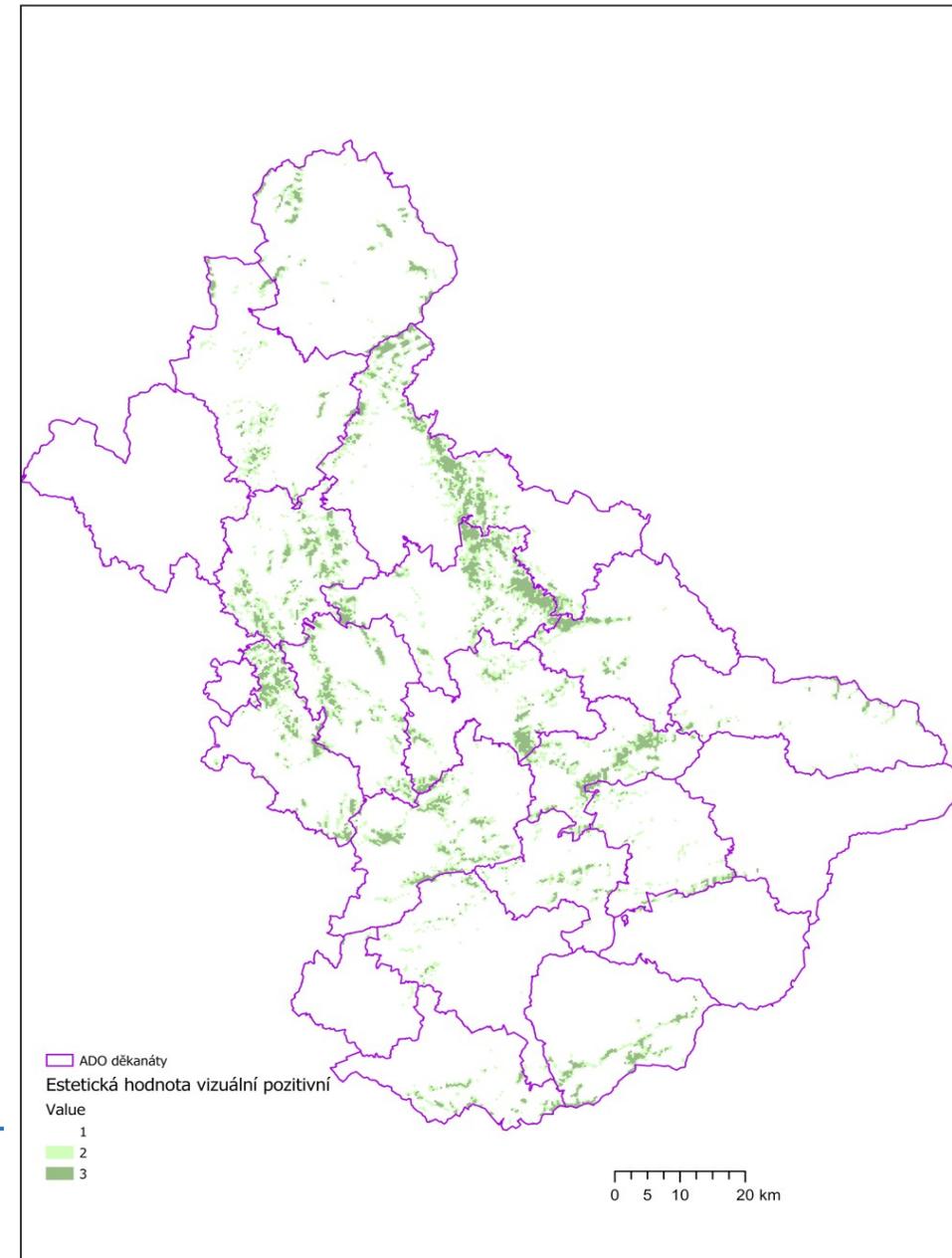
- Aesthetic values ranging from **-3 (negative aesthetic value) to +3 (positive aesthetic value)**
  - score was obtained using expert estimates from 8 experts
  - values are based on the geographical significance of the element and the relative significance in relation to the object's vicinity.
- achieved values were weighted and converted to a unit of the area under investigation in a hexagon mesh
  - edge size 196 meters
  - => study area = 103 052 hexagons
- *Data source*
  - actual geodatabase (result of step 1)
- Procedure
  - spatial analysis including map algebra - were applied in the GIS



# Analysis of the visual impact on the landscape

*Landscape features not only impact the site of its location, but also affect its surroundings depending on the configuration of the terrain.*

- visibility of the elements was modelled → it was inspected, which spots in the surrounding areas are impacted by the given element
- the individual elements were assigned fixed spatial attributes
  - height in meters above the surface - was taken from relevant data sources
  - minimum needed height of the object for the calculation of the values of aesthetic expression
- 1) the areas of impact of the elements with positive value were determined
- 2) the areas of impact of the elements with negative value
- 3) then the partial results were spatially merged → this resulted in delimitation of zones according to the prevalence of perception
- Data sources:
  - digital terrain model (DMR-5G), digital surface model (DMR-1P)
  - elements affecting visibility (from ZABAGED, OSM)
  - actual field survey
- Procedure
  - reverse viewshed and reverse visibility
  - spatial overlay



# Synthesis of aesthetic value of an element and its visual impact

- results from steps 2 and 3 were combined
  - → final aesthetic value of the cultural landscape was calculated.
- resulting scale of the aesthetic value then **ranges from -3 to +4**
  
- *Procedure:*
  - spatial overlaps
  - map algebra tools
  - geovisualization methods





Point value	Category	Area (ha)	Area (% of ADO area)
-3	Territory of very low aesthetic value (negative)	1300.00	0.13
-2	Territory of low aesthetic value	4407.99	0.43
-1	Territory of reduced aesthetic value	40071.63	3.94
0	Territory without specific aesthetic value (neutral)	335462.85	33.02
1	Territory of increased aesthetic value	124096.06	12.21
2	Territory of medium aesthetic value	314182.33	30.93
3	Territory of high aesthetic value	178534.42	17.57
4	Territory of exceptionally high aesthetic value (positive)	17942.64	1.77
Total	1015997.94	100	



# Interpretation of results

- The map shows that almost all populated areas (urban areas) are perceived negatively and the degree of negativity depends on the size of the site and the number of positively perceived objects in the given space.
- The open landscape, formed by forests and forest complexes, with roads and water bodies, or with small sacral buildings, achieves higher levels of aesthetic value evaluation.
- Sites with spiritual properties belong to areas with a value of 4, which is of exceptionally high aesthetic value.
  - include the Hostýn Hills with a significantly positive area of Hostýn to the southeast of Bystřice pod Hostýnem
  - the Maleník ridge stretching southeast from Lipník nad Bečvou to Hranice
  - the picturesque slopes of the White Carpathians to the southeast border of ADO in the areas of Veselí na Moravou, Uherský Brod and Valašské Klobouky.



# Conclusion

- Map of the aesthetic value presents a new, yet unresolved topic of visualization of the perception of the aesthetic values of the landscape.
- Creation of the methodology of aesthetic evaluation is based on the general concept of perception of the surroundings in a positive or negative sense.
- Based on expert judgement, positive elements those, which are rated as welcomed and sought-after, enriching, visited, preferred for living, stay or visitors destinations.
- Locations perceived negatively and thus without the need to visit, without housing and stay preferences receive the opposite evaluation.
- The resulting map presents a new perspective on landscape perception with a clear preference for natural sites.



# Thank you for attention

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