

Mateusz Gyurkovich (mateusz.gyurkovich@pk.edu.pl)

Institute of Urban Design, Faculty of Architecture, Cracow University of Technology

Adolfo Sotoca (adolfo.sotoca@ltu.se)

Department of Civil, Environmental and Nature Resources Engineering,
Luleå University of Technology

TOWARDS THE CRACOW METROPOLIS – A DREAM OR A REALITY? A SELECTED ISSUES

W KIERUNKU KRAKOWSKIEJ METROPOLII – MARZENIE CZY RZECZYWISTOŚĆ?

WYBRANE PROBLEMY

Abstract

Cracow, the former capital of Poland and currently the second-largest Polish city, dreams of becoming the most important metropolis – not only of the Lesser Poland region, but also of the entire southern and south-eastern part of Poland. This paper, based on long-term research and field studies, also refers, in part, to the “Model of the Spatial Structure of Cracow” research programme, which was conducted at the Institute of Urban Design of the CUT under the guidance of M. Gyurkovich with collaboration with A. Sotoca, between October 2016 and July 2017. This is the background against which the selected issues of spatial transformations that took place within the city limits and that influence the urban morphology of Cracow, will be presented against. The type of spatial structure that can currently be observed in Cracow, does not bring to mind an association with the urban form of a European Metropolis. Can the contemporary attempts to create a polycentric urban organism- that can compete with other, well-organised ones, internationally, ever be successful? Will the dream of the Cracow Metropolis ever come true?

Keywords: metropolis, polycentrism, density, exurbanisation, urban morphology, urban form

Streszczenie

Kraków, była stolica Polski i obecnie drugie polskie miasto, marzy o staniu się najważniejszą metropolią nie tylko regionu Małopolski, ale także całej południowej i południowo-wschodniej Polski. Niniejszy artykuł, oparty o długotrwałe badania i studia terenowe, również odnosi się częściowo do programu badawczego „Model Struktury Przestrzennej Krakowa”, opracowanego w Instytucie Projektowania Urbanistycznego PK pod kierunkiem M. Gyurkovicha przy współpracy z A. Sotocą między październikiem 2016 a lipcem 2017 roku. Stanowi on tło, na którym będą prezentowane wybrane zagadnienia przekształceń przestrzennych, które miały miejsce w obrębie miasta, i które wywierają wpływ na morfologię urbanistyczną Krakowa. Rodzaj struktury przestrzennej, który można obecnie zaobserwować w Krakowie, nie wywołuje konotacji z formą urbanistyczną Europejskiej Metropolii. Czy współczesne próby stworzenia policentrycznego miejskiego organizmu, który mógłby konkurować z innymi, dobrze zorganizowanymi miastami na płaszczyźnie międzynarodowej mogą zakończyć się powodzeniem? Czy marzenie o Krakowskiej Metropolii kiedykolwiek się spełni?

Słowa kluczowe: metropolia, policentryzm, intensywność, eksurbanizacja, morfologia urbanistyczna, forma urbanistyczna

1. Focus of the paper

This article was written as one of the results of many years of studying the wealth of subject literature¹, cartographic and iconographic materials, as well as planning documents regarding Cracow, in addition to observations and on-site research. This research concentrated chiefly around the problems associated with the urban form and, even more broadly – the urban composition of a city that plays the *de facto* role of a very important metropolitan centre on the regional² and national³ scale. It focused both on the city as a whole, but also on each of the distinct, characteristic elements that make up that whole. Cracow cannot be labelled as “compact city” and the roots of this issue are connected much more with the process of its urban growth over last 120 years, than with its more distant historical origins or geographic determinants of the location: between river plain and hilly areas. We can observe, within the city limits, the defragmentation of the urban form and the coexistence of dense urban fabric chaotically mixed with the sprawled areas of different kind and origin. That structures has been created mostly after the Second World War⁴, on former rural areas, without changing the original partitions of the sites, and sometimes even- without changing the scale and typology of former villages to “more urban like”. The main focus of the paper would be put on this strange coexistence of different typology and scales, which makes that the identifying of “local sub-centre” in numerous districts and areas within the Cracow city limits is almost impossible. That is one of the main reasons, why the problem of the polycentric nature of the spatial structure of Cracow, which has been declared in numerous planning documents and has been present in academic discourse on both the national and international level, is still not functioning at a satisfactory level – unlike throughout the city’s history [38, 18].

¹ Which focuses on numerous issues – from general urban planning theories (among others: [13, 34, 35, 54, 12, 15, 61, 55, 58, 10, 45, 36]); through the history of the spatial development of Cracow (including: [7, 47, 43, 44, 39, 60, 38, 9, 42, 57, 17, as well – 14] , in addition to problems that have been of particular importance in recent years, associated with the phenomenon of exurbanisation and of the loss of the urban form of cities – important sources include the documents of the European Commission, publications associated with international scientific conferences (those organised in Poland include, for instance, the Urban Landscape Renewal conference at the Silesian University of Technology or a series of conferences organised by the Institute of Urban Design of the CUT in the years 2001–2016), as well as the research work published both in the form of articles and scientific books (including: [2, 22, 37, 32, 33, 26, 31, 6]).

² As the capital and the largest city of Lesser Poland, it is also an important university, cultural, economic and tourist centre (12,000,000 tourists in the year 2016 – according to data of the Tourist Information Service of the Office of the City of Cracow from 11.10.2017), and in the spiritual sense, a pilgrimage centre for Catholics, the seat of an archdiocese – metropolis, which is composed of four dioceses of the Catholic Church.

³ To which it is not limited, as it also exerts strong influence in this part of Europe (sometimes in tandem with the Upper Silesian Metropolis, or separately – depending on accepted conditions) – cf., among others, elements of the bibliography.

⁴ But also before, since the times of the Plan from 1910, which will be mentioned later on; they appear more and more often even nowadays.

2. Introduction

The rapid and largely uncontrollable development and growth of cities during the past century has taken place with varying intensity in different parts of the world. There is currently no single, widely accepted model of a metropolitan city – there exist many variations of it, depending on the different geographic, historical, economic and demographic conditions (as well as many others: [58, 45, 4, 17]. This process has often led to a situation in which, apart from fragments of composed urban tissue, relics of spatial layouts that are typical of rural areas can be observed in urban zones. The situation is no different in Cracow. The causes of this state of affairs can be sought both on the side of economic and legal conditions, political turmoil (which, apart from changes regarding the political system, also include military operations) that changed over time, as well as in the complex history of the spatial development of the city⁵. In Poland, the period of the last three decades, apart from a return to democracy, has also been a time of ongoing processes of the growth of urban areas. They are accompanied by a more and more observable loss of urban form and characteristic compositional elements that have so far shaped cities in our region of Europe (The situation is no different in Cracow, cf. for instance [1, 32, 33].

Cities and metropolitan areas inevitably become the natural environment of the life and habitation of modern humans. The 21st century has already been called the "century of cities", with over half of the global population living in cities (as of 2006). Against this background, Poland (38.45 million inhabitants in the year 2015 – according to information provided by GUS [71]) appears to fit in with the European average, although when compared to countries with a similar population from the circle of the European tradition of building cities (e.g. Canada – 36.5 million; Spain – 46.4 million or Ukraine – 45.1 million inhabitants in the year 2015 [71]) it can be observed that the share of medium-sized (up to 100,000 inhabitants) and small (up to 50,000 inhabitants) cities and towns is much greater in the overall number of urbanised areas. Cracow, the former capital of Poland, has a dream to become the most important metropolis, not only in the region of Lesser Poland, but also in the entire southern and south-eastern part of the country. Cracow is currently Poland's second largest city with a population of slightly over 765 thousand inhabitants in 2016 [72], while the populations of comparable (second-largest in their respective countries) cities in the aforementioned countries, as well as in the majority of EU member states are substantially larger and usually exceed 1.5 million inhabitants⁶.

