

THE CULTURAL HERITAGE AS AN ELEMENT OF GEOSPACE

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On 17–19 May 2007 Third All-Polish Symposium was held in the series „Cracow meetings with INSPIRE”. It focused on the subject „Cultural heritage as an element of geospace”. The Symposium was connected with the Polish Days INSPIRE 2007 and coincided with coming into force of the INSPIRE Directive establishing Spatial Information Infrastructure in Europe, to be composed of infrastructures of the EU Member States, including Poland.

The Symposium was organized by the Cracow City Hall with participation of the Marshall’s Office of Małopolskie Voivodeship, the Małopolskie Voivodeship Office, AGH University of Science and Technology and Okręgowe Przedsiębiorstwo Geodezyjne i Kartograficzne w Krakowie (Regional Geodetic and Cartographic Enterprise in Cracow).

During the debate it was emphasized several times that the Symposium was very successful. First of all, the choice of the subject was well-aimed as it made possible to gather specialists in two areas, namely cultural heritage and geoinformation. They developed an interdisciplinary discussion undoubtedly to the benefit of all participants and there were ca 200 of them. Detailed subjects of nearly 40 papers presented referred in equal proportion to both above mentioned areas. In the opinion of the Program Council, the level of the papers was, in general, higher than good. Selected papers are published after review in this issue of “Annals of Geomatics”, supported by the Chief Surveyor of Poland who took patronage of the Symposium.

The setting of the Symposium matched the subjects discussed. The meeting was held in monumental interiors of the Cracow City Hall in the city centre. Cracow is the city best representing Polish cultural heritage. Next to the Symposium venue, on the other side of Franciszkańska No. 3, there is a famous window reminding John Paul II, particularly on 18 May, the anniversary of his birth and second day of the Symposium.

The scientific program was supplemented with cultural and social programs, including the evening in monumental „Wieliczka” salt mine and the Night of Museums in Cracow. These events favoured establishing contacts and cooperation, including interdisciplinary and interdepartmental, which is the essence of INSPIRE as a great European, and consequently also Polish, undertaking.

The course and results of the Symposium are presented here below divided into sessions.

Session I: Cultural heritage and its place in spatial information

During that session introductory papers were delivered, shedding light on the subjects of the Symposium both from the side of cultural heritage and geoinformation. For this reason we devote to them more attention in this article than to other papers.

Professor A. Tomaszewski discussed the role of cultural heritage for contemporary civilization. He paid attention to the importance of historical monuments documentation, and stated that progress in recording techniques of the form and space open ever new, unimaginable in the past possibilities for protection of cultural goods and, at the same time, for bringing them closer to individuals and societies. In Poland, the body responsible for elaboration and implementation of the national program of cultural goods is the Ministry of Culture and National Heritage. This program, treating documentation as an integral component of any restoration proceeding, both at its opening and completion, should include:

- assumptions for the Internet database about inventorying of historical monuments created on the basis of existing and regularly updated measurement documentation,
- establishing a hierarchy of objects importance to be taken into account in planning the order of implementation of actions concerning protection and restoration of historical monuments,
- protection of point and area historical monuments by means of their permanent monitoring,
- close cooperation of geodetic and cartographic sciences with the community of historical monuments conservators, because cultural heritage is an element of geospace.

Professor B. Ney in his paper, because of his absence delivered by professor T. Chrobak, discussed the tasks of geodesy (surveying) and cartography in cultural heritage, including first of all:

- land and buildings register of cultural heritage objects being properties in physical sense – as a public register held by geodetic and cartographic service,
- geodetic works covering renovation of urban complexes,
- geodetic documentation taking into account individual historical monuments in extremely large scale.

Summing up, the author stated that geodesy, photogrammetry, satellite, aerial and earth remote sensing and cartography play a crucial role in retaining the monuments of material culture for the future, which can be proved i.a. by experience of Cracow, Toruń and Warsaw.

Professor A. Linsenbarth presented his paper under a suggestive title „INSPIRE –from initiative to directive” describing the course of works leading to INSPIRE Directive. We may take 2001 as the date when these works began and when the idea of uniform European spatial information infrastructure appeared, necessary for environmental policy and for many other purposes. Subsequent phases of legislative process, connected with the work of experts, social consultations and long lasting arrangements within the framework of the Council and the European Parliament were completed under conciliation procedure. The Directive came into force on 15 May 2007.

