

# PROCESS OF INCORPORATION AND MORPHOLOGICAL TRANSFORMATIONS OF RURAL SETTLEMENT PATTERNS IN THE CONTEXT OF URBAN DEVELOPMENT. THE CASE STUDY OF ŁÓDŹ

TOMASZ FIGLUS 

Department of Political and Historical Geography and Regional Studies, Faculty of Geographical Sciences, University of Łódź, Łódź, Poland

Manuscript received: January 30, 2020

Revised version: May 18, 2020

FIGLUS T., 2020. Process of incorporation and morphological transformations of rural settlement patterns in the context of urban development. The case study of Łódź. *Quaestiones Geographicae* 39(2), Bogucki Wydawnictwo Naukowe, Poznań, pp. 75–95. 8 figs, 1 table.

**ABSTRACT:** The subject of the research covers the problem of morphological changes in former villages incorporated into the city on the example of Łódź. The first objective of the article is to analyse the urban development of the city, taking into account the territorial changes and incorporation of villages. The second objective includes the analysis of morphological changes in former villages that have taken place after their incorporation into the city since the mid-twentieth century. The study required analysis of source materials in the form of preserved historical maps and today's plans, legal acts, planning documents and chosen statistical data. The analysis of changes in the spatial structure of villages incorporated into the city was possible mainly thanks to the retrogressive, as well as progressive method. The article also uses the method of morphological analysis of the city plan based on the Conzenian tradition of urban morphology. The study applies the typology of rural settlement patterns, taking into account the issue of morphological changes and relics of morphological features from the period before the incorporation into the city. It is characteristic that the transformation process of rural settlement patterns took place in different ways and with various intensity depending mostly on the scale of urbanisation processes. It was possible to distinguish the orthomorphic transformations, where all spatial modifications were mainly additions and did not destroy the morphogenetic core, so the former layouts have been preserved almost completely, semi-metamorphic transformations, where spatial reorganisation was considerable, but not total, and clear relics of the historical rural settlement pattern have been saved, and metamorphic transformations, in which almost all elements of the former morphological structure have been completely erased and the former layouts have been totally changed.

**KEYWORDS:** morphology, rural forms, settlement patterns, urban development, Łódź, city, spatial transformation, incorporation

*Corresponding author: Tomasz Figlus, Faculty of Geographical Sciences, University of Łódź, ul. S. Kopcińskiego 31, 90-142 Łódź, Poland; e-mail: tomasz.figlus@geo.uni.lodz.pl*

## Introduction

The subject of the research covers the problem of incorporation and morphological changes in former villages on the example of Łódź within its current administrative borders. Studies on the

transformation of spatial structures of rural settlements are needed from many points of view. Regional research and comparative analyses on this issue provide better opportunities for introducing more efficient ways of urban planning. At the same time, the identification of changes

in rural settlement patterns, taking into account their directions and strength of transformations, provides the basis for a better implementation of local policies in relation to the protection of the historical layout of former villages. The first objective of the article is to analyse the incorporation of neighbouring rural areas into the city of Łódź in the context of urban development. They were examined on the basis of available legal acts and archival maps and then shown using cartographic methods. In the context of urban changes, it was possible to analyse the chronology of incorporation of individual rural settlements into the city and the length of their transformation process after the change of administrative status. The second objective includes the analysis of morphological changes in former villages that have taken place after their incorporation into the city since the mid-twentieth century.

## Materials and methods

The study of incorporations and morphological changes of former villages required analysis of historical source materials in the form of preserved maps from various periods of the city's development, legal acts, planning documents and selected statistical data.

The research covered former villages within the borders of today's Łódź. The main study involved the examination of the entire collection of villages that had been incorporated into the city since the end of World War II. Their historical spatial arrangement was compared with the modern form of layout, using historical maps from the interwar period and today's cartographic sources. Detailed topographic maps issued by the Military Geographic Institute in the scale of 1:25,000 and modern cartographic maps on the same scale were used. Historical maps were available in the form of German copies made during World War II. Map sheets (P41 S29 D, G and H; P42 S29 A and B) are well preserved in many reprints. The author used maps collected in the Library of the Faculty of Geographical Sciences of the University of Lodz<sup>1</sup>. For comparative purposes,

the author used the topographic background on the national geoportal: [www.geoportal.gov.pl](http://www.geoportal.gov.pl), containing current spatial information.

Thanks to the analysis of maps, it was possible to identify general morphological changes in the built-up area and communication system that have occurred in all the villages which were incorporated into Łódź after World War II. The research of the field layout was not included due to the limited availability of detailed geodetic maps for all villages before World War II. Based on the analysis of maps for individual villages, three different categories of settlement units were identified, which showed clear differences in terms of the degree of spatial transformation. Two former villages were randomly selected from each group and studied in detail. This analysis was based not only on available maps, but also included other source materials regarding changes in spatial development in the last few decades.

Qualitative methods were mainly used in the article (Merriam 2009). The analysis of changes in the spatial structure of villages incorporated into the city was possible mainly thanks to the retrogressive method. It is a reconstruction of the facts based on retroactive inference. Having information on the development or disappearance of certain phenomena for a given period, elements of the earlier spatial structure can be identified based on historical sources. In this way, the initial elements and subsequent development stages are reconstructed (Sauer 1941; Gulley 1961; Bloch 1966; Baker 1968, 1975). The author of the article also used progressive methods. In this context, a comparative analysis of the cartographic record in the form of a sequence of preserved plans with available historical materials was made. In this way it was possible to explain the changes of elements of later origin and to follow the entire urban development process (Jäger 1968; Baker, Butlin 1973). The method of the morphological analysis of the city plan was also applied in the article (Conzen 1962, 1968). This allowed identifying any changes in the spatial structure and

---

saufnahme, 1:25 000, sheets: P42 S29 A: 1936 (copy from 1940), P41 S29 G: 1935/1936 (copy from 1940), P41 S29 H: 1936 (copy from 1940), P41 S29 D: 1935 (copy from 1940), P42 S29 B: 1936 (copy from 1940), Biblioteka Wydziału Nauk Geograficznych Uniwersytetu Łódzkiego [Library of the Faculty of Geographical Sciences of the University of Lodz].

<sup>1</sup> Mapa Szczegółowa Polski [Detailed Map of Poland], Wojskowy Instytut Geograficzny [Military Geographic Institute], German copies: Reichsamt für Lande-

development of the city. A comparative and dynamic analysis was made on the basis of linear morphological elements (streets, internal borders) and surface elements (including plots, urban blocks) in terms of shape, size and methods of use. In the interpretation of the examined variability, factors and processes affecting the dynamics of morphological elements were taken into account (Larkham, Conzen 2014). A very important stage of the research procedure was also a field study, thanks to which it was possible to collect additional source materials and verify data based on archival and modern maps (Rippon 2013). The results of the study also included an attempt at typology of rural settlement patterns, taking into account the morphological changes and relics of spatial features from the period before the incorporation into the city.