We can thus conclude (after A. Bitner [5]) that the indicator of the level of demographic urbanisation appears to be decidedly insufficient for the purpose of fully describing the complex phenomenon of urbanisation. The studying of the structure of a city from a morphological perspective can be exceptionally helpful. Urban morphology, understood as an interdisciplinary field bordering on urban planning and architecture, as well as geography,

⁵ Confer numerous bibliographic positions that refer to the spatial development of Cracow or of its fragments, including those mentioned in previous notes.

⁶ For comparison: in Canada – Montreal – 1,620 thousand; in Spain – Barcelona – 1,605 thousand; in Ukraine – Kharkiv – 1,450 thousand; in Germany – Hamburg – 1,686 thousand; cf. the websites of the aforementioned cities, as well as [73].

focuses on studying *urban form*. Depending on its current, it focuses its attention on such aspects of the space of a city like: streets (roads), plot division and the built environment or, even more generally: plots, the built environment and non-built-up spaces (solid/void). According to the basic principles of this discipline (Confer, for instance [46, 27–29]), a *city's morphological structure* (which is the structure of the visible, three-dimensional form of a city), which is sometimes described in literature as *morphogenetic* (which is the structure of the visible form with a reference to its genesis), is a part of its spatial structure. The latter term was used by the authors in the *Model of the Spatial Structure of Cracow* already during the 1st stage of this research study [20] and it appears to be more adequate in the context of a city with a historically shaped core that features unique assets, which Cracow, without a doubt, clearly possesses.

3. The *morphogenetic* structure of Cracow

The urban structure of Cracow, similarly to that of any city, is defined by the grid of the spatial layout outlined by urban units⁷ that are connected with each other through the transport system⁸ and are composed in a legible manner and are easy to identify, or, by using a different term – *morphogenetic units*. In theory, their mutual compositional relations should be legible both in terms of their plan, but chiefly in the third dimension – in the real-world spatial structure of a city. An urban composition built using these measures, under the guise of the urban form, should facilitate spatial orientation among its users, even those that are not familiar with a particular city or district [27]. Due to numerous problems that have been mentioned briefly in this paper, this is, however, not the case in Cracow.

The form of a city, in the case of Cracow, as it has already been mentioned earlier, is highly varied and not always legible. However, from the visual perspective of the city, we can identify individual fragments (districts, regions, architectural and urban complexes) which are easy to tell apart. The important thing here is legibility on both the layer of *urban grids*, understood as a system of public spaces (including roads and streets, as well as the still heavily fragmented system of green public spaces), as well as on the layer of *tissues*, which is formed from the architectural substance that constitutes the filling of these grids. The morphogenetic structure was recorded in the form of a scheme of the layout of the units of urban space that have become distinct due to their planning, form and genesis (called *morphogenetic units* [20, 21]).

⁷ According to urban composition theory – e.g.: K. Lynch, K. Wejchert – regions/areas, treated in this work as *tissue*.

⁸ Elements of which can be defined in accordance with numerous theories regarding urban composition (whose authors are, among others: G. Cullen, K. Lynch, or K. Wejchert), as: lines/and in reference to the methodological assumptions of the *Model of the Spatial Structure of the City of Cracow*, as *grids* [21].

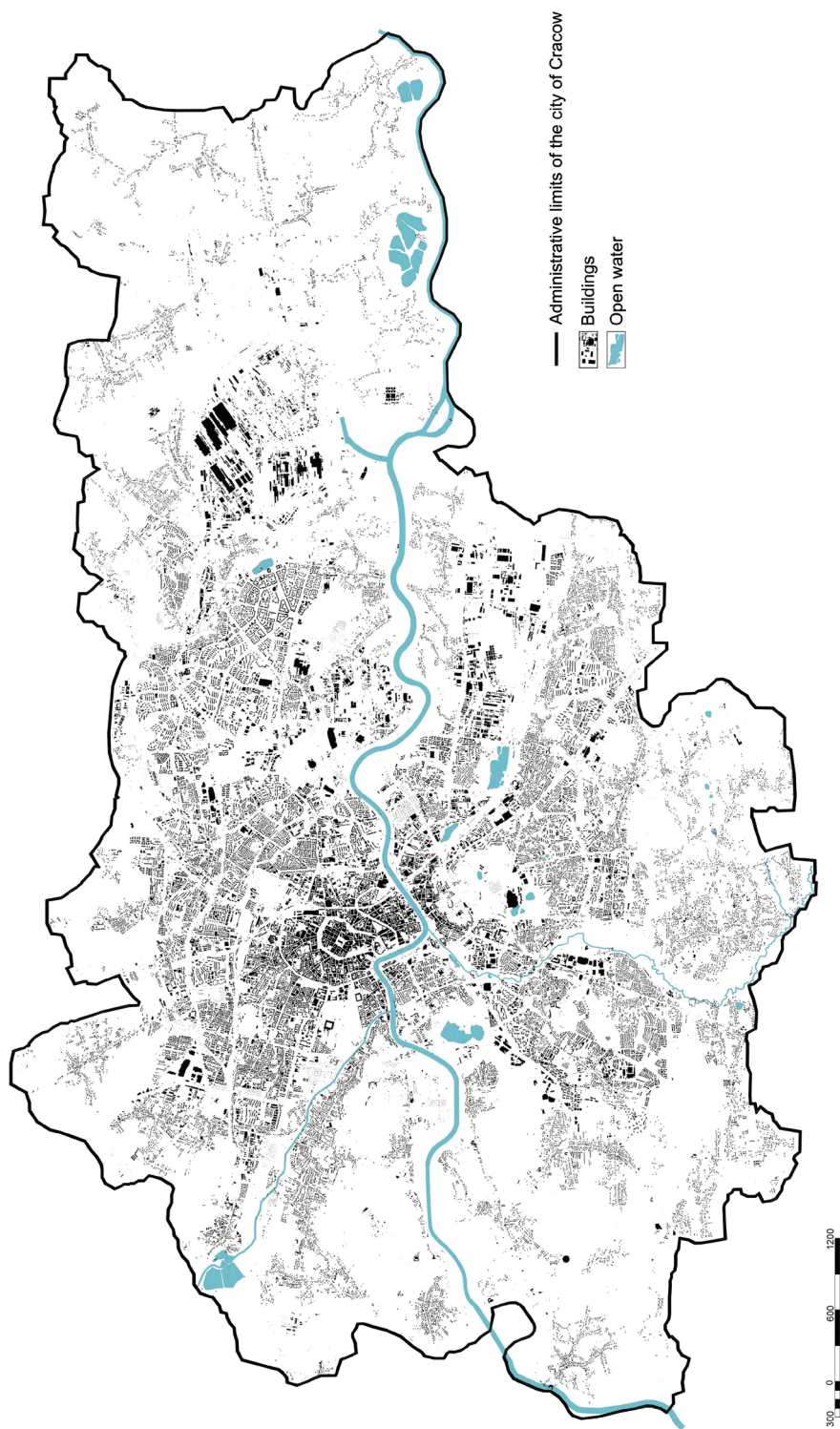


Fig. 1. Cracow 2016 – structure of the built environment – developed by P. Tota, K. Studencka (source: [21, pp. 41, 53–54])