Legislative, executive and administrative regulations in the Member States should be issued within 2 years from that date.

Professor J. Gaździcki described relations between information about cultural heritage and spatial information infrastructure stating in his conclusions that:

- information about immovable historical monuments is a kind of broadly understood spatial information,
- in the information system about cultural heritage it is necessary to use geospatial technology (GIS),
- taking cultural heritage into account in INSPIRE and in Polish Spatial Information Infrastructure is fully justified and by all means advantageous,

- KOBIDZ (National Heritage Board of Poland) databases should be developed as components of the information system about cultural heritage and integrated in the Polish Spatial Information Infrastructure; it is also necessary to integrate and standardize existing data resources,
- fulfillment of the above mentioned tasks requires cooperation between the bodies responsible for cultural heritage and the bodies responsible for spatial information in the country,
- there is a need to carry out research concerning information about immovable historical monuments treated as spatial information, taking in this research into account ICT, and geospatial technologies.

Vice President of GUGiK (Head Office of Geodesy and Cartography) A. Iwaniak Ph.D. presented the initiatives of geodetic and cartographic service to build information infrastructure in Poland. This was a broad review of actions carried out and new initiatives launched, directly or indirectly connected with the subjects interesting participants of the Symposium. The review covered in particular the actions concerning:

- Polish Spatial Information Infrastructure, particularly as regards geodetic and cartographic information, including modified GEOPORTAL and metadata project,
- modernization and computerization of the cadastre,
- new system solutions in the area of topographic cartography,
- multifunctional system of precise satellite positioning covering the area of Poland.

The author included to new initiatives the following systems:

TERYT 2 – nationwide system of territorial identification, fulfilling the function of common reference base of geospace identification for all other information systems in public sector,

GBDOT – Georeference Database of Topographic Objects is featured with unique and stable identifiers, nationwide range, continuous updating, layer structure, and partial integration with land and buildings register and basic map,

E-KATASTER – as a public register held together with the land and buildings register, regulated on the level of national law, held on the powiat (county) level strictly linked with the state geodetic and cartographic resources, including data on ownership based on the land and mortgage register, ensuring general access to all cadastre data.

Session II was held parallel in two halls and covered:

- utilization of Malopolski Precise Positioning System in works accepted by powiat (county) centers of geodetic and cartographic documentation,
- sponsors' presentations
 - WASKO: *Interoperational metadata catalogues and spatial data review services*
 - Hewlett Packard: *GIS spatial information systems and geoengineering products in security policy*

Session III: Cultural heritage management

Eight papers were delivered in this session. The need for coordination and cooperation in the area of recording and documenting historical monuments was presented, pointing out to positive examples of institutional cooperation. Not only new technologies are necessary, but also new legal tools to enable effective opposition to the teats to environment and urban disintegration, including disintegration of historical cities panoramas.

Also, the role of spatial planning in heritage management was discussed with reference to Cracow (Fig. 1). Today, protection of cultural heritage is subordinated to free market rules and ownership protection and spatial planning is correlated with political circumstances. Thus, there is a need to:

- build consciousness in the society and political elites that protection of cultural heritage is not a barrier to growth but this is a chance of development and our duty to future generations,
- restore the role of spatial planning on local level as an instrument of reasonable development, of building spatial order and quality of space and not only of removing investment barriers and providing new terrains for building development,
- to create legal, organizational and financial basis for the protection of landscape and natural and cultural heritage to be actually implemented and not only to be restricted to research and analytical level.

Session IV: Natural environment and landscape as an element of cultural heritage

Nine papers covering diversified subjects were delivered and they may be divided into four groups concerning:

- landscape protection and shaping,
- landscape history,
- perception,
- social participation.

Theoretical considerations were in most cases supported by practical examples and interesting visual presentations.

In the first group, issues of landscape area protection (national parks, landscape parks and culture parks) were dealt with and the importance of landscape values as an element of spatial economic mobilization was emphasized.

In the second group, the influence of historically conditioned ways of landscape recording on landscape shaping was discussed. The paper presenting Biblical events in geospace stood out with its originality and innovative methodology.

