

## NODAL POINTS IN THE STRUCTURE OF KRAKÓW'S INNER CITY

### Daniel Ogrodnik

PhD.Arch., Assistant Professor

[dogrodnik@pk.edu.pl](mailto:dogrodnik@pk.edu.pl)

Central City Areas Design Studio

Institute of City and Region Design, Faculty of Architecture

Cracow University of Technology

Warszawska Str. 24, 31-155 Kraków, Poland

[a-5@pk.edu.pl](mailto:a-5@pk.edu.pl)

+48 12 628 2050

**Key words:** spatial structure, polycentricism, central districts, nodal points

### Abstract

In line with the leading topic of the conference *Back to the Sense of the City*, the author discusses problems related to the process of emergence of key fragments of the contemporary city. These are activity and development concentrations of various kind called nodal points. Their form and content reflect both the condition of a city as a social organism and the influence of the mechanisms (of the market and regulatory nature) responsible for its spatial growth. The article presents the general theoretical and methodological grounds on which the study of this problem area has been based as well as the analysis of the situation in certain selected areas in central Kraków, such as *Krakowskie Centrum Komunikacyjne* /Kraków Transportation Centre/, *Zabłocie*, the area of the *Market Hall in Grzegórzki* and the *Mogilskie Roundabout*. In conclusion, the author defines the main spatial problems in shaping nodal points in Kraków's central districts and presents them against the backdrop of how similar areas have been dealt with in other European cities.

### The research objective, definitions and typology

The author's research objective was further development of expertise in spatial planning and urban design of contemporary large city and metropolitan structures. What is needed, for example, is tuning the techniques of planning graphic representation to the contemporary social, economic and infrastructural conditions as well as to the theoretical and visionary trends. The inconsistency between the present approach to defining spaces and the actual dynamics of transformations and currently occurring phenomena is particularly visible at points and in areas of special significance for crystalizing the urban structure, which for some reasons stand out because of their tendency to cumulate activities and their corresponding spaces (see: Zuziak, 2011).

Such places, called *nodal points*, become of key importance for numerous aspects of life in the contemporary city. Their unique character is generated by convenient transportation

accessibility, the merits of their spatial development or by other beneficial factors. They stand out in the structure of the city owing to their high level of functional integration. The nodal points or areas are not synonymous with the concept of the urban centre, but instead they are more of a component of such centre or a germ from which such centre may develop. The building material of nodal points are diverse forms of urban spaces: passages, courtyards, enclosures, foregrounds of buildings, public transport stops, footbridges or large crossroads, which ever more often co-create the environment in which metropolis inhabitants live their daily lives. They may be identified by interpreting knots of relations, connections, movement, activity and behaviour types in the so-called “*space of flows*” (Castells, 2008).

The author is striving to offer a more in-depth analysis of nodal points by examining the spatial structure of city central areas. In this part of the city, nodal points exist within a complex and multi-layered system of spatial, functional and symbolic relations, emerging at movement and activity concentration knots, at the crossing points of major transportation and composition axes, they may also focus around the so-called primary components, i.e. structures or spaces which generate the development of urban fabric (Rossi, 1984). A special role in crystallization of an inner city spatial structure is reserved for sites located in the surroundings of public transport intermodal transit hubs, due to their accessibility and the potential to create and strengthen spatial connections.

The basic typological classification of nodal points is based on the criterion of location within the spatial structure of a metropolis:

- nodal points in the strict city centre – concentration of potentials characterised by the highest spatial, functional or culture-related merits in the surroundings of major city squares or the main market square,
- nodal points in the city central areas – they are characterised by the intensely concentrated development and heightened levels of activity in the area of major crossroads, squares, railway stations or transport interchange points,
- nodal points within the city structure – major spaces in mono- or multifunctional centre-generating complexes,
- nodal points outside the city structure – monofunctional concentrations, insular in character, separated from the urban fabric, located in the area of major roads.

Another classification is related to the leading role of nodal points in spatial structure crystallization:

- transit hubs within the public transport network,
- places integrating the network of public spaces,
- keystones of metropolitan urban composition,
- culture-related spaces: remembrance sites, symbols,
- nodes in a network of economic, social and administrative connections (decision centres, creativity centres).