Their delimitation was performed in reference to the *structural urban units*⁹ established in the Spatial Development Conditions and Directions Study of Cracow¹⁰, which aggregate areas with similar spatial features that are easy to delineate using linear elements of development (roads, railways, hydrological elements, etc.). Guidelines for the development of local plans for all 63 *structural urban units* were defined in the following, III volume of the Study in question. They already contained a detailed division of each SUU into areas of varying morphology. In order to properly evaluate the existing morphogenetic structure of Cracow, and, as a result, also its potential, it was thus necessary to introduce a finer division. This is why the final delimitation of *morphogenetic units*¹¹ was performed on the basis of the following three criteria: the features of the physiognomy of the urban form; the qualities of the layout of buildings; the genesis of the formation of the individual fragments of urban tissue. The scheme of the introduced morphogenetic units (Fig. 2) shows that many of them (80) are formed of unstructured or post-rural single-family housing of suburban character. So called “hybrid morphogenetic units” are treated as potential intervention sites and potential areas of the development of well-structured, urban fabric of Cracow linking the core of the city with the outskirts and Nowa Huta district. As for today, they are in fact no more than chaotic mixture of different kind of uses and typologies in which one can find the leftovers of former suburban villages, which has influenced very strongly¹² on the later development of those areas of the city.

The urban development of Cracow – from the earliest times of the pre-charter settlements grouped around the fortified princely castle on Wawel Hill from the IX century, through the tri-city polycentric layout that formed in the Middle Ages¹³, to modern times – can, similarly to many other cities on the European continent, serve as a case study for the tracing of the role of urban composition, both in the crystallisation of urban and district cores, as well as of the residential building layouts that accompanied them. Cracow is currently not a compact city outside of its second bypass, which is a result of historical conditions¹⁴. It is characterised by a high loosening of the built environment as well as a high share of morphogenetic units associated with suburban

⁹ This document specifies the division of Cracow into 63 structural urban units (SUU), which were assigned customary names, easily associated with a given area of the city. Even though their delimitation was mostly based on, among other things, conditions associated with the morphological structure of each area, in many cases other elements turned out to be more important and affected the final delimitation of SUU's. When performing the limitations, it was rightly acknowledged that “*there is no absolute necessity of reflecting the historical layout of the City, as current development has, in many cases already erased this layout and it is no longer possible to recreate*” [69, Vol. II, p. 37].

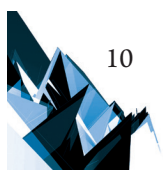
¹⁰ This mention refers to the planning document from the year 2014 that is still in force – see *References*.

¹¹ 411 morphogenetic units were delimited in the work. This included as many as 80 units that featured the dominating role of single-family buildings of a suburban and rural character that occupy considerable areas of the city within its administrative limits – see Fig. 2, cf. [21, pp. 49–51].

¹² Most of all, thanks to the partition of the rural and building sites, which can be observed on numerous maps, plans and the aerial photos of the city from different times (including those presented in this paper).

¹³ Which are: Cracow (Cracovia – 1257), Kazimierz (Casimiria – 1335) and Kleparz (Florentia, Claeopardia – 1366), with the metropolitan layout having functioned, with small changes, for nearly 450 years. Over time, it was accompanied by a larger amount of suburbs, *jurisdictions* and satellite urban layouts (e.g. Podgórze from 1784).- cf. for instance [14, 44, 47].

¹⁴ Which are touched upon in this article, but discussed much more in depth in the publications on the spatial development of Cracow, including a number of works by M. Gyurkovich, that have already been referenced here many times.



or even rural single-family buildings. These areas are mixed with dense, multi-family residential built-up areas from the second half of the XX century and even denser developer housing estates that have been built after the year 2003 on the basis of singular administrative decisions¹⁵ and imperfect local plans that are not fully coordinated with each other¹⁶. It was observed that buildings are not the dominating form of development in many areas within the city. In such cases, morphogenetic units associated with forms of spatial development other than buildings were outlined, such as: the natural landscape, composed greenery (including parks and cemeteries)¹⁷, larger watercourses and reservoirs, large railroad areas, the city's highway bypass, etc.¹⁸

Up to the time of the proclamation of the results of the competition for the *Greater Cracow Regulation Plan* in the year 1910 (and for a couple years longer), Cracow was a compact city, due to the slowing down of the growth after the relocation of the capital to Warsaw in the XVI century, as well as largely thanks to the status of a fortress-city, which was given to it by the Austrian partitioning authorities in the second half of the XIX century. The *Plan*¹⁹ presented a spatial vision for a part of the areas that were newly incorporated into the city. The radial-concentric layout of the city – that was initiated inside the XIX-century urban tissue and which was also continued in the spatial structure of the Cracow Fortress – became crystallised in its provisions. Areas of the concentration of built-up areas featuring diverse forms of use and standards, with a clear underlining of the westward direction of the city's development (both on the northern and southern shores of the Vistula) were defined for the first time. Areas located to the west of the city were assigned to representative residential districts featuring diverse degrees of density²⁰. Apartments of a lower standard, mixed in with industrial areas, were placed mainly in the eastern (Grzegórzki, Wesoła) and southern (Kazimierz, Dębniki) parts of the city²¹.

The wedge of typologically diverse residential buildings that was featured in the Plan and that pierced the space between the city lawn of Błonia to the south and the railway line bound for Silesia in the north, constituted the largest development area of the city according to the document. This is roughly the area of the current fifth and sixth districts. Throughout the entire period of the two decades of the Interbellum, as well as during the Nazi occupation and in the years of the People's Republic of Poland, these areas were subjected to the processes of parcellation and urbanisation.

¹⁵ In areas where no local plans are in effect.

¹⁶ Or that are completely incompatible with each other, only very vaguely referring to the regulations of the Study in force at the time of their development, which, in light of Polish law, not even a legally binding document. This was written about by many authors of publications listed in the *References* (e.g. [32, 33, 6, 1, 61–63, 56, 57]).