## Theoretical background

The beginning of the discussion concerning the issues of morphology and physiognomy of settlements dates back to the end of the 19th century (Schlüter 1899). The problem of morphology was examined separately with reference to various types of settlements, both rural and urban forms. In the case of rural settlements, the research concentrates on the issue of origin and the relations between elements which make up for the spatial structure of a village, as well as the spatial distribution of settlements and their types (Lienau 1973; Szulc 1995; Tkocz 1998). For the purposes of the article, a terminological approach was adopted, proposed by Koter (1994a: 26–31) and widely recognised by researchers, according to which morphology is one of the subdisciplines of geography which analyses the external and internal structure of settlement. In a broad sense, it includes a physiognomy, in a narrow sense morphological studies and morphogenetic research. In this context, the physiognomy focuses on the description and interpretation of external landscape features; morphology in a narrow sense deals with the analysis of elements of spatial composition and morphogenesis is aimed at the origin and reconstruction of historical spatial layout. Contemporary research concerning the morphology, both in Poland and worldwide, is generally based on the methods of analyses

of town plans, also known as Conzenian methods (Conzen 1962, 1968; Whitehand 1992, 2001; Koter, Kulesza 2010; Szmytkie 2014). Studies on the issues of morphology of settlement in Poland are very extensive and include many scientific schools, representing various theoretical and methodological trends. According to Figlus (2018: 168), four basic research directions can be distinguished: monographical-regional (aimed at studying particular settlement units or their collection within a particular area), problem-oriented (concentrating on selected planning aspects or particular morphogenetic factors), theoretical-methodological (attempting to understand the entirety of the process of development of spatial layouts via different methods and approaches), and synthetic-typological (aimed at creating comprehensive overviews and typologies on the basis of comparative studies). As far as morphological works are concerned, there are a number of scientific approaches observable: morphogenetic (i.e. a reconstruction of the overall circumstances of emergence and development of settlement forms), morphofunctional (i.e. an explanation of variability of rural or urban forms regarding the evolution of their socio-economic function), morphostructural (i.e. the study on the planning elements from the perspective of their spatial relations), and morphochorological (attempting to identify the types of rural or urban forms in time).

The literature on the historical suburban area that has been incorporated into the city is very broad and includes many theoretical problems, concerning terminology and research methods as well as specific empirical studies. This problem is often analysed in the context of the urban sprawl process and the concept of rural-urban continuum (Clawson 1962; Reissman 1970; Connel 1074; Squires 2002; Woods 2005). In Polish research on urbanisation of villages near the city or within its borders, the issue of defining and general considerations of this process were often taken into account (e.g. Prochownik 1975; Koter 1985; Liszewski 1987; Dziegieć 1995; Bański 2005, 2012; Maik 2012; Kacprzak, Staszewska 2011; Staszewska 2012). The suburban zone develops: within the administrative boundaries of the city (internal suburbanisation), in areas of the core city that are still free to invest; outside the city limits (urban fringe) characterised by a relative

spatial continuity of investment; and outside the direct administrative neighbourhood of the city (urban-rural fringe), with a predominance of extensive forms of land use (Lisowski, Grochowski 2009). Thus, the historical suburban area is the effect of the incorporation of the village into the city based on an administrative decision, and further the process of converging the village into the city, taking into account socio-economic structures but also in physiognomic and morphological terms (Sokołowski 1999). The issue of morphological transformations of former rural settlements and suburban zone were quite often examined in studies of large Polish cities, such as Wrocław, Warsaw, Poznań, Lublin (e.g. Golachowski 1966; Rakowski 1975; Miszevska 1996, 2002; Jakóbczyk-Gryszkiewicz 1998; Wesołowska 2006; Bański, Wesołowska 2010; Kacprzak, Staszewska 2008; Szmytkie 2011; Kajdanek 2011; Mantey 2011; Szczepańska, Wilkaniec 2014; Sobotka 2014; Miszevska, Szmytkie 2015, 2017). The process of spatial transformation of the villages near Łódź was also undertaken by researchers (e.g. Straszewicz 1954; Jakóbczyk-Gryszkiewicz 1991; Matczak 1991; Wójcik 2006, 2013). The reference basis for the article are primarily the works of Koter (1976, 1979, 1994b) concerning the morphogenesis of villages within the borders of Łódź and their persistence in the urban landscape.

### **Process of incorporation of rural settlements in the context of urban development of Łódź**

The urban development of Łódź can be divided into several basic development stages. The first covers the pre-industrial period to the beginning of the 19th century. Łódź as a village was probably established in the Middle Ages and organised under German law in the linear form. This episcopal settlement was transformed into a small town on the opposite bank of the River Łódka in the early 15th century. The town was characterised by the poor economic development. For this reason, the economic life in Łódź was mainly based on the cultivation of land. The spatial layout was compact and concentrated around the market place and church square, with a few outgoing streets and covered about 800 ha of the arable fields (Zand 1931; Koter 1976, 2002a).

The second stage of the city's development began in the first half of the 19th century and was associated with the first industrial settlements. At the beginning, a clothmakers' settlement, called Nowe Miasto (New Town), was established. The colony was given a compact, geometrical shape and it had a marketplace of the original octagonal shape, unique in Poland. All buildings were architecturally uniform and they combined residential and production functions. A few years later, between 1824–1827, a second textile settlement was established. It was a linen-cotton colony named Łódka, located along the axis of the Piotrków route. Łódka was arranged based on a totally different spatial and functional plan resulting from the production cycle, starting from the preparation of raw materials to production of yarn and woven fabrics to complex finishing processes. It was necessary to incorporate into the city the entire village of Wólka and the mill settlements of Kulom-Piła, Lamus, Księży Młyn, Wójtowski Młyn and Araszt. Later on, new settlements were formed due to the expansion of textile factories, called Nowa Łódka or Böhmsche Linie after its Czech settlers. In 1828, another colony was established named Ślązaki to mark the Silesian origins of its inhabitants. Despite the crisis that followed, the collapse of the November Uprising, Łódź continued its dynamic expansion. In 1840 Nowa Dzielnica (New District) was established on the incorporated land. It was arranged into a dense grid of streets. Nowa Dzielnica's axis ran along Główna Street, where the central place of the district – Wodny Rynek was located. The establishment of this quarter was the last organised and rational urban planning effort in the 19th-century urban history of Łódź (Koter 1969, 2002b; Rynkowska 1960; Kossmann 1966).

In the second half of the 19th century, the phase of large-scale factory development of the city began. During this period, Łódź evolved from a compound small-town factory settlement into a large urban centre, whose spatial structure gradually took the form of a metropolitan landscape. The urbanisation process was naturally correlated with the industrial growth of the city and large-scale migrations caused by the enfranchisement of peasants in 1864. It is worth adding that despite the rapid demographic development of Łódź for over 60 years until the beginning of the 20th century, there were no changes in the

administrative boundaries of the city. The local authorities' control over the city's development was very limited. Still, outside the city limits were located such crucial and urbanised complexes as industrial Widzew, and in particular the rapidly growing working-class suburban district of Bałuty and Chojny. Starting from the mid-century, due to the increasingly widespread use of the steam engine, the factories were erected wherever space was available. Some industrial complexes constituted also the separate residential areas for workers (Wesołowski 2002a; Stefański 2001; Popławska 1992).

The changes in the city's administrative territory did not occur until the early 20th century. In 1906 the Russian authorities decided to incorporate new areas into the city, at the expense of the surrounding rural settlements, which had not been part of the Łódź territory before. The areas which were incorporated, completely or partly, included the following settlements (in the geographical order): from the Radogoszcz commune – Żubardź and part of Doły; from the Chojny commune – part of the villages of Widzew and Dąbrowa, and Dąbrowa Mała; from the Brus commune – part of the villages of Brus, Karolew, Rokicie Stare and Rokicie Nowe. As a result of those incorporations, the area of the city increased from 2,739 to 3,811 ha. However, this territorial development did not respond to the current needs of Łódź, because it included mainly the western, industrial and urbanised part of Widzew and J. Heinzel's and J. Kunitzer's factories with the workers' colony, excluding the larger urbanised suburbs (Koter 1980: 191; Bandurka 1995: 59)<sup>2</sup>.