The following factors indicating nodal potential have been derived from the functional and semantic contexts outlined above:

- accessibility with the use of various modes of public transport, on foot and on bike;
- the level of activity concentration, not only in the sense of the land use (density and height of development), which may be subject to limitations, e.g. by historic monument conservation restrictions, but also in the sense of the intensity of contacts, interaction, events and processes, assessed in the aspects of quantity, capacity and quality,
- diversity and attractiveness of spaces, programme and function, variety of users, functional and spatial integration,
- urban character and vitality: the structure of contacts and urban life manifestations which demonstrate the nodal role of a place,
- presence of potential and real elements or relations which are significant for building a metropolitan urban composition (axes, dominant features, urban enclosures, culmination points),
- the range of connections and influence of the concentrated functions and activities: local, regional or global.

### Planning the polycentric Kraków

An examination of the nodal structure of Kraków's central areas requires looking at the issue from the perspective of the history of planning the polycentric growth of the city structure. The concept of developing points and areas of nodal character was first envisioned and included in strategic plans for Kraków presented sometime in mid-20th century. Building Nowa Huta in the 50s of the 20th cent. as an independent entity resulted in creation of a bipolar structure of a kind, which considerably affected the way in which growth of the Kraków region structure was planned in many aspects – the question of finding the “*centre of gravity*” of this structure is just one example. The 60s brought some new concepts of rebuilding the inner city and building a new city centre in the vicinity of the main railway station, these concepts were important yet disputable – due to the problems they referred to. However, we may see, in these ideas from 50 years ago, the germs of the nodal points which are developing now.

The Plan for Kraków Urban Complex */Plan Krakowskiego Zespołu Miejskiego/* from the 70s of the 20th century introduced the principles – propagated at the time – of the “*bands and nodes*” system of settlement network. The General Plan of Spatial Development of 1994, which followed the previous plan, really initiated building new urban centres in the seven strategic areas: Krakowskie Centrum Komunikacyjne */Kraków Transportation Centre/*, Kraków-East, Olsza, Dąbie, Ludwinów-Zakrzówek, Kazimierz and Pychowice, all of which were characterised by attractive locations. The plan stipulated that these places would become locations of modern financial and banking, commercial, scientific and cultural centres or exhibition areas of various range of significance (Mydel, 1994, pp. 59 – 65).

The Study of Conditions and Directions of Spatial Development for Kraków of 2003 highlighted the role of the city central areas as well as urban and suburban centres in the process of making the spatial structure of the city more polycentric. An idea was sketched of developing a network of public spaces, integrating the urban structure of the central districts. Its geometry

was based, with the exception of the Old Town, on the major transportation and commercial routes running along the historic streets and contemporary thoroughfares cutting through the city centre. The existing and potential “*spaces of travel*” adjoining railway stations and stops as well as the semi-public enclosures of e.g. office and commercial complexes, including the ones which already were (or were to be) created outside the inner city, were listed among important elements forming the network of public spaces.

In the document of 2014, amending the Study of 2003, the typology of centre-generating concentrations was expanded and special attention was paid to the role of nodal points. Centres and nodes of activity were considered important components of the spatial structure, due to their unique symbolic, aesthetic etc. significance, and were to be characterised by three parameters: transportation accessibility, adequate intensity of flows and development density. The document concluded that the characteristic feature of the policy for building a sustainable polycentric network had to be creation of a spatial urban network with several urban centres of metropolitan significance and one clearly marked out main centre, focusing the functions which are most important for preserving the identity of Kraków.

### **Nodal points in the structure of Kraków’s inner city – case studies**

The selected examples are places adjoining public transport hubs (figure 1). We find there complex aspects of activity concentration and urban character creation. The analysis has been based on the factors determining the nodal point potential which are presented in the introduction.

The nodal area of *Krakowskie Centrum Komunikacyjne KCK* /Kraków Transportation Centre/, i.e. the so-called New Centre in the area of the main railway station is one of the particularly interesting examples of modernisation of a transit hub and rebuilding a city central area as it was one of the first large developer projects in Poland to be realised at the site formerly owned and used by Polish Railways. The project evolved for many years, which in consequence led to its alienation from the scale and forms characteristic of its urban context. Moreover, its use programme had been limited, the amount and size of public spaces reduced, with some of them appropriated, and the issues related to transportation had been sidelined and downgraded.