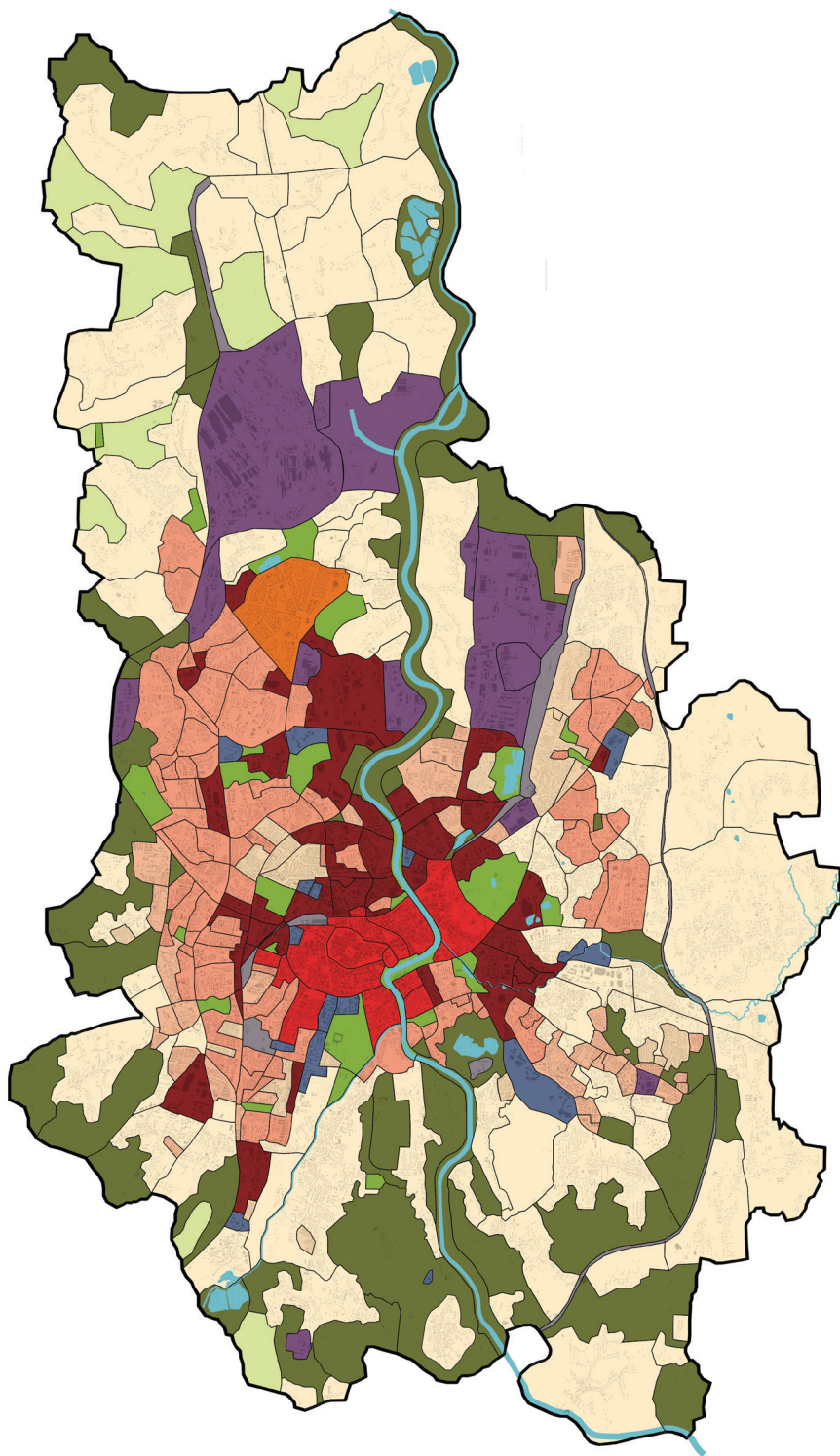
¹⁷ Regarding their role in the shaping of the structure of Cracow – see, for instance [24].

¹⁸ The method used partially refers to, in spirit, to the works of professor Bogdanowski (*architectural and landscape units*), however, it appears to be much more objectivised: [8].

¹⁹ Whose authors were Józef Czajkowski, Władysław Ekielski, Tadeusz Stryjeński, Ludwik Wojtyczko and Kazimierz Wyczyński. It was the first significant planning document after several decades of blocking the city's development due to it being a fortified borderland stronghold – cf. for instance: [44, 14].

²⁰ The urban multi-family residential buildings in these areas were placed adjacent to villa districts and city green areas, such as Błonia Krakowskie, Park Jordana and the future sports grounds of the Wisła and Cracovia sports clubs that were established in 1906.

²¹ The significance of the Plan of Greater Cracow to the later spatial development of the entire metropolitan layout is enormous and has been the subject of numerous scientific works many times. It was discussed in detail by, among others, Krystian Seibert in a previously cited book from 1983.



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Typology of morphogenetic units


















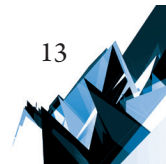
	Borders of morphogenetic units
	Administrative limits of the city of Krakow
	Buildings
	Open waters
Morphogenetic units [412]	
	Units primarily featuring buildings of a character typical of a city centre [14]
	The historical city of Nowa Huta as a morphogenetic superunit [1]
	Units primarily featuring multi-family residential buildings (1945-1989)[80]
	Units primarily featuring multi-family residential buildings (built after the year 1989)[86]
	Units primarily featuring ordered single-family residential buildings [19]
	Units primarily featuring unstructured single-family buildings and those of a suburban character [80]
	Units primarily featuring buildings with an educational and pilgrimage-related form of use [16]
	Units primarily featuring buildings with a production, storage and municipal technical services-related form of use [13]
	Hybrid morphogenetic units as potential intervention sites [43]
	Units featuring restricted areas [9]
	Units primarily featuring composed green areas [28]
	Units primarily featuring unstructured green areas [54]
	Units primarily featuring agricultural areas [9]

Fig. 2. Cracow 2016 – division into morphogenetic units along with their typology – developed by M. Gyurkovich, P. Tota (source: [21, pp. 41, 53–54])



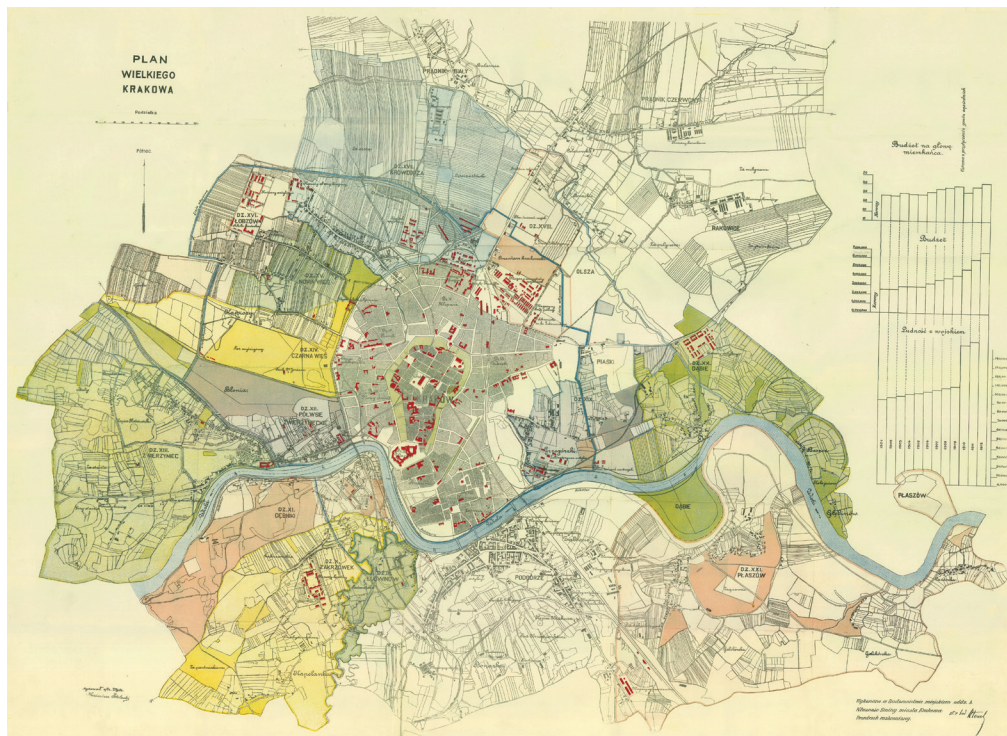


Fig. 3. Cracow – The Greater Cracow Plan, 1912 version
(source: archive of the Institute of Urban Design of the CUT)

Despite the demolishing of a part of the fortifications of the core of the fortress – the “noyau”, we can still see significant areas exempted from civilian use (barracks and military storehouse complexes near Warszawska, Montelupich, Raclawicka, Wroclawska streets and in the district of Grzegórzki) in the plans from the Interbellum period. To this day, despite a change of the form of use of most of these areas (despite one complex at Raclawicka street and the area between Wroclawska and Głowackiego streets), they are easily recognisable in urban tissue, constituting, unambiguously, separate units, which can only serve to confirm the enormous influence of the XIX century Austrian fortress on the morphological structure of modern Cracow.