During World War I, by the decision of the German Police President von Oppen from 1915, the following rural areas were incorporated into the city: from the Radogoszcz commune – parts of the villages of Żabieniec and Radogoszcz, part of the Radogoszcz grange, part of the Julianów grange, the villages of Bałuty Nowe, Bałuty Stare, and Bałuty Kolonia, the Marysin grange; from the commune of Nowosolna: part of the village Antoniew Stoki; from the commune of Chojny: parts of the villages of Widzew, Zarzew, Dąbrowa,

Chojny (Julianów) and the Chojny grange; from the Brus commune: parts of the villages of Rokicie Stare, Rokicie Nowe and Rokicie Wójtostwo, and part of the Brus grange. The analysed changes were finally approved in 1927 and 1935 by the Polish authorities. As a result of these documents, the area of the city increased from 3,811 hectares to 5,875 ha<sup>3</sup> (Bandurka 1995: 69; Koter 1980: 191).

The interwar period brought to Łódź industrial stagnation and the need to restructure the economy. Despite the difficult situation, the city experienced a significant population increase and massive territorial expansion, predominantly due to single-family housing developments.

Numerous public buildings representing modernist architecture were developed. In the interwar period there was a significant development of infrastructure, primarily the water supply system designed by Lindley, as well as the gas and electricity networks, which expanded also into the suburbs. In that period the development of new housing estates in the peripheral and suburban areas of the city is observed. This process was initiated by the housing cooperatives, diocesan authorities, and the Workers' Estates Association (Towarzystwo Osiedli Robotniczych). In this context, several estates from this period are worth mentioning. All of them were built according to a single urban plan and architectural design, dedicated to middle-class groups, mainly public service officials or to a broader working class, such as the J. Montwiłł-Mirecki estate in Polesie Konstantynowskie, and new housing estates in the area of historical rural manors: Marysin and Stoki. Due to the collapse of the Heinzels' empire, the large Julianów estate in Radogoszcz was also parcelled out for single-family housing developments (Wesołowski 2002b; Koter 2009).

During World War II the Nazis incorporated Łódź into the German Reich, part of so called Warthegau, and in 1940 they changed its name to Litzmannstadt. At the same time, they extended the city territory almost four times, from 58.8 km<sup>2</sup>

<sup>2</sup> Plan ziemi przysjediniennych k gorodu Lodzi, with the scale of 1:8,400, by a surveyor, Hilary Szymański of 1907 (The State Archive in Lodz, cartographic collection, Catalogue Number (CN) 627 and 628).

<sup>3</sup> Map of the territorial development of Lodz in 1821–1915, prepared in the Division of Measurements of the Municipal Council of the city of Lodz (The State Archive in Lodz, Cartographic collection, CN 2971; the Notice of the Lodz voivode of 11 May 1935 on the recognition and establishment of the boundaries of Lodz city, Łódzki Dziennik Wojewódzki No. 10 of 1935, item 151).

Table 1. Incorporations of rural areas to the city of Łódź in the 20th century.

Moments of territorial development	Area incorporated to city (ha)	Area after incorporation (ha)	Incorporated rural areas
1906	1072	3811	Żubardź, part of Doły, western part of Widzew and Dąbrowa, Dąbrówka Mała, part of Karolew, Brus, Rokicie Stare, Rokicie Nowe
1915	2064	5875	part of Żabieniec, Radogoszcz and Julianów grange, Bałuty Stare, Bałuty Nowe, Marysin grange, Chojny grange, part of Antoniew Stoki, part of Widzew, Zarzew and Dąbrowa, part of Rokicie Stare, Rokicie Nowe, Rokicie wójtostwo,
1946	15326	21201	part of Radogoszcz, Grabieniec, Mikołajew, Odzierady, part of Antoniew, Brus, Smulsko, Jagodnica Złotno and grange, Teofilów, part of Rokicie, Retkinia Brzózki, Retkinia Zagrodniki, Retkinia Piaski, Retkinia Długa Kolonia, Retkinia Działy, Złotno, Leonów, Kały, Lublinek, Charzew, Chocianowice, Ruda Pabianicka, Jędrzejów, Olechów, Budy Sikawa, Budy Stoki, Henryków, Janów, Stoki and grange, Sikawa and grange, Moskule, Moskuliki, Łagiewniki Małe, Łagiewniki grange, Modrzew
1959–1965	234	21435	Huta Aniołów, part of Starowa Góra, part of Ustronie and Olechów
1988	7890	29325	Romanów, Sokołów, Zimna Woda, Nowe Moskule, Nowy Imielnik and Wilanów, Srebrna, part of Nowe Łagiewniki, part of Wiskitno, Bronisin, Łaskowice, Huta Szklana, part of Antoniew, Jagodnica, Andrzejów, Feliksin, Nery and Sądziecno, Mileszki, Nowosolna and Wiączyń Górny

Source: own compilation based on historical documents and Szambelan, Stępniewski 2009.

to 212 km<sup>2</sup> (Bandurka 1995: 106). It is a paradox, but for the second time in the history of Łódź, its serious spatial problems were solved by the German occupant. The Nazi authorities' decisions regarding the incorporations were based not only on urban planning but also on political reasons. They wanted to strengthen the German element in Łódź by incorporating former settlements and colonies inhabited by German settlers. The decisions taken by the occupational authorities were annulled immediately after the war. However, at the end of 1945, The Council of Ministers issued a directive regarding the expansion of Łódź, which was put in practice on 13th February 1946 and it confirmed the territorial changes made during the war. The following villages, colonies and granges were incorporated into Łódź at that time (in the geographical order), starting from the north: Radogoszcz, Kolonia Radogoszcz, Łagiewniki Małe, Łagiewniki with the Łagiewniki Forest and Arturówek, a fragment of Modrzew, Łodzianka, Wilanów, Moskule Stare, Moskuliki, Łukaszew, Rogi, Różki, Kolonia Marysin III, Antoniew Sikawa, Budy Sikawa, Folwark Sikawa, Stoki,

Antoniew Stoki, Budy Stoki, Kolonia Jędrówizna, Henryków, Janów, the remaining parts of Widzew and Zarzew, Augustów, Poręby, Olechów, Młynek, Kowalszczyzna, Jędrzejów, Wiskitno, the remaining parts of Chojny (Chojny A, B, D, E and G, as well as Folwark Chojny), Julianów, Komorniki, Stare Chojny, Górki Stare, Górki Nowe, Józefów, a small fragment of Starowa Góra, the town of Ruda Pabianicka, Chocianowice, Charzew, Chocianowiczki, Rokicie Stare, Rokicie Wójtostwa, Retkinia Zagrodniki, Retkinia Mała Kolonia, Retkinia Długa Kolonia, Lublinek, Smulsko, Retkinia Działy, Retkinia Brzózki, Retkinia Piaski, Folwark Retkinia, Rokicie Nowe, Folwark Brus, Leonów, Stare Złotno, Jagodnica Złotno, Kolonia Jagodnica Złotno, Folwark Jagodnica Złotno, Kolonia Cyganka, Odzierady, a small fragment of Antoniew, Grabieniec, Mikołajew, Budy Kałowskie, Kochanówka, Kały, Teofilów, Borowiec, Pabianka, Marianów and Żabieniec (Koter 2009: 189–190)<sup>4</sup>. In the next four

<sup>4</sup> Ordinance of the Council of Ministers of 20 December 1945 on the changes in the boundaries of Lodz city

decades, the administrative territory of Łódź did not change much. On 1st January 1959, it increased by 2.29 ha of Huta Aniołów, on 31st December 1961 – by 21.06 ha of Starowa Góra<sup>5</sup>, and on 1st January 1965 – by a 214-ha fragment of Andrespol, including Ustronie and the housing estate of Olechów, with the neighbouring railway grounds<sup>6</sup>. As a result of those changes, Łódź area grew to 214.3 km<sup>2</sup> and remained as such until 1988 (Bandurka 1995: 164).