Issues concerning landscape perception were presented by means of results of a questionnaire survey carried out in the last months among inhabitants of Cracow and representatives of specialized firms.

Social participation as a way to solve potential conflicts accompanying landscape planning and shaping was presented on the example of a landscape-oriented investment.

The papers delivered provided a picture, on the one hand, of *corrosion* of spatial planning, including landscape shaping, taking place in the recent years and, on the other hand, of enhanced activities aimed at drawing profits from *privatization* of landscape values remaining *de nomine* a public good. Against this background, signs of growing recognition of the value of *the view from the window* raises some optimism, similarly as examples of social participation in taking spatial decisions.

Session V: Making inventory of architectural monuments

Eight papers were delivered in this session, presenting:

- contemporary technologies used for making inventory of monuments, taking into account:
 - progress in photogrammetric technology and in laser scanning for making inventory of broadly understood historical monuments,

- digital technology for information products expanded by 3D metric models of historical monuments,
- linking of aerial and earth photogrammetry methods with comprehensive inventory of the object itself and its natural environment;
- practical documentation of cultural heritage:
 - restoration documentation of Pijarów Church in Cracow and Sigismund Chapel on Wawel,
 - creation of a database about historical monuments for Mazowieckie Voivodeship and for Cracow.

Summing up, we should state that contemporary methods of making inventory of architectural monuments are well known, but the scope of their practical application in Poland is modest.

Session VI: Three dimensional modeling and visualization of cultural heritage objects

Seven papers were delivered discussing both the aspects of broadly understood modeling, including conceptual modeling and data organization in appropriate structures and the problem of the visualization itself. In most papers real world was modeled with the use of photogrammetric measurements or laser scanning.

There were papers describing reconstruction of not existing architectural objects on the basis of archeological research, archival materials and scientific hypothesis. The participants of the session could:

- get acquainted with reconstruction of Romanesque Cracow some 250 years before the town location under Magdeburg law,
- visit interiors of a few Cracow churches,
- walk down the Cracow streets, and even touch exhibits in a Dutch museum.

Two techniques of acquiring 3D data were compared both in the papers and during the discussion that followed. The examples presented show that both techniques are used: 3D model of the Old Town of Warsaw was made on the basis of photogrammetric measurement of aerial photos, and 3D model of the whole city of Cracow – on the basis of aerial laser scanning. The latter technique is growing dynamically, used in earth and aerial measurements and synergic effects of its working together with photogrammetry are already visible.

3D visualization technique was demonstrated providing great possibilities and bringing about spectacular effects. However, attention was drawn to negative consequences of excessive concentration on the visualization itself, leading to closed single undertakings.

In one paper directions of standardization of 3D spatial information were presented, which raises hope that 3D visualization will soon stop to be the aim in itself, but only one of the ways to use databases composed of 3D objects (Fig. 2).

In conclusion we may state that we have entered the stage of building 3D GIS systems.

Session VII: Documenting and monitoring world cultural heritage

The session covered seven papers presenting achievements in documenting objects of world cultural heritage. With the use of photogrammetric technology of making inventory worked out in the Photogrammetry and Remote Sensing Information Section of the Mining Geodesy and Environmental Engineering Department at the AGH University of Science and Technology, documentation of Egyptian necropolis Shunet El Zerib was made. Documenta-

tion of architectural historical monuments was the task of 14 BARI scientific trips of geodesy students from AGH in Cracow.

Works on creation of spatial information systems were presented for the needs of historical monuments documentation and cultural heritage management. These works concerned:

- the concept of the time and space system about historical events and sources,
- implementation of Carpathian Convention.

More than 50-year experience in the area of making inventory of works of art and documentation of conservatory works of the Department of Conservation and Restoration of Works of Art at the Academy of Fine Arts in Cracow was discussed. Gathered documentation resources are regularly updated taking into account modern solutions and technologies, including those concerning acquisition and making available in digital form the documentation on historical monuments in Poland.

Summing up of the Symposium

Professor J. Gaździcki, chairing this session, presented the initial version of the report prepared in cooperation with chairmen of individual sessions (in the order of sessions and without titles): T. Chrobak, Maciej Antosiewicz, Piotr Malcharek, Janusz Sepioł, Aleksander Bóhm, Stanisław Marczyk, Ireneusz Płuska, Zbigniew Głogowski, Krystian Pyka, Władysław Mierzwa.