As a result of these transformations, it was possible to establish highly diverse urban tissue in this area, where Interbellum-period townhouses and urban villas, as well as representative residences are accompanied by relics of rural-type buildings, city block in-fills of a varied typology and form, as well as small complexes of prefabricated panel building apartment blocks of differing, yet easily predictable²² heights. Today, these areas belong to the most centrally (despite the historical core of the city that has been shaped since the beginning of the XX century and has been placed on the UNESCO World Heritage Site List²³) located districts of the city, irrefutably constituting the heart of a metropolis. This begs the question whether there is still a place for substandard urban substance

²² Due to the solutions of industrialised construction employed in the 1960's and 1970's.

²³ Both as a protected area – the Old Town, Wawel and Kazimierz – since 1978; as well as the buffer zone within the core (noyau) of the Cracow Fortress – since the year 2010 [74].

in such a key area of the city – a substance that imitates the former layout of the villages from around Cracow²⁴ and that increases spatial chaos in the centre. Especially in light of the fact that this structure is constantly made denser, particularly in areas that have been reclaimed from former users (industry and the military). A striking example of such interventions is the residential development (built as a series of independent projects designed by different architects) that fills in the formerly industrial areas between Raclawicka, Poznańska and Wrocławska streets and the railway tracks. Morphological dissimilarity, a disruptive scale and non-contextuality are the identifying traits of the – architecturally attractive, nonetheless – urban form of this heterogeneous complex.

Contrary to other Polish cities, whose urban structure has substantially suffered during the time of the Nazi German occupation of World War II, at the time of its ending Cracow²⁵ found itself enriched by 168 km² of land formerly belonging to suburban communities, a developed and modernised street network and a number of monumental urban layouts whose construction was just getting started. What is interesting, in their overall objectives, apart from plans of bombastic administrative districts at the foot of Wawel Hill, in Dębniki and in the area of Błonia, the German plans were a continuation of the pre-war plan by Dziewoński²⁶ in the western districts, which was also based on a continuation of the key features of the plan of 1910. The new residential district for the arriving civilian German population, located near the newly established Królewska street (then named Reichstrasse) [19] which was opened in 1941 and that led from the centre in the direction of the Palace in Łobzów (which was then used as a military barracks), deserves particular attention.

The form and urban composition of the areas that were planned and built during the period of the Interbellum and during World War II, based chiefly on city blocks and monumental public buildings connected to green areas and paved squares, resembles a traditional XIX century city, although the architectural forms themselves were different. Similar in both principle and construction is the urban structure of the oldest part of Nowa Huta²⁷, which was initially being built as a separate urban organism from 1949 onwards, but that was relatively rapidly incorporated into Cracow. Although the scale of the buildings is also somewhat different at times, a structure that mostly resembles the general idea of a European city was built nonetheless. The incorporation of the new urban organism that was Nowa Huta – which was located around 7 km to the east – caused the need to physically connect the city not only through the circulation system (roads and railways), but also through the layout of the

²⁴ In most cases the architectural substance was heavily modified or completely redeveloped, it thus has no historical or architectural value.

²⁵ The city remained under the authorities of the Nazi occupants from the 6th of September 1939 to the 18th of January 1945, when, along with the rest of the country, it was transferred under Soviet occupation. During this time it played the role of the capital of the so-called General Government, a rump state dependent on Nazi Germany, which was meant to lower the importance of Warsaw, as the capital of occupied Poland, and at the same time take over and germanise the historical role of Cracow [14].

²⁶ Developed in the years 1935–39; cf. [47, pp. 18–20].

²⁷ Nowa Huta, built based on a multi-axial, concentric layout, in which we can find inspiration with Baroque layouts, in combination with communist ideology and spatial principles that refer to neighbourhood units. The socialist realist city was built in accordance with a design developed by a team under the leadership of T. Ptaszycki. Nowa Huta has become the subject of numerous scientific works (e.g. [14, 47, 39, 38, 3]).



Fig. 4. Cracow – plan from the year 1947 (source: archive of the Institute of Urban Design of the CUT)

built environment. The current, historically conditioned development of the city became distorted and the new east-west development direction became dominant for several decades, something that has been confirmed by numerous planning and research works²⁸.

The newly established urban structure chiefly consisted of residential estates featuring prefabricated panel buildings as well as a number of small single-family residential complexes, featuring villas, terrace houses or other typologies²⁹, and which mostly (at least from the perspective of design objectives) constituted wholes composed in line with modernist and functionalist urban planning principles. Unfortunately, it was not possible to build all of the elements of these layouts. Especially those associated with circulation and service infrastructure were not implemented in a satisfactory manner. Similarly composed green areas or other types of public spaces do not constitute spatially legible and well-functioning systems on the scale of the city outside of Cracow's city centre³⁰.

²⁸ The administrative decision regarding its incorporation into Cracow on the day of 1.01.1951 as one of six districts (Cracow is currently divided into eighteen districts) brought with it additional changes and planning decisions, which have changed the spatial structure of the city forever. Instead of the historical axial layout that was developing along the N-S axis, subsequent city development plans (see References) feature belts of buildings oriented along the E-W axis, one in the north and another in the south of the city (cf. also, for instance [39, 47]).

²⁹ E.g. the immensely interesting Widok Zarzecz housing estate composed of atrial houses by M. Buratynska-Seruga and her team.

³⁰ As shown in research by A. Ziobro in: [21, pp. 144–168].

4. Complicated contemporary urban form of Cracow

Multi-family structures that appeared around the entire city after the year 1945 (apart from the centre of Nowa Huta), are still mixed with agricultural areas and the aforementioned relics of the former villages that used to be located around Cracow and that were being incorporated into the city throughout almost the entirety of the XX century³¹. In general, regardless of location within the city's structure, the planning of residential buildings as a part of these groupings is the result of secondary divisions, as well as the combination and adaptation of the layout of parcels of former agricultural areas. At times, especially on the outskirts of the city, in the so-called *suburban zone*³², but also in areas that are currently located closer to the city centre, they have legible centres of complexes that were once the centres of villages (Tyniec, Mydlniki, Skotniki, Bronowice Małe, Piaski Wielkie). Cracow's distinct quality is that single-family residential buildings are encountered practically all over the city, apart from the city centre inside the area encircled by the II bypass. They create typologically diverse groupings and groups – both large and small – either composed or chaotic in their layout.

A significant number of diverse projects, chiefly carried out by private developers on sites of varying size, spread nearly all over the administrative area of the city, could be seen in the space of Cracow during the last quarter-century. Residential projects, both multi and single-family ones, which were characterised more precisely in the oft-cited work [21], are the majority here. At times, they form composed wholes (units) or constitute a harmonious supplementation of earlier – currently historical – architectural and urban layouts. At other times they remain without any compositional connection with the extant context or even disrupt composed spatial layouts that have existed for decades (which is particularly visible in the case of residential and mixed-use residential and commercial projects that constitute the “densification” of multi-family residential estates from the second half of the XX century). They are sometimes built outside of built-up areas that have an urbanised character, amid green or agricultural areas, or in the area of the former villages that surrounded Cracow, which have currently found themselves inside the city's administrative limits³³. The still-considerable amount of gated communities, built in such a manner that the continuity of the urban public domain is not being extended, also aids in the increasing of spatial chaos in many fragments of the city. Furthermore, we can also observe the tendency of the fencing off and fragmentation of the existing “modernist” spatial layouts of estates, and even the fencing off of individual buildings located in compact urban tissue and the reduction of common areas to, oftentimes, little more than road lanes.

³¹ The last areas were incorporated into Cracow in 1986 – cf. [14].