Łódź was only slightly damaged during World War II. However, the city has completely changed its socio-economic structure by losing its multicultural character. In practice, the change of the political system led to the implementation of a centrally planned socialist economy and the nationalisation of industry. After the war, the structure of Łódź industry gradually changed. In addition to textile factories, numerous electro-mechanical, chemical and clothing plants were established. The spatial structure of industry has also changed significantly. The process of demolishing outdated downtown industrial buildings can be observed. At the same time, industrial complexes were located in new districts in the city's peripheral zones, in the place of the former villages incorporated into the city. Following the development of new industrial structures in suburbs, as a result of administrative decisions, new housing estates were built primarily in the 1970s. The new buildings developed mainly in the form of multi-family blocks of flats. Large estates in Retkinia, Widzew, Teofilów, Dąbrowa or Radogoszcz can be considered as the basic examples of housing investments in this period (Koter 2009).

The next territorial change of the city, the last one so far, involving the incorporation of the neighbouring rural areas, took place at the end of the 1980s. The social consultations, which were an expression of certain democratisation of socio-political life, provided the basis for changing

the city boundaries. The resolution of the National Council of Łódź of 29th June 1987, was practically introduced on 1st January 1988. As a result, the following rural settlements were incorporated into individual administrative districts of Łódź, into Bałuty: Romanów, Zimna Woda and Sokołów from the Aleksandrów Łódzki commune; a part of the village of Łagiewniki Małe from the Zgierz commune, as well as Nowe Moskule, Nowy Imielnik and Wilanów from the Stryków commune; into Widzew: Nowosolna, Mileszki and Wiączyń Górny from the Nowosolna commune, as well as Sąsiecno, Nery, Andrzejów and Feliksin from the Andrespol commune; into Górna: Huta Szklana from the Andrespol commune, Wiskitno Las and Wiskitno from the Brójce commune, Bronisin from the Rzgów commune, as well as Łaskowice from the Pabianice commune; into Polesie: Lublinek and a fragment of Konstanyń Łódzki, as well as Jagodnica, Huta Jagodnicka and part of the village of Antoniew from the Aleksandrów Łódzki commune. As a result of the changes, the area of the administrative territory of Łódź increased by 78.9 km<sup>2</sup>, from 214.3 km<sup>2</sup> to 293.3 km<sup>2</sup> (Bandurka 1995: 175)<sup>7</sup>.

The political changes that took place in Poland in 1989 caused a very deep economic crisis in Łódź. In a relatively short period, the vast majority of large industrial plants collapsed. As a result, a long process of successive depopulation began. In the last decades, the necessary economic restructuring has taken place in the city, which has increased the importance of the services, including metropolitan ones. Thanks to new foreign investments and the functioning of special economic zones, new electromechanical and electronics industries have appeared in Łódź. The transport network was expanded or significantly improved in the city and its vicinity. Increased suburbanisation on a spatial level caused the development of new housing estates in the periphery, including areas of former villages incorporated into the city in the second half of the 20th century. At the same time, one of the most typical urban transformations for Łódź was

(Journal of Laws No. 4, item 35 of 13 February 1946).

<sup>5</sup> Ordinance of the Council of Ministers of 7 November 1961 on the changes in the boundaries of Lodz city (Journal of Laws No. 50, item 266 as of 23 November 1961).

<sup>6</sup> Ordinance of the Council of Ministers of 13 November 1964 on the changes in the boundaries of Lodz city (Journal of Laws No. 42, item 282 as of 28 November 1964).

<sup>7</sup> Resolution of the National Council of Lodz city No. XXVII/161/87 of 29 June 1987 on the changes in the boundaries of Lodz city (Monitor Polski No. 25, item 205 as of 4 September 1987).

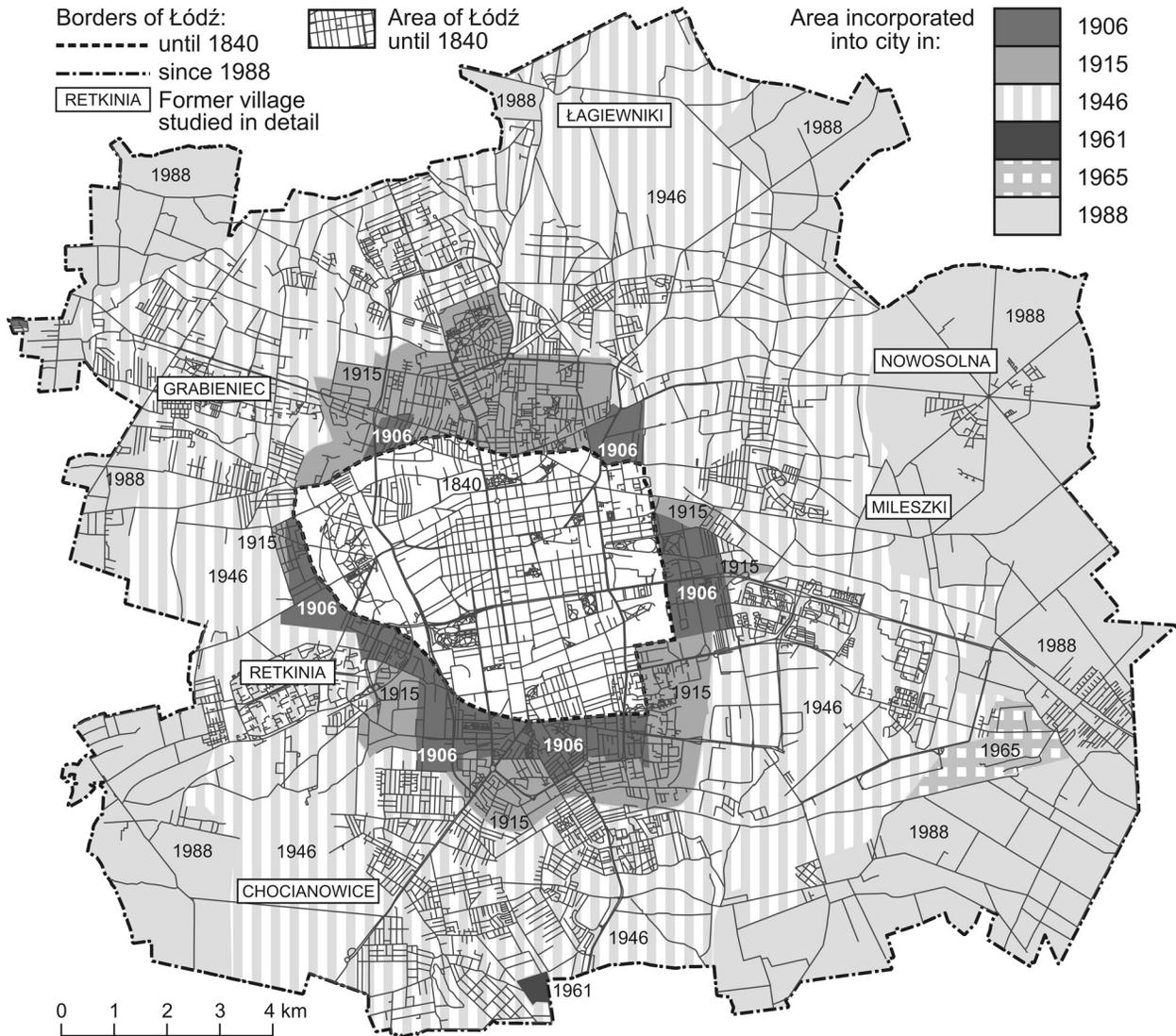


Fig. 1. Process of incorporation of rural areas into the city of Łódź in 20th century.  
Source: own compilation based on Szambelan, Stępniewski 2009.

the revitalisation of nineteenth-century industrial complexes and the development of new residential, office, commercial and recreation complexes. It is characteristic that these processes were accompanied by great spatial, functional and social changes.