The subject of analysis are the spaces co-creating the main transport interchange of Kraków: the complex composed of the railway and bus stations, connected with public transport stops and car parks, directly accessible from the second central ring road. It is a densely developed area, situated in close vicinity of the main centre of the city. The major concentration of centre-generation functions is the area to the west of the railway station, i.e. the shopping mall and the still nascent route of services along Pawia street.

The area directly adjacent to the transport hub is insufficiently diversified functionally. The interchange square to the east of the railway tracks is monofunctional and dominated by the road system. The western side has been dominated by the concentration of retail and services, i.e. the shopping mall. In a broader context, however, the nodal area seems to be characterised by a programme variety: block residential development is studded with public facilities,

institutions, universities, culture-related amenities and churches, it is also being gradually completed with facilities of the office and hotel function.

The complex and extensive shape of the transport hub, unclear geometry and scale of the urban module defined primarily by the large-scale commercial facility as well as the road and railway barriers generate the major problem of this nodal area, which is disintegration. The above-mentioned deficiencies weaken the potential of such nodal points in the process of creating the network of public spaces. It must be pointed out, however, that the extensive area of the transport hub, which is an inconvenience from the point of view of passengers, generates flows of movement stimulating concentration of activity in their surroundings.

Vitality is generated primarily by the transport hub, but also by the concentration of services in one of the largest shopping malls in the city – we observe the greatest intensity of contacts here. One component which stands out from the others is the passage under the crossroads between Lubicz and Basztowa streets, connecting the railway station area with the historic city centre. The small scale, the presence and type of services, accumulation of movement and the variety of users have all contributed to the emergence of a true public space here.

The western side of the railway station, particularly Pawia street, the square outside the railway station and the passage under Basztowa-Lubicz crossroads are spaces characterised by a high level of activity throughout the whole day. They possess features typical of a central city space, such as: compact development forming street frontages, integrated routes lined with facilities offering services, public life created by diverse users (visitors, clients, passers-by, employees, residents). It is one of the most vibrant areas of the city central district. The activities are generated mostly because of the close vicinity of the main city centre, the transportation hub and the shopping mall, and – to a slightly lesser degree – by the two universities and other institutions located in the area. The eastern side of the railway station features few movement generators, hence urban life periodically dwindles.

The high potential of this area as the so-called “*space of flows*” is affected by the following: the main hub of the public transport network with a connection to the international airport, a commercial facility of significance going far beyond its adjacent areas, public institutions of higher education, organs of administration, hotels and, finally, the close vicinity of the world-class historic city centre. When it comes to weaknesses, it will certainly be the low number of decision or creative centres.

The KCK area focuses several important axes of the metropolitan composition (Lubicz, Pawia, 29 Listopada and Lubomirskiego streets) which create visual connections and display areas for potential dominant features. The way in which the area over the covered railway platforms (now a car park) is developed will be of crucial significance for completing the urban composition of the district. There have been concepts of locating a multifunctional building at the site, but certain structural problems enforce looking for an alternative ways of developing it, e.g. a light structure hosting a public garden and viewing terraces.

The area of the square at the *Market Hall in Grzegórzki* is potentially one of the major transit hubs of public transport (the planned integrated hub of fast metropolitan railway and numerous

tram lines). The hub may compete with the KCK /Kraków Transportation Centre/ due to its location at the distance of a short walk from the main city centre and many important centre-generating concentrations in the district of Kazimierz. However, the area needs certain improvements related to accessibility and integration with its surroundings, and two issues seem to be of key importance here – clearing the areas around the railway line (a flyover instead of the now existing embankment) and revitalisation of Wielopole street as the main pedestrian route leading towards the Old Town.

The options of putting the area to some more intensive use are limited mostly to tidying it up, complementing the blocks where they are adjacent to the railway line with some new development and using the space under the planned flyover and the fast metropolitan railway (SKM) stop. Considerable flows of pedestrian movement are generated by the market place of significance (also in the cultural aspect) exceeding the neighbourhood in which it is situated, the district of university hospitals and the vicinity of Kazimierz (tourist traffic). The direct surroundings are dominated by block development, mostly residential, of moderate potential to increase the variety of use programme.

The area is characterised by high activity intensity throughout the whole day, mostly owing to the transit hub and market place integrated in one space, but also to the close vicinity of the city main centre. This vitality will be strengthened once the SKM stop and the railway line flyover have been built, which will also improve the accessibility of activity focuses in the surrounding area.