³² According to the terminology of the SUIKZP currently in force, however, as we know, this is a common occurrence in Polish cities (e.g. [22, 37, 32, 33, 6, 51]).

³³ Increases in the amount of residential buildings were discussed in detail by A. Ziobro in: [21 pp. 144–168].



Fig. 5. Cracow, north-western part – fragment of an orthophotomap from the year 2004 (source: [75])

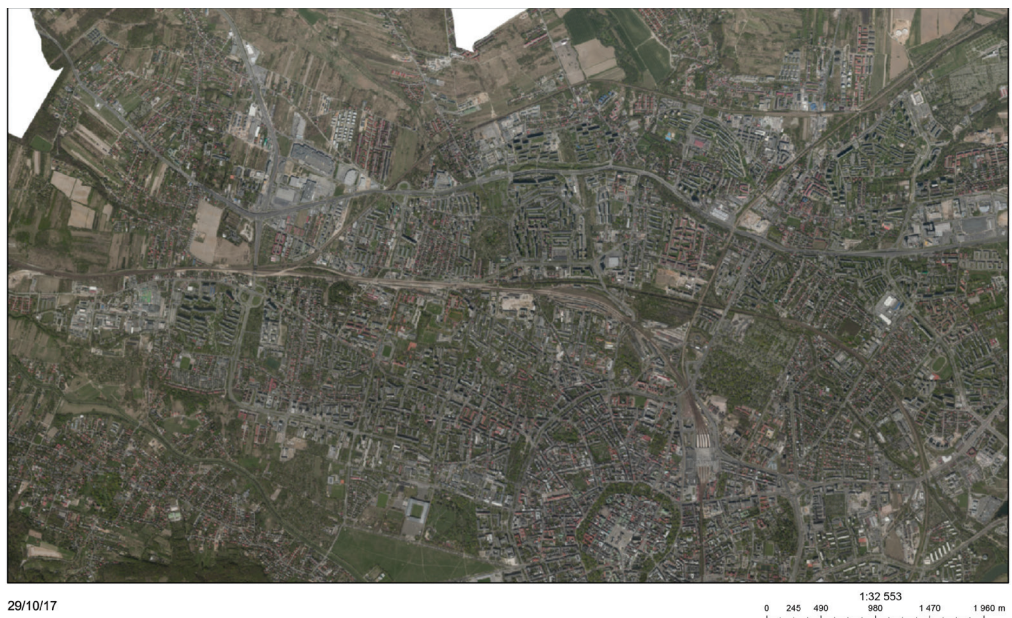


Fig. 6. Cracow, north-western part – fragment of an orthophotomap from the year 2015 (source: [75])



Fig. 7. Cracow, south-western part – fragment of an orthophotomap from the year 2004 (source: [75])

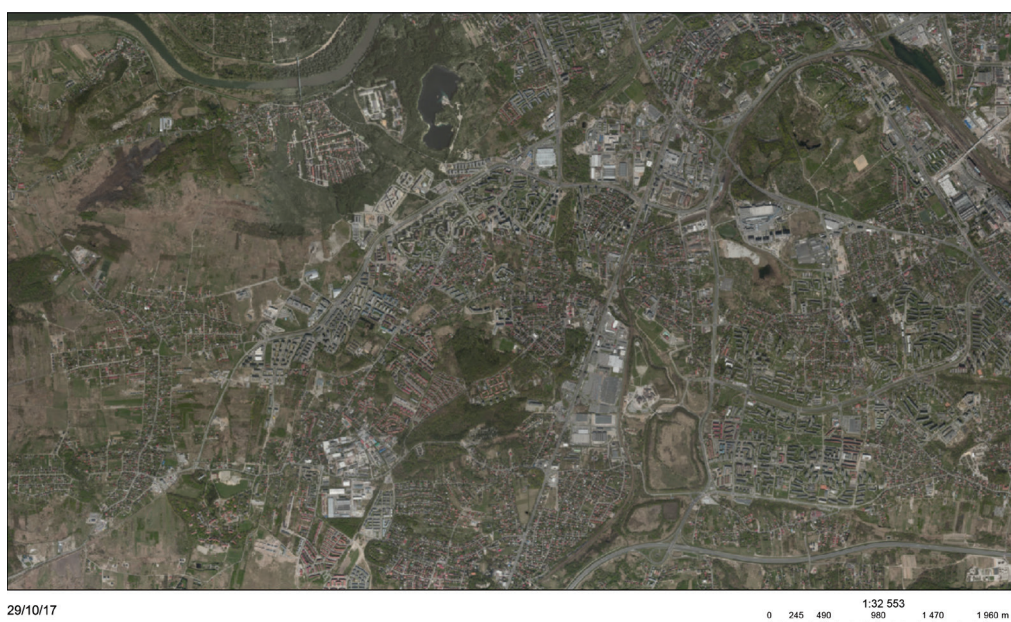


Fig. 8. Cracow, south-western part – fragment of an orthophotomap from the year 2015 (source: [75])



Fig. 9–12. Cracow, relics of rural and farm-type buildings in the context of Sienkiewicza, Wrocławska and Kijowska streets in the strict city centre (photo by M. Gyurkovich)



Fig. 13. Zarzecze street, currently also a central area of the city (the 6th district) – the preserved urban layout of a former village (photo by M. Gyurkovich)



Fig. 14. Cracow – Przegorzały. Prestigious villa district in the western part of the city at the foot of Las Wolski in the Sowiniec belt. The lack of common areas (sidewalk, composed greenery) and the Americanisation of the space of Cracow, making residents dependent on travelling by car (photo by M. Gyurkovich)

5. Summary

Quite interesting plans and projects that have the potential to change the city into one of the most important polycentric centres of the country seem to appear more and more often, proposed by the local administration of different levels³⁴. Up until now, not many changes and projects of a metropolitan scale have been initiated. It is really hard to distinguish most of the declared local centres of the future metropolis from among the sprawled urban-rural fabric which surrounds the slightly more defined and composed central districts of Cracow. Even within the city's administrative borders one can still observe numerous areas featuring a sprawled, low-density structure³⁵. Exurbanisation in Poland is founded on a completely different historical, social and economic basis than the one in North America or Western Europe [48]. The different spatial representation of sprawl is the result of the abovementioned situation. Administrative divisions and borders are imperceptible in space. Loosened, chaotic individual buildings mixed with new estates of detached and multifamily houses shape the landscape of the belt around the modern city, covering several dozen square kilometres³⁶.

The fall of the communist political system in Poland in 1989, combined with an increase in the possibility of building individual homes, has caused an increase in the number of houses within and around Cracow. At the same time, this process was not accompanied by any infrastructural projects on the municipal, metropolitan or regional scale, which can be observed on the examples of aerial photos from 2004 and 2015, that have been presented in the article, and which show parts of the modern urban fabric of Cracow. Situations like this are unusual in the abovementioned countries³⁷, where sprawl has appeared as one of the results of the growth of the traffic network. The Polish version of urban sprawl has more in common with the process of the creation of slums around the metropolises of Latin America, Africa or Asia, but the spatial effect and the developers of new buildings are entirely different [26]. This is mostly the result of the chaotic formation of new projects during the last three decades, in addition to contemporary attempts at creating a polycentric urban organism, that could compete with other, well organised ones, at the international level. Is such a spatial structure capable of evolving into the layout of a polycentric metropolis that has been declared for

³⁴ See: *References*.