### Morphological evolution of rural settlements within the boundaries of Łódź before the incorporation in the 20th century

The contemporary spatial structure of Łódź is very complicated, taking into account genetic,

physiognomic, morphological and functional aspects. It was formed as a result of several centuries of urban tissue evolution in the changing conditions of the political situation, economic systems, and socio-cultural diversity. According to Koter (1979), the historical structure of the city within the administrative boundaries until 1988 includes about 200 morphogenetic units. The vast majority of them are of rural origin and were incorporated and transformed at various stages of territorial development in Łódź. This problem was analysed in detail in the previous part of the article. The studied rural layouts, until their incorporation, constituted a diverse set of settlements in terms of their origin and morphological features. This is important because the time when

the village was established and its layout may also determine the possibilities of its transformation. The analysis of the origin and morphological types of villages incorporated into the city allows indicating some regularities. The first group includes villages developed in the Middle Ages, such as: Łagiewniki, Radogoszcz, Modrzew Kały, Wiskitno, Chocianowice, Retkinia, Rogi, Chojny, Rokicie, Bałuty, Moskule, Stoki, Widzew, Doły, Złotno, Mileszki. These are the settlements established under so-called Polish and German law. Some villages were developed in an evolutionary way and haven't been regulated. One can also observe the process of foundation of new villages or regulation of the villages already existing. These villages were founded in the planned settlement action, and therefore they were very regular in shape (Szulc 1995; Koter 1994b). In the group of villages founded in the Middle Ages, one can distinguish many forms. One of the most popular rural settlement patterns was a street village, with homesteads situated irregularly or regularly along the straight road (e.g. Złotno). One can identify so called green villages with homesteads situated around the large oval square as well (e.g. Mileszki). Cross-road and multi-roads villages were also very typical rural settlement patterns characteristic of this type of colonisation (e.g. Wiskitno).

In the early Modern Period, a clear change in the socio-political system can be observed. As a result of refeudalisation, an economy system based on obligatory peasant labour developed. For this reason, granges began to form on a massive scale. Sometimes they were created as autonomous settlement points around the courtyard (e.g. Brus), connected with a colony inhabited by peasants, or formed complexes of economic and residential buildings directly next to the village of earlier origin (e.g. Sokołów, Łagiewniki, Moskule, Sikawa, Stoki, Mileszki, Jagodnica, Ruda, Chojny, Retkinia, Wiskitno). In this period many small hamlets were also established in Łódź. They came into existence spontaneously as a result of deforestation, on clearings. They were strongly connected with an early industrial form of forest exploitation such as pitch-, potash-, and charcoal-making or using the fall of the river (e.g. Charzew, Lamus, Budy Sikawskie). These settlements were characterised by a small form and irregular fields. As a result of the Second

Partition of Poland, the studied area in 1793–1807 was under the administration of Prussia. At the end of the 18th century and the beginning of the 19th century a new colonisation has reached the area of today's Łódź, based mainly on settlers of German origin. It covered so-called *Olęder* (e.g. Janów, Henryków, Żabieniec, Grabieniec, Antoniew) and Prussian settlements (e.g. Olechów, Augustów, Starowa Góra). Some landlords sold some of their estates and deforested lands for colonists (Baranowski 1974; Koter 2002a). It is possible to distinguish rural settlements in the form of regular row villages. They consist of one or two rows of farmstead situated side by side down the street. New colonies were mostly densely built-up. The pattern of the fields was arranged in the form of regular, broad stripes belonging to separate owners. Some villages were planned in a very original form, e.g. the spatial structure of the village of Nowosolna consisted of eight intersecting roads.

In the second half of the 19th century, major changes took place in the settlement network of the villages near Łódź, caused by changes in agriculture systems and enfranchisement of peasants. Many villages were regulated. The changes observed in the layout generally included the land consolidation and separation of the peasant land from the land belonging to noble manors. As a result of these settlement processes, new villages were formed on the basis of pre-existing ones. For example, in the place of the former village of Retkinia, the following units were established: Retkinia Zagrodniki, Retkinia Mała Kolonia, Retkinia Długa Kolonia, Retkinia Działy, Retkinia Brzózki, Retkinia Piaski, Retkinia Folwark. Most of them took the form of rows with buildings loosely situated along the road and long and narrow field plots. Many granges were parcelled and new settlements were established in their place. Only a few villages near Łódź have retained their original character (e.g. Mileszki).

### **Morphological transformations of former villages incorporated into the city on selected examples**

All the selected villages have been incorporated into the city since the mid-20th century. It

is characteristic that the spatial reorganisation of rural settlement patterns took place in different ways and with various intensity. The extent of morphological changes in former rural areas, depends primarily on intensity of the urban development. Therefore, it is very important how much time has passed since the incorporation into the city and what was the scale and direction of urbanisation determined by economic conditions, including the industrialisation, development of the service sector, and investment in transport (Koter et al. 1993). Many factors influenced the various morphological changes in former villages. In the interwar period, the dynamics of spatial transformation was limited by insufficient territorial development in relation to the current housing needs of the city. The potential for changes in the urban fabric was influenced by the economic crisis, lack of financial resources and land ownership problems. For this reason, the implementation of new housing estates took place mainly on suburbia, where granges were parcelled and developed in terms of urban planning. On the other hand, within the administrative boundaries of the city, new investments were rather local. The time of the Polish People's Republic was the most important period in the urban development of Łódź, due to the large scale of changes determined by the following factors: enormous expansion of the city, nationalisation of industry and trade, abolishing the land rent within the city space, limiting the integrity of private property and

easy expropriation, applying the principles of a centrally planned economy and spatial planning, introducing the system of industrial housing construction and building standardisation (Koter 2009: 189). For this reason, large industrial complexes and block housing estates developed on a large scale in the area of the former villages, contrary to the former ownership divisions. Changes in the political and economic system after 1989 caused new opportunities for the city's development due to the resumption of the principles of the free market and land rent. There has been a process of major changes in the city's central zones. At the same time, the uncontrolled expansion of residential areas began, especially in the form of single-family housing estates. It covered the city's peripheral areas, i.e. the area of former villages, where urban changes at the turn of the 21st century were most noticeable.

Now I turn to the analysis of the final results of studies on the problem of morphological changes in the former villages incorporated into the city. On the basis of a comparative analysis of maps and other sources it was possible to identify three basic groups of rural settlement patterns, which differ taking into account the extent of morphological transformations in connection with different conditions. In this part of the article I would like to analyse the diversity of layout changes on selected examples of former villages representing the distinguished categories and discuss the problem of preservation of historical rural settlement patterns.

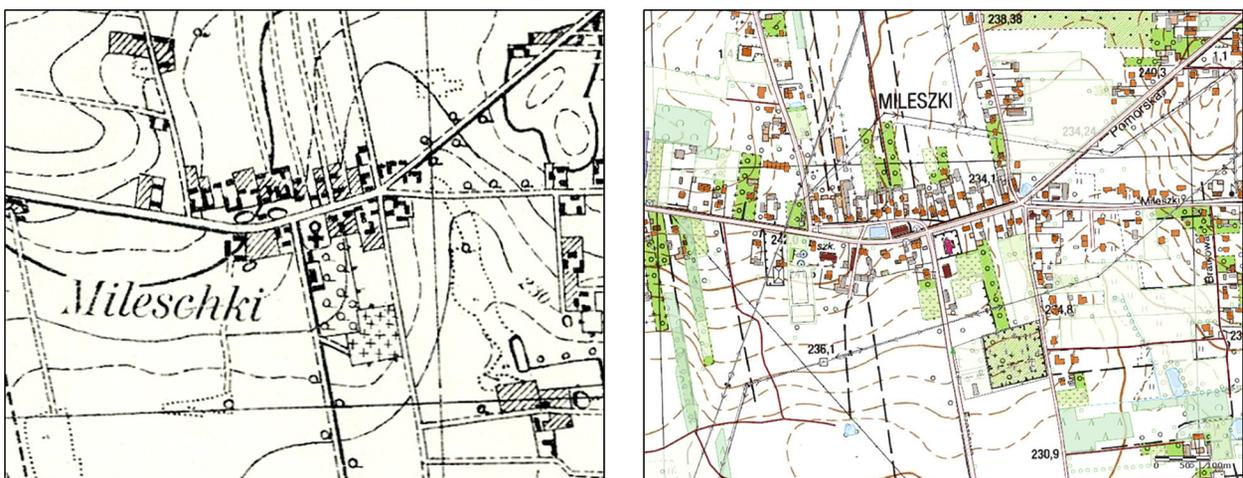


Fig. 2. Morphological changes in the former village of Mileszki.