The discussed nodal points are characterised by a lower position in the network of connections going beyond their districts, yet this may change when a railway connection with the airport is launched into operation (access for the tourist- and business-generated traffic). There are relatively few public facilities or significant decision centres in the neighbourhood. This location – in one of the major streets of the city central area – does not stand out much from the metropolitan composition, the only distinguishing features being the historic railway bridge, the building of the Market Hall and the building of the bank in Wielopole street.

*Mogilskie Roundabout* is one of the major nodes in the public transport network, located at the second central ring road. It may be seen as a gate providing access to the strict city centre at the crossroads of the city's major streets: Lubicz, Mogilska, Lubomirskiego and Powstańców Warszawskich. The Kraków City administration centre, the campus of University of Economics, the Kraków Opera and the complex of Jagiellonian University clinics are all within walking distance.

The specific character of this nodal point has been determined by the transit hub which has been located within the extensive roundabout flanking the remnants of the former defence fort. The road arrangement has aggravated disintegration of the already clearly incoherent structure, which is composed of an affluent residential neighbourhood, an office and services complex (courts, prosecutors' offices, administration, a hotel), block development characteristic of city centres and a university campus.

The area in question is of key importance for integrating this part of the city centre. The problem of this place is that urban space disappears where it meets the roundabout. Several attempts have been made to propose a concept of development that would put this space into adequate scale, breathe some life into it and improve the connections with its surroundings. The focus has been placed on assessing the possibility of building some structures inside the roundabout and overcoming the barriers of the wide thoroughfares. The fundamental question is how to design the multifunctional public space of the transport hub and how to define the pedestrian connections with activity focuses in the surroundings, which is particularly difficult because of the “bottlenecks” situated between the development and the road system. Answering these questions seems to be of fundamental significance for strengthening the vitality of this nodal point and its urban character.

It is an area of a discernible diversified programme (culture- and science-related facilities, offices, public administration, health care, residential development, services). Individual functions are grouped into quite extensive and uniform complexes, which are separated from one another. The programme of the nodal point may gain some attractiveness once the project of rebuilding the so-called “Szkieletor” /the Skeleton/ – a high-rise tower commenced in the 70s of the 20th century and never completed – is successfully carried out. The plan for the Skeleton provides creating a residential-office-commercial complex with a representational public space.

Mogilskie Roundabout is a keystone of numerous axes of metropolitan composition, marked out with a high-rise dominant feature. The structures to be built within the roundabout would potentially create terminating vistas of many streets. The urban design implemented in this nodal point will be a particularly interesting example of completing a large-scale composition, combining aspects of integrating transport infrastructure with a multifunctional urban fabric and a network of public spaces.

*Zabłocie* is one of the largest and at present one of the most dynamically transformed of all former industrial areas in Kraków, with a still considerable stock of sites suitable for development. The concentration of office and residential spaces which are being built here will be of significance for the growth of the city central districts. The local land use plan allows building structures from 15 to 25 metres in height, with the development ratio of up to 70%, which creates a considerable potential of development accumulation in the area easily accessible by transport.

The area is characterised by a potentially very diverse use and activity programme: flats, culture-related and educational facilities, work places, services for the tourist traffic, start-ups and microbusinesses. International corporations are also interested in locations here. However, the appeal of the space comes primarily from the services related to culture (museum of contemporary art, historic museum) and remembrance sites of worldwide significance (the Oskar Schindler’s Factory monument). The level of vitality in the area of Zabłocie is growing mostly owing to the intensification of the tourist traffic flowing to the historic remembrance sites, the presence of people employed in the numerous offices in the neighbourhood and students.

After working hours, most of the area seems empty, yet it is beginning to change as the ever more numerous new residents will certainly breathe in some life into the streets.

Due to the configuration of the tram line and the fast metropolitan railway (SKM) stop, which are situated at the distance of 200 m from each other, this place is not very likely to play an important role as a mobility node. Pedestrian accessibility of the stop improves, though, owing to the growing network of public spaces, such as the Ghetto Heroes Square, Lipowa Avenue, the planned foot- and cycle-bridges to Kazimierz and Grzegórzki and the Vistula river park. The weakest link of this network is the area of the SKM stop. The problem with this place is that its urban design has not been integrated with the projects related to the infrastructure. A striking example of the above is absence of any clear connection between the entrance to the planned stop and the urban square planned in Kącik and Lipowa streets, which was to be an important component in the network of public spaces in the area covered by the revitalisation project. Moreover, the square has been dominated by vehicle traffic (the roundabout). Isolating the surroundings of the SKM stop by erecting, nota bene in compliance with the local plan, of an enclosed monofunctional block of residential development, has also been a mistake. This trend, jeopardizing development of a vital network of public spaces, may also be observed in the case of some complexes of office buildings, fenced away and resembling suburban development.