³⁵ Unfortunately there seems to be, that there are no administrative policies against sprawl, on the contrary – more and more areas are changed from rural use or urban greenery to built-up use. The above-mentioned Spatial Development Conditions and Directions Study of Cracow from 2014, which should be the basis for the local plans, secures vast areas for future housing use of different kind – many for single-family one. Altogether the surface devoted for housing areas in Cracow is already prepared to accommodate way much more of inhabitants, than the long-term demographic prognosis for entire region (see *Planning documents* [69, 70]). According to the demands of the land owners, those changes are constantly introduced in the uncoordinated local plans, which are still – by the way – not covering the 100% of the city limits [76].

³⁶ Which has its justification in historical land ownership divisions that were typical of *Galicja* (the former Austrian partition) – see, for instance: [33].

³⁷ Compare with US and situation in Portland [49].

years³⁸? Is Cracow condemned to become an urban organism bereft of the principles known from the history of urban composition³⁹? Will its metropolitan rank be preserved, despite its imperfect urban form? Can the dream of the Cracow Metropolis ever come true?

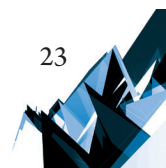
References

- [1] Bajwoluk T., *Konflikty strukturalne w tkance miejskiej i podmiejskiej Krakowa*, [in:] Maciejewska A. (ed.), *Współczesne uwarunkowania gospodarowania przestrzenią – szanse i zagrożenia dla zrównoważonego rozwoju: proces inwestycyjny*, Oficyna Wydawnicza PW, Warszawa 2014.
- [2] Bartkowicz B., *Przyczyny braku kompozycji i piękna w przeobrażeniach i rozwoju miast*, Teka KUiA PAN, Vol. XXXIII, Kraków 2001.
- [3] Biedrzycka A. (ed.), *Nowa Huta. Architektura i twórcy miasta idealnego. Niezrealizowane projekty*, Muzeum Historyczne Miasta Krakowa, Kraków 2007.
- [4] Biere Arenas R., Gyurkovich M. (eds.) *Back to the Sense of the City: 11th VCT International monograph book, Year 2016, July, Cracow*, CPSV, Barcelona 2016, www.upcommons.upc.edu/handle/2117/90350 (access: 09.03.20137).
- [5] Bitner A., *Nowa metoda określania poziomu zurbanizowania obszaru na podstawie morfologii struktury podziału gruntu na działki*, [in:] *Infrastruktura i ekologia terenów wiejskich*, No. 3/2010, Polska Akademia Nauk, Oddział w Krakowie, Komisja Technicznej Infrastruktury Wsi.
- [6] Blazy R., *Deformation of the City*, Technical Transactions 9/2017.
- [7] Bogdanowski J., *Warownie i zieleń Twierdzy Kraków*, Wyd. Literackie, Kraków 1979.
- [8] Bogdanowski J., *Metoda jednostek i wnętrza (JARK-WAK) architektoniczno-krajobrazowych w studiach i projektowaniu*, [in:] *Nowe idee i rozwój dziedziny architektury krajobrazu w Polsce*, III Forum Architektury Krajobrazu, materiały konferencyjne P. Wolski (ed.), Ośr. OZK, Warszawa 2000.
- [9] Bojanowski K., *Strategia dla Krakowa – koncepcja rozwoju przestrzeni publicznych. Monolog o polskiej urbanistyce*, Wyd. PK, Kraków 2013.
- [10] Böhm A., *O czynniku kompozycji w planowaniu przestrzeni*, Wyd. PK, Kraków 2016.
- [11] Busquets J., *Urban compositions: City Design in the 21st Century*, [in:] Graafland A., Kavanaugh L.J. (eds.), *Crossover. Architecture, Urbanism, Technology*, 010 Publishers, Rotterdam 2006.
- [12] Chmielewski J.M., *Teoria Urbanistyki*, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1996.
- [13] Cullen G., *The Concise Townscape*, The Architectural Press, London 1986.
- [14] *Encyklopedia Krakowa*, PWN, Warszawa–Kraków 2000.

³⁸ For instance in the concept of “Cracow of small towns” formulated in the plan of the city from the year 1988, developed by Z. Ziobrowski and his team. See [57, 58]

³⁹ See, for instance: [15, 27, 31, 40]

- [15] Gyurkovich J., *Znaczenie form charakterystycznych dla kształtowania i percepcji przestrzeni. Wybrane zagadnienia kompozycji w architekturze i urbanistyce*, Monografia 258, Wyd. PK, Kraków 1999.
- [16] Gyurkovich J., *The significance of contemporary transformations of urban areas for the global processes of urbanization*, Technical Transactions, 1-A/1/2012.
- [17] Gyurkovich J., Matusik A., Suchoń F. (eds.), *Cracow: selected problems of the urban structure evolution*, Wyd. PK, Kraków 2016.
- [18] Gyurkovich M., *In search of the urban composition of sub-centres in polycentric European metropolises*, [in:] ACE – Architecture, City and Environment / Arquitectura, Ciudad e Entorno No. 18, 2, February 2012.
- [19] Gyurkovich M., *Transformations of public space in multifamily residential complexes in the western part of Cracow*, [in:] Gyurkovich M. (ed.), *Future of the city: mass housing estates or multifamily housing complexes?*, Eco Rehab 3 Cracow 2012, Cracow University of Technology, Cracow 2012.
- [20] Gyurkovich M., Szarata A., Zuziak Z.K., *Model Przestrzennej Struktury Krakowa. Perspektywa planistyczna. Etap I – Założenia modelu strukturalnych zmian w zagospodarowaniu przestrzennym miasta Krakowa*, reaserch project prepared for the City Council of Cracow, Instytut Projektowania Urbanistycznego, Politechnika Krakowska, Kraków 2016.
- [21] Gyurkovich M., Szarata A., Zuziak Z.K. et al., *Model Przestrzennej Struktury Krakowa. Perspektywa planistyczna. Etap II – Zdefiniowanie modelu przestrzennej struktury Krakowa*, reaserch project prepared for the City Council of Cracow, Instytut Projektowania Urbanistycznego, Politechnika Krakowska, Kraków 2017.
- [22] Gzell S., Wośko-Czerankowska A., Majewska A., Świeżawska K., *Miasto zwarte. Problem terenów granicznych*, Międzyuczelniane Zeszyty Naukowe, Urbanistyka, Akapit-DTP, Warszawa 2011.
- [23] Harvey D., *Bunt miast. Prawo do miasta i miejska rewolucja*, Fundacja Nowej Kultury Bęc Zmiana, Warszawa 2012.
- [24] Hodor K., *Urban parks and their value: Cracow Examples*, Technical Transactions, 1-A/2016.
- [25] Hrabiec A., Ziobro A., Baran S., *Reflection about the Future of Cracow Metropolis*, Space & Form No. 17/2012.
- [26] Kajdanek K., *Suburbanizacja po polsku*, Nomos, Kraków 2012.
- [27] Kantarek A.A., *O orientacji w przestrzeni miasta*, Monografia 368, Wyd. PK, Kraków 2008.
- [28] Kantarek A.A., *Urban form and orientation in urban space*, [in:] Oliveira V. et al., *ISUF: Our Common Future in Urban Morphology*, Vol. 2, ISUF2014: 21st International Seminar on Urban Form, Porto, Portugal, www.isuf2014.fe.up.pt/ISUF2014%20ebook.pdf (access: 05.08.2017).
- [29] Kantarek A.A., *Morfologia i typologia formy urbanistycznej*, [in:] Kantarek A.A., Gyurkovich J. (eds.), *Wyznaczniki kształtu współczesnej przestrzeni urbanistycznej*, Wyd. PK, Kraków 2015.
- [30] Kochanowski M., Lorens P. (eds.), *Miasto – wspólne dobro i zbiorowy obowiązek*, Materiały I Kongresu Urbanistyki Polskiej, BU 2, Urbanista, Warszawa 2004.