Source: Detailed topographic map (sheet P41 S29 H) issued by the Military Geographic Institute in 1936 (German copy from 1940) and the present topographic map from the national geoportal: [www.geoportal.gov.pl](http://www.geoportal.gov.pl).

The first category includes rural settlement patterns in which slight morphological changes can be observed. The former villages are characterised by short spatial development after the recent incorporation and relatively low intensity of urbanisation in the city's peripheral areas. The analysed type is represented by the villages of Mileszki and Chocianowice. Mileszki is a village that was founded in the Middle Ages and is one of the oldest settlements located in today's Łódź. The first historical mention of the village dates from 1393 and refers to the records of the land court. However, it can be assumed that Mileszki was established much earlier. The village was a noble property and belonged, among others, to the Romiszewski and Stokowski families. The layout took the form of an oval village. The buildings concentrated around the oval square. The whole village habitat was regular and rectangular in shape. The fields were divided into several plot complexes. The plots in the middle field have a direction consistent with the course of the habitat plots, while the plots in the side complexes are perpendicular (Koter 1994b). The village was incorporated into the city in 1988 and is located in the eastern part of today's Łódź. The morphogenetic core retained its original form. In the centre of the village there is still a square with a pond and residential buildings, including farm homesteads. The land parcelling that took place in Mileszki caused a partial spatial development along the communication axis running through the habitat and along former field roads. However, these modifications did not significantly change the morphological features of the

historical layout. In addition, despite multiple ownership divisions, the outline of the original complexes of fields can still be seen in the cultural landscape.

The first historical mention of Chocianowice is from 1398, but the origin of the village probably dates back to the early Middle Ages. Until the end of the 18th century, the settlement belonged to the Kraków chapter, then it became government property and in 1840 it was privatised (the property was bought by M. Lubowidzki) (Baruch 1903: 246–247, 294). Originally, Chocianowice had the compact form of a street village. In the second half of the 19th century, as a result of land regulation, it was transformed into a row village. The buildings were located quite loosely, usually on one side of a long and straight road. The farms were accompanied by long and narrow plots of land, perpendicular to the village axis. Chocianowice was incorporated into Łódź shortly after the end of World War II, but nevertheless has largely preserved its former agrarian character. Due to its peripheral location in relation to the planning directions of residential and industrial buildings, it avoided major reconstruction of its spatial structure. A comparative analysis of the maps shows that the rural settlement pattern has not undergone a significant transformation. The changes primarily involved increasing the density of built-up areas and the partial appearance of single-family housing on the other side of the road. In this case we are dealing with orthomorphic changes, when all spatial modifications were mainly additions and did not destroy the morphogenetic core, so the initial layouts have

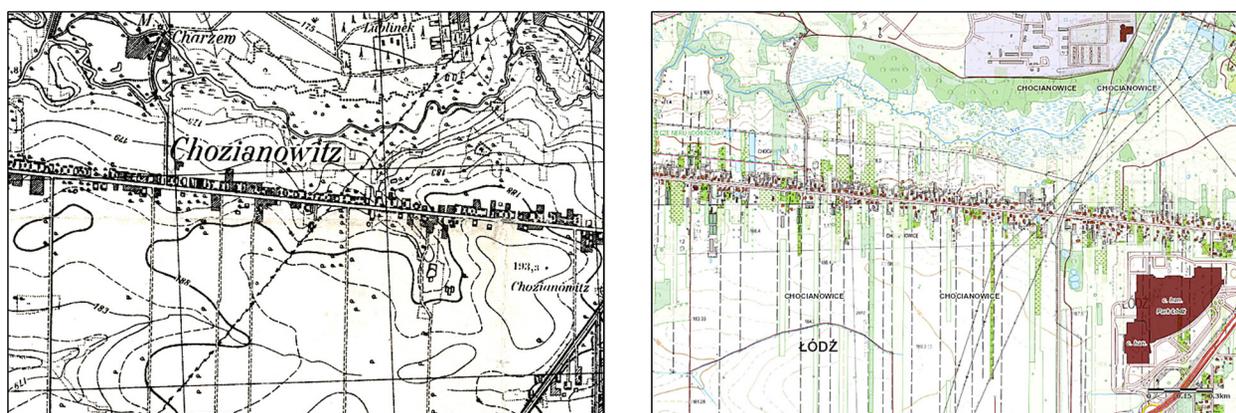


Fig. 3. Morphological changes in the former village of Chocianowice.

Source: Detailed topographic map (sheet P42 S29 A) issued by the Military Geographic Institute in 1936 (German copy from 1940) and the present topographic map from the national geoportal: [www.geoportal.gov.pl](http://www.geoportal.gov.pl).

been preserved almost completely. They are characterised by clear, historic layout and possible morphological modifications have been relatively small and insignificant.

The second category includes rural settlement patterns in which significant but incomplete morphological changes can be observed. The former villages are characterised by long spatial development associated with the incorporation and average intensity of urbanisation in the city's peripheral areas or the significant intensity of urbanisation but relatively short spatial development associated with the incorporation to the city. The analysed type is represented by the villages of Nowosolna and Łagiewniki. Nowosolna was founded in 1801 by Prussian authorities who took possession of this area as a result of the partitions of Poland. The development of a new settlement (called Neu Sulzfeld) in the place of the formerly existing royal village of

Wiączyń was possible due to the high activity of Bernhard Zimmermann (Woźniak 2013: 109–100; Figlus 2017: 200–204). The layout of Nowosolna was very original because it used a radial form. The homesteads were arranged at regular intervals on both sides of eight straight roads. In addition, eight auxiliary rays were used to divide the fields. In the centre of the layout was a square, and next to it there were lands used by the entire community, associated with socio-cultural and religious functions. Nowosolna was incorporated into the city in 1988. When we compare the village layout based on the map from the first half of the 20th century and today's map, we will see clear morphological differences. The analysed area has become very attractive for new housing investments. As a result of high interest in purchasing land in the city's peripheral zone, large fragments of the former village were divided into small plots for housing purposes. In a relatively

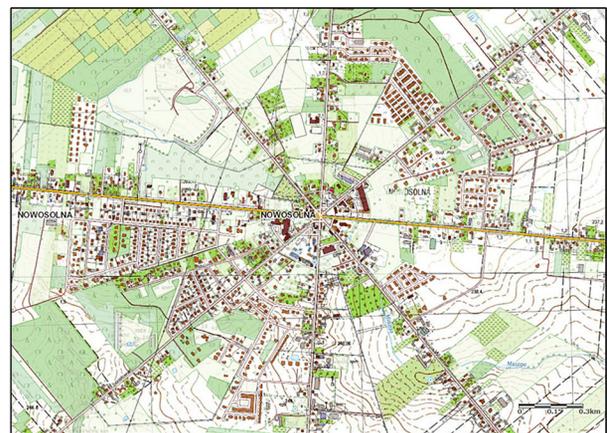
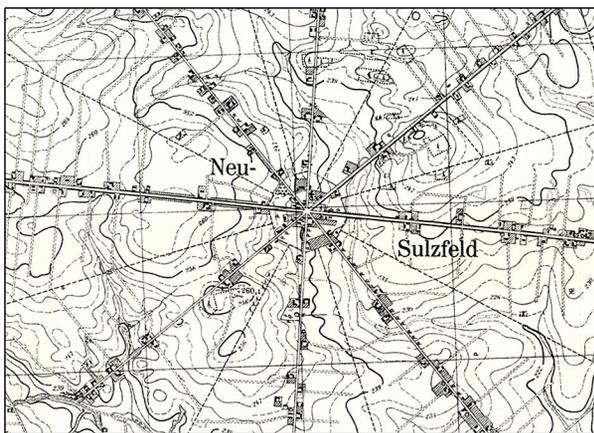


Fig. 4. Morphological changes in the former village of Nowosolna.