Revitalisation of Zabłocie may also be studied as an example of an emerging node in the city's cultural space. The former industrial structures have concentrated social activities creating cultural life in the city (concerts, film screenings in the open air and food festivals). Today, they are being pushed out of this area by developer projects. The way in which the existing cultural heritage of industrial architecture is being dealt with is also questionable. For example, new owners have been able to obtain permits to demolish the Korngolds' factory or the former Czesław Śmiechowski's Soap Factory (Miraculum) – both historic relicts of industrial architecture.

The railway stop is a specific place – it draws a border line between “the world” of the post-industrial district and the space of the city. This nodal point is hidden within the area of Zabłocie. Perhaps it would not be a bad idea to locate a dominant feature here, which would constitute a visual accent in the panorama of Zabłocie as it is seen from Kotlarski bridge, i.e. along one of the major thoroughfares of the central Kraków.

## Conclusions

The synthesis of the problem situations presented in the article should be preceded by a few observations made by the author while examining the significant examples of transformations carried out in the central areas of several European cities (*inter alia* Amsterdam, Copenhagen, Milan and Turin). Both the already completed projects and the assumptions of the planned undertakings demonstrate the desire to achieve coherence between the three values of nodal points: accessibility, diversity/vitality and connectivity. The resulting urban form reconciles investors' and developers' intent and objectives with the public interest. The success stems from the following grounds on which the city planners' and designers' choices must be based:

clear spatial idea which manifests itself both in the scale of a metropolitan composition and in the development morphology detail, integrated design of city structures and spaces, including the multimodal transportation infrastructure, tuning the zones of various development and activities to the configuration of places of the highest accessibility, striving to strengthen the structure-generating potential by stimulating nodal points' vitality.

Looking at the examples from Kraków in the context of the above observations, we will immediately distinguish the following problems:

- the geometry of the urban fabric in the nodal points is characterised by insufficient clarity, which results primarily in aggravated dysfunctions in the network of public spaces and other adverse functional – spatial phenomena,
- surrounding nodal points of the most convenient accessibility with public transport has been dominated by excessively monofunctional concentrations of services, which weakens the integrating role of the nodal point and lowers the level of vitality of these spaces,
- integration between the network of public spaces and the infrastructure of public transport hubs is clearly insufficient.

Functional or compositional connections emerging between a nodal point and activity focuses indicate development of a specific area of influence, which could be described as a nodal area. Defining relations present within the nodal area is of significance for the proper development of its structure-generating potential or the ability to create and integrate components of the city space. These relations and activities as well as their accompanying spatial features should be subject of *inter alia* morphological study of urban fabric carried out with the objective of arriving at optimum planning graphic representation and defining the conditions of shaping and evaluating important development projects, considerably modifying the inner city structure.

## References

**Castells**, Manuel, *Space of Flows, Space of Places*, materials for *A theory of Urbanism in The Information Age* [in:] T. Haas (ed.) *New Urbanism and Beyond. Designing Cities for the Future*, New York : Rizzoli International Publications, 2008.