By the end the participants of the Symposium expressed their thanks to the Organization Committee, headed by Vice President of City of Cracow, Kazimierz Bujakowski Ph.D Eng. for excellent organization and assuring very good conditions for the debates. Also the Cracow City Hall and the institutions mentioned in the introduction, which supported organization of the Symposium, were duly recognized.

The Symposium proved that a spatial information infrastructure created in accordance with the INSPIRE Directive is an interdisciplinary and interdepartmental cooperation platform offering benefits to collaborating professional communities, institutions, enterprises and public administration bodies.

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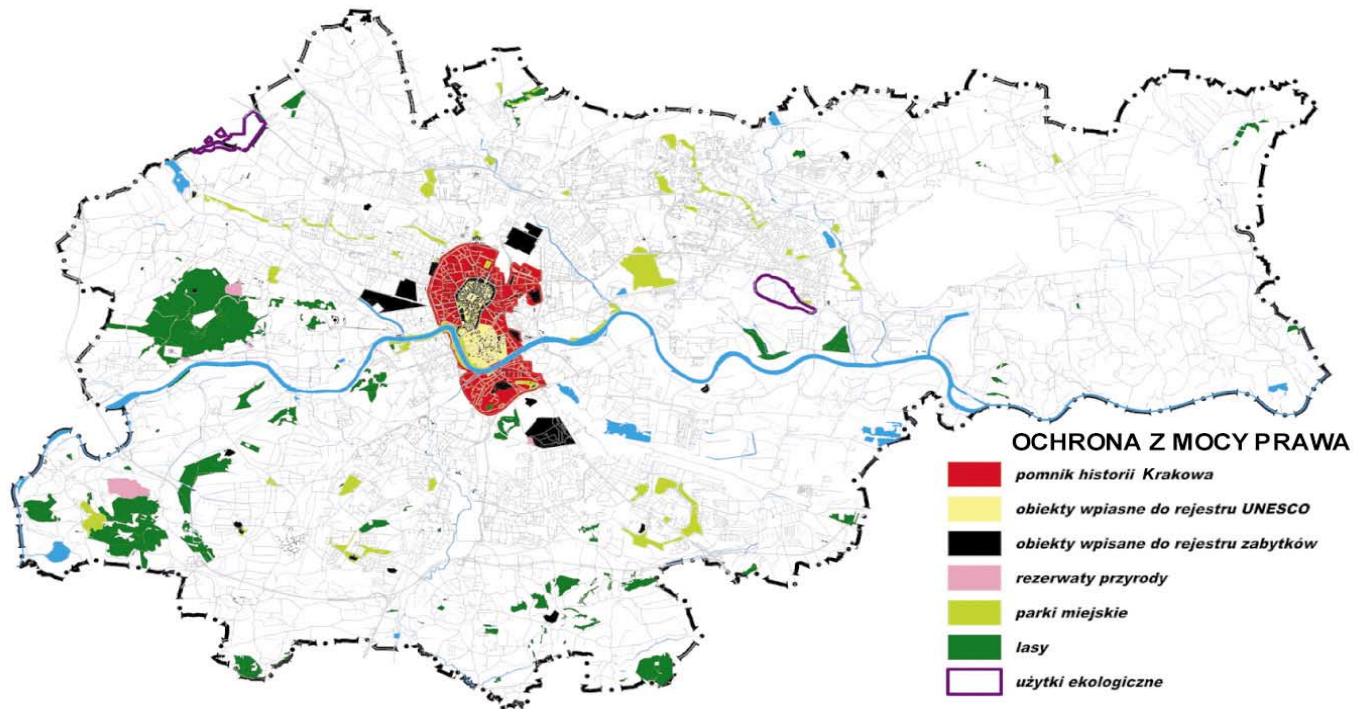


Fig. 1. Legally protected sites in Cracow
Rys. 1. Obszary prawnie chronione w Krakowie



Fig. 2. Visualisation of a controversial Wyspiański Pavillon currently under construction in Cracow
Rys. 2. Wizualizacja kontrowersyjnego Pawilonu Wyspiańskiego obecnie budowanego w Krakowie