Source: Detailed topographic map (sheet P41 S29 H) issued by the Military Geographic Institute in 1936 (German copy from 1940) and the present topographic map from the national geoportal: [www.geoportal.gov.pl](http://www.geoportal.gov.pl).

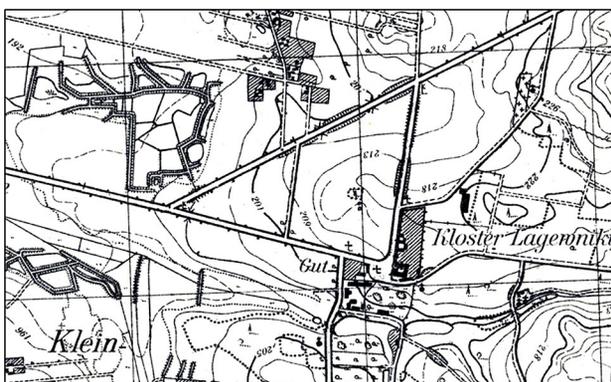


Fig. 5. Morphological changes in the former village of Łagiewniki.

Source: Detailed topographic map (sheet P41 S29 D) issued by the Military Geographic Institute in 1935 (German copy from 1940) and the present topographic map from the national geoportal: [www.geoportal.gov.pl](http://www.geoportal.gov.pl).

short time new roads were marked out along former field roads and new residential estates began to develop. At the same time, due to the development of single-family housing, farm buildings were constantly disappearing. The most intense morphological changes took place in the south-west of the former village. In other sectors, e.g. the north-west, the transformation was small and involves increasing the density of buildings. Despite the discussed processes, the morphogenetic core in the form of eight intersecting roads is still visible in the city landscape.

Łagiewniki was a village that was annexed to Łódź in 1946. The first historical mention of this settlement comes from the late 14th century, while the name may suggest a much earlier origin. Originally, it was a prince's village, then it became a noble property. For centuries it belonged to the Stokowski, Karnkowski, Zawisza and Zareba families. In 1886, the village came into possession of the Heinzl family of factory owners from Łódź, who built a palace on the site of the former manor house. The central part of Łagiewniki included a residential complex, next to which a grange was built, consisting of farm buildings situated around a square courtyard and houses for peasants. An important element of the layout of the village was the religious complex. It was made up of the Franciscan church and monastery from the 17th century (Gramsz 2002). As a result of the nationalisation carried out after World War II, the manor-farm complex was confiscated and became state property, and then changed its function completely. This decision caused a partial transformation of the rural settlement pattern of Łagiewniki. The process of the parcelling of the manor land previously belonging to the Heinzl family began. In this way, large blocks were divided into smaller plots of land and new areas for housing investment were gradually developed. As one can see on today's map, new roads were marked out along which a single-family housing estate and a hospital were established. Despite these changes, elements of the historical structure have been clearly preserved in the form of relics of the palace and manor complex, as well as the remains of the church and monastery. In this case we are dealing with semi-metamorphic transformations, where the spatial reorganisation was considerable, but not total, and saved clear relics of the historical rural

settlement pattern, so the initial layouts have been partially preserved. They are characterised by the durability of the historic layout, and all spatial changes were quite significant, but did not result in the complete disappearance of the original structure. Transformation of rural settlement patterns has been primarily limited to external changes which include the process of spatial expansion of built-up areas along the main and side roads or the dispersed development within the former fields.

The third category includes layouts in which very significant and complete changes can be observed. The former villages are characterised by very high intensity of urbanisation in city's peripheral areas and relatively long spatial development associated with the incorporation to the city. The analysed type is represented by the villages of Grabieniec and Retkinia. Grabieniec was established near Łódź as part of the Olęder colonisation, probably around 1793, which is confirmed by the analysis of the Prussian map from that period. It was developed in the noble estates, on the initiative of the owner of the village of Kały. For this reason, the settlement was initially called Olędery Kałowskie (Baranowski 1974: 21; Goldberg 1957: 88). It came into existence as a result of deforestation, on clearings. The built-up area took the form of a one-sided, row village. The buildings were situated along a curve, an arched road and consisted of several homesteads. At each farm there was a field in the form of narrow plot. Grabieniec was incorporated into the city immediately after the end of World War II. Due to urban planning decisions, this area was designed for the development of a large industrial and residential complex. North of the former village, the Industrial Teofilów district was established. There were 'Elta', producing transformers and electrical equipment, 'Stomil', producing rubber boots, 'Teofilów', producing clothes and a number of smaller factories. South of Aleksandrowska Street, in the 1970s, three large housing estates were built gradually. Two of them covered the area of the former village of Grabieniec: S. Żeromskiego estate (eastern part of Grabieniec), occupied the area between Traktorowa and Kaczeńcowa Streets and in the south it reached beyond Rojna Street. The predominant architectural form in this housing estate was the standard five-storey blocks of flats.

The second one, M. Konopnicka estate (western part of Grabieniec) extended from Kaczeńcowa to Wici and Szczecińska Street and included also several high-rise buildings but it also consists of built-up areas in a terraced form (Koter 2009: 199–200). As a result of the comparative analysis of the maps, it can be concluded that the layout of the former village has completely disappeared.

Retkinia is a village founded in the Middle Ages. The first mention of its existence comes from the late 14th century. Until the end of the 18th century it was church and then government property. In 1841, the settlement was privatised. As a result of land consolidation and reorganisation, the village was divided into: Long Colony and Short Colony as well as Zagrodniki. The changes in Retkinia's layout reflected the current socio-agrarian structure of the population.

Retkinia Folwark was separated from the former area of the village, and a few smaller colonies – Działy, Piaski and Brzóska – were based on its partial division (Zaluska 1914: 217; Szlązak 2016: 14–15). As a result of regulations, row villages with loosely situated buildings along the road were erected. Retkinia was incorporated into the city in 1946. The development of industry and the increase in the city's population determined the need for urgent housing investments. In the second half of the 1970s, the construction of the largest Łódź housing estate of Retkinia began and was divided into several stages. New roads have been marked out in the area of the newly built district, usually contrary to the course of the previously existing communication system and ownership divisions. During several years of intensive construction, new housing estates were

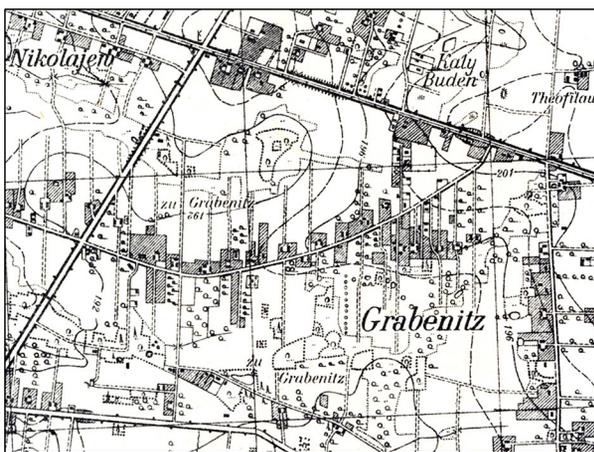


Fig. 6. Morphological changes in the former village Grabieniec.