**Mydel**, Rajmund, *Rozwój urbanistyczny miasta Krakowa po II Wojnie Światowej*, Kraków : Secesja, 1994

**Rossi**, Aldo, *The Architecture of the City*, New York : The Massachusetts Institute of Technology, 1984

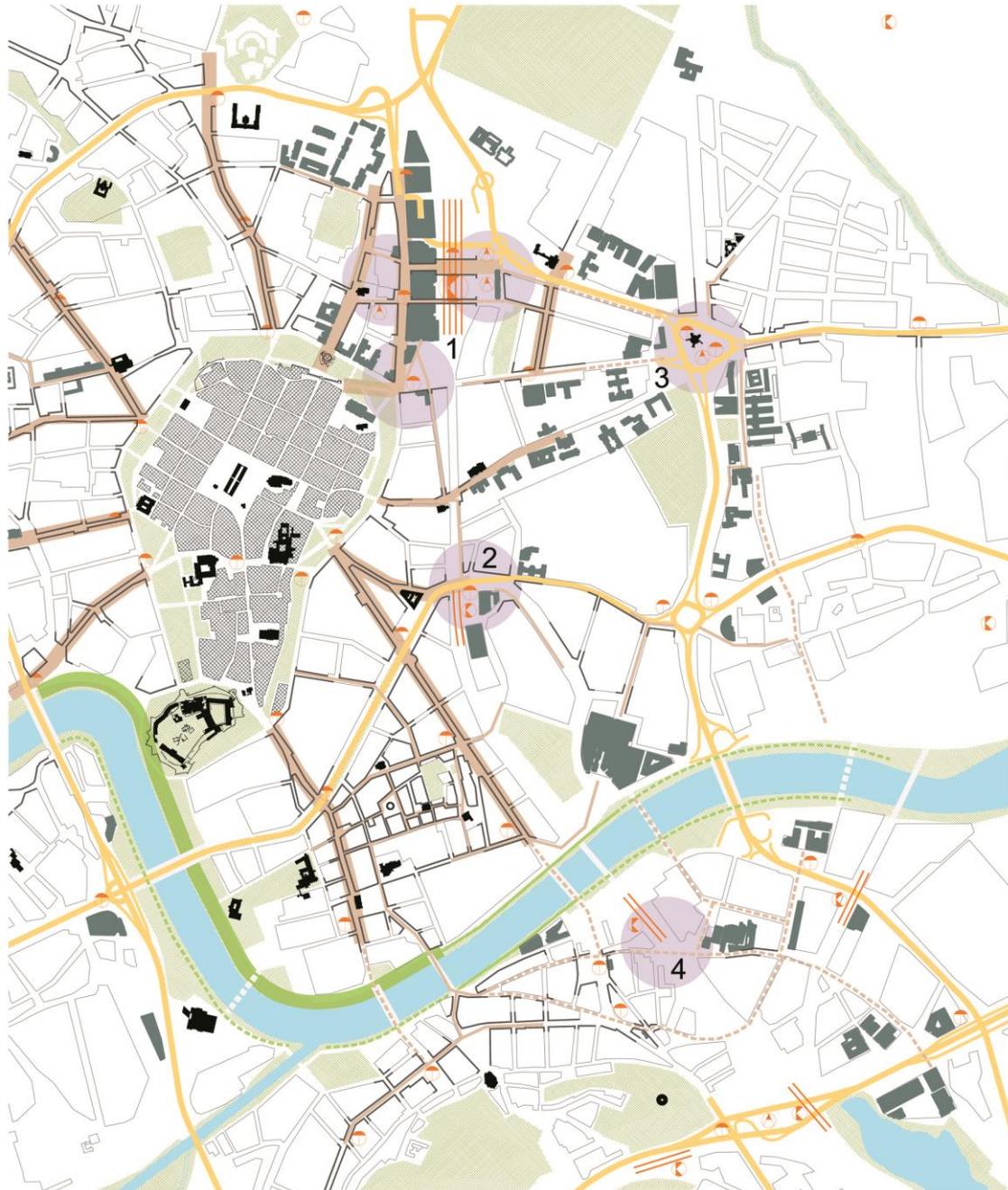
*Study of Conditions and Directions of Spatial Development for the City of Kraków*, Kraków : City Council, 2003

*Amendment to the Study of Conditions and Directions of Spatial Development for the City of Kraków*, Kraków : City Council, 2014

**Wyżykowski**, Andrzej (ed.), *Obszary strategiczne Krakowa*, Kraków : CUT Press, 1997

**Zuziak**, Zbigniew K., *Strategiczne węzły w przestrzeni przepływów*, [in:] *Czasopismo Techniczne/Technical Transactions*, series: Architecture, issue 1-A/2011, Kraków : CUT Press, 2011, pp. 41-47

**Figure 1. Nodal points in the structure of Kraków's inner city.  
Interpretation of potentials.**



1. Kraków Transportation Centre, 2. Market Hall in Grzegórzki,  
3. Mogiłskie Roundabout, 4. Zabłocie

-  Main City Centre (Old Town)
-  important buildings, monuments, dominants
-  public green areas, water

-  activity generators (services, public buildings, workplaces)
-  urban frontage with built-in services
-  main road system
-  public transport stops incl. planned (train, tramway, bus)
-  streams of pedestrian movement and developing directions

Source: the author, 2016