- [31] Kosiński W., *Paradigm of the City of the 21st Century. Between the Past of the Polis and the Future of the Metropolis*, Wyd. PK, Kraków 2016.
- [32] Kowicki M., *Patologie/wyzwania architektoniczno-planistyczne we wsi małopolskiej studium na tle tendencji krajowych i europejskich*, Wyd. PK, Kraków 2010.
- [33] Kowicki M., *Rozproszenie zabudowy na obszarach Małopolski a kryzys kreatywności opracowań planistyczno-przestrzennych*, Wyd. PK, Kraków 2014.
- [34] Lynch K., *Good City Form*, The MIT Press., Cambridge Mass., London 1984.
- [35] Lynch K., *The Image of the City*, The MIT Press., Cambridge Mass., 1960.
- [36] Majda T, Mironowicz I. (eds.), *Manifesty urbanistyczne*, BU 15, TUP, Warszawa 2017.
- [37] Melges H. *Architectural transitory zone between city and village (based on chosen examples Kraków–Śląsk agglomeration)*, Technical Transactions, 1-A/2007.
- [38] Motak M., *Historia rozwoju urbanistycznego Krakowa w zarysie*, Wyd. PK, Kraków 2012.
- [39] Mydel R., *Rozwój urbanistyczny miasta Krakowa po drugiej wojnie światowej*, Secesja, Kraków 1994.
- [40] Paszkowski Z., *Miasto idealne w perspektywie europejskiej i jego związku z urbanistyką*, Universitas, Kraków 2011.
- [41] Podhalański B.M., *Building polycentricity of the Metropolitan Region of Kraków and Katowice*, Technical Transactions, 5-A/2008.
- [42] Podhalański B.M., *Integrowanie przestrzeni metropolitalnych*, Monografia 443, Wyd. PK, Kraków 2013.
- [43] Purchla J., *Jak powstał nowoczesny Kraków*, Wyd. Literackie, Kraków 1990.
- [44] Purchla J., *Kraków w Europie Środką*, BOSZ, Olszanica, Kraków 2008.
- [45] Salinger N., *Eight City Types and their Interactions. The "Eight-Fold" Model*, Technical Transactions, 2/2017.
- [46] Samuels I., Panerai P., Castex J., Depaule J.Ch., *Urban Forms. The Death and Life of the Urban Block*, Architectural Press, Oxford, Burlington 2005.
- [47] Seibert K., *Plan Wielkiego Krakowa*, Wyd. Literackie, Kraków 1983.
- [48] Sotoca Garcia A., Massuet Villamajó M., *The next city: low density territories in the metropolitan area of Barcelona*, Technical Transactions, 1-A2/2012.
- [49] Sotoca A., *Lessons from the world: Urban growth in the USA: from tracing boundaries to complex management: the Metro Portland case study*, GRU Urbanism Research Group 2014, http://urbact.eu/fileadmin/Projects/USE_ACT/documents_media/USEAct_III_report_ISTANBUL.pdf
- [50] Sudjic D., *Język miast, Karakter*, Kraków 2017.
- [51] ULAR 5 – *Urban Landscape Renewal- Between City and Non-City, proceedings of Scientific Conference*, Sulimowska-Ociepka A. et. al. (eds.), Silesian University of Technology, Faculty of Architecture, Gliwice 2010.
- [52] *Urban Agenda for the EU 'Pact of Amsterdam'*, Agreed at the Informal Meeting of EU Ministers Responsible for Urban Matters on 30 May 2016 in Amsterdam, The Netherlands.
- [53] *Urban Sprawl in Europe, The ignored challenge*, European Commission, Directorate-General, Joint Research Centre, European Environment Agency, EEA REPORT, No. 10/2006.

- [54] Wejchert K., *Elementy kompozycji urbanistycznej*, Arkady, Warszawa 1974.
- [55] Węclawowicz-Bilska E., *Directions of contemporary, spatial development of European cities*, Technical Transactions, 3-A/2011.
- [56] Węclawowicz-Bilska E. et al. (eds.), *Skuteczność planów zagospodarowania przestrzennego. Potrzeby i możliwości*, materiały międzynarodowej konferencji naukowej, Instytut Projektowania Miast i Regionów, Wydział Architektury PK, Kraków 2004.
- [57] Ziobro A.B., *Model interpretation of the metropolitan spatial structure in development plans of the Cracow and its region. Period 1960–2010*, doctoral thesis, Faculty of Architecture, CUT, Cracow 2014.
- [58] Ziobrowski Z., *Urbanistyczne wymiary miast*, IRM, Kraków 2012.
- [59] Zipser T., *Prediction of states, modelling of processes and building the decision*, Architectus, No. 3(47)/2016.
- [60] Zuziak Z.K., *Sterowanie procesami suburbanizacji w obszarze wzajemnych oddziaływań Katowic i Krakowa – spojrzenie z Krakowa*, Czasopismo Techniczne, 15/2005.
- [61] Zuziak Z.K., *O tożsamości urbanistyki*, Wyd. PK, Kraków 2008.
- [62] [Zuziak, Z.K., *Metropolitan form and sustainable mobility*, Technical Transactions, 1-A/2010.
- [63] Zuziak Z.K., *Urban structures and metropolitan planning*, [in:] Węclawowicz-Bilska E. (ed.), *New ideas in planning for territorial development*, Vol. 2, *The problems of metropolitan areas and big cities: collective work*, Monografia 546, Wyd. PK., Kraków 2017.
- [64] Plan ogólny Krakowa (1967 r.), opracowany pod kier. Stanisława Hagera.
- [65] Plan Ogólny Krakowskiego Zespołu Miejskiego (1977), opracowany pod kier. Krystiana Seiberta.
- [66] Miejskowy Plan Ogólny Zagospodarowania Przestrzennego Miasta Krakowa (1988), opracowany pod kier. Zygmunta Ziobrowskiego.
- [67] Miejskowy Plan Ogólny Zagospodarowania Przestrzennego Miasta Krakowa (1994), opracowany pod kier. Zygmunta Ziobrowskiego.
- [68] Studium Uwarunkowań i Kierunków Zagospodarowania Przestrzennego (2003), opracowane pod kier. Roberta Kuzianika.
- [69] *Zmiana Studium Uwarunkowań i Kierunków Zagospodarowania Przestrzennego Miasta Krakowa, t. I–III*, załącznik do Uchwały nr CXII/1700/14 Rady Miasta Krakowa z 9 lipca 2014 r., Biuro Planowania Przestrzennego UM Krakowa, Kraków 2014.
- [70] *Strategia Rozwoju Województwa Małopolskiego Na Lata 2011–2020*, przyjęta Uchwałą Nr XII/183/11 Sejmiku Województwa Małopolskiego z dnia 26 września 2011 r., s. 37, 111, 127.
- [71] www.stat.gov.pl/statystyka-miedzynarodowa/porownania-miedzynarodowe/tablice-o-krajach-wedlug-tematow/terytorium-i-ludnosc (access: 5.06.2017).
- [72] www.Cracow.pl/biznes/1140,artykul,liczby_o_Cracowie.html (access: 5.06.2017).
- [73] www.encyklopedia.pwn.pl (access: 5.06.2017).
- [74] www.unesco.org (access: 02.05.2017).
- [75] City Spatial Information System, <http://msip.um.krakow.pl/obserwatorium> (access: 29.10.2017).
- [76] <http://obserwatorium.um.krakow.pl> (access: 06.11.2017).