Source: Detailed topographic map (sheet P41 S29 G) issued by the Military Geographic Institute in 1935/1936 period (German copy from 1940) and the present topographic map from the national geoportal: [www.geoportal.gov.pl](http://www.geoportal.gov.pl).

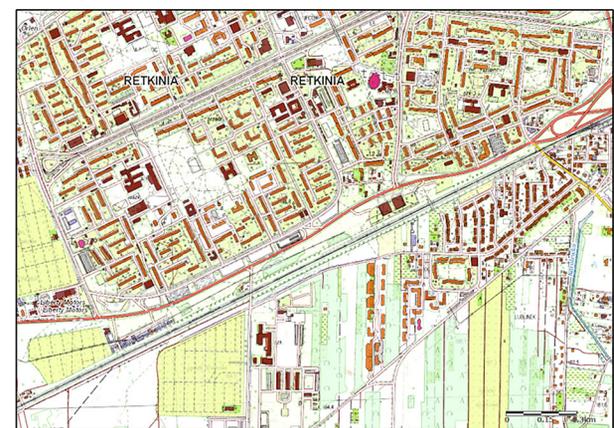
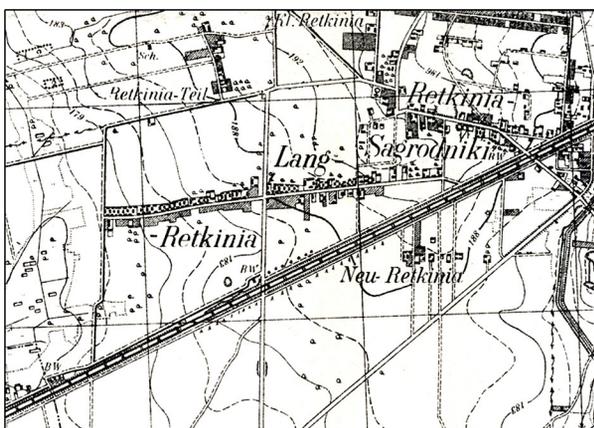


Fig. 7. Morphological changes in the former village of Retkinia.

Source: Detailed topographic map (sheet P42 S29 A) issued by the Military Geographic Institute in 1936 (German copy from 1940) and the present topographic map from the national geoportal: [www.geoportal.gov.pl](http://www.geoportal.gov.pl).

developed consisting of blocks of flats (Hufcowa – Botanik, Balonowa – Retkinia Południe, Retkinia Północ, Śródmieście Południe – Sympatyczna). The historical settlements of Retkinia Piaski and Retkinia Zagrodniki have been urbanised and many elements of their spatial layouts, as well as the relics of old buildings have been adapted (Koter 2009: 201). In this case we are dealing with metamorphic transformations, when almost all elements of the former morphological structure have been completely erased and the initial layouts have been totally changed. They are characterised by a complete disappearance of the historic layout, where the spatial changes have been very significant, therefore there are almost no traces of the former morphological structure.

## Discussion

The settlements that were incorporated into the city are gradually losing their rural character, including low building density, predominance of arable land (Cherry 1976; Cloke, Goodwin 1992) and landscape specificity, which is characterised by extensive land use (Gilg 1985; Whitby, Willis 1978). Morphological transformations of former villages resulting from functional changes are characteristic of all major cities in Poland, not only in Łódź (Miszewska 1996; Miszewska, Szmytkie 2015, 2017). These processes are manifested in the expansion of urban investment areas and new elements of infrastructure (Smailes 1975; Bassand 1982). The analysed changes are often an effect of the so-called semiurbanisation, defined as socio-economic and morphological transformations of villages, resulting in the formation of a settlement form which is transitional between the village and the city (Golachowski 1965).

The large-scale urbanisation of villages results in the disappearance of the dichotomous division of settlements as an effect of the phenomenon of rural-urban continuum (Kirk 1980; Sokołowski 1999; Krzysztofik 2008). According to Bański (2008), the components with indistinct boundaries can be distinguished, i.e. a city, a suburban area and rural areas, which corresponds to the model: centre – transition zone – periphery. The villages located in the continuum zone are gradually changing their historical layout, and some of them are then joined to the city as a result of

administrative decisions. For some villages, incorporation becomes an impulse for significant changes in spatial development and physiognomy of buildings (Pacione 2001; Maik 1992; Słodczyk 2003). The analysis of spatial changes carried out by the author within the borders of Łódź confirms this tendency. As the formal status changes, morphological transformations occur with varying intensity.

The issue of the incorporated villages can be related to the theoretical concept of urban sprawl (Chin 2002). It is a process of 'spreading the city' beyond the administrative boundaries. It occurs in its suburban area and may result in the gradual attachment of the surrounding villages. The spatial development of the city should be treated as the expansion of the urban area and the increase of all morphological elements, including roads and buildings (Berbesz, Szmytkie 2016). Diffusion and succession are characteristic processes for transformations in the functional and spatial structure of villages incorporated into the city (Słodczyk 2003). The concept of diffusion in the field of urban space analysis means the spread of a given type of development into new areas, while the concept of succession should be understood as a conversion of one type of land use into another.

The most important socio-economic processes that take place today in suburban areas and former villages related to cities include migrations, dynamic development of individual housing, diversification of the spatial structure, development of non-agricultural activities and disappearance of agricultural production (Bański 2008; Szmytkie 2014). Morphological transformations of former villages can result from both concentration and dispersion of built-up areas. On the one hand, new housing developments are founded in conjunction with the existing one, which in consequence extends the former village's habitat. On the other hand, new urban housing estates degrade the traditional rural landscape. At the same time, former agricultural lands are divided into small plots, which means that the residential areas develop within former arable fields (Miszewska 1996; Wójcik 2013).

Conzen (1960) analysed the morphological transformation process. As a result, he distinguished four phases of the so-called urban cycle: initial phase, filling phase, climax phase and

recession phase. It can be said that the initial phase corresponds to the author's first stage of changes, in which the village retains its original spatial arrangement from the time of incorporation, the filling phase corresponds to the second stage of changes, in which successive expansion of buildings takes place within the former settlement, or in its close vicinity, while the climax phase corresponds to the third stage of changes, when the transformation of the building structure is complete and results in the disappearance of the spatial layout from the time before the incorporation. The recession phase was not identified in the study area.

According to the Conzenian School, Koter (1994a) identified three types of morphological changes: the filling process, which involves the implementation of additional elements into previously formed spatial structures (the density of buildings changes and plots are divided); the process of supplementation, which involves the formation of new urban units, in addition to those of older origin and the transformation process that implies the radical reconstruction of existing spatial structures and foundation of new, more functional and more fashionable forms. Similar processes were noticed in the examined villages within the borders of Łódź.

In the study three basic categories of morphological transformations have been distinguished (orthomorphic, semi-metamorphic and metamorphic). The proposed typology of morphological changes refers in general to an analogous division suggested by Conzen (1962). Research on the morphological transformation of the former villages incorporated into Łódź confirms the results of similar studies carried out by Berbesz and Szmytkie (2016), who identified the initial phase, the transformation phase, and the final phase, depending on the expansion of built-up areas and the preservation of former village layouts, which are situated within the city borders at present.

## Conclusions

The scope of the research included morphological changes of villages incorporated into the city on the example of Łódź. It is characteristic that the transformation process of rural settlement patterns took place in different ways and

with various intensity depending mostly on the scale of urbanisation related to functional transition from rural activity to other forms of economic development. On the basis of the comparison of the spatial layout from the period before World War II and the contemporary plan, it is possible to describe the scale of transformation. As a result of the low intensity of the urbanisation process in this period one can observe only slight morphological changes in peripheral areas of the city. All the observed morphological changes are insignificant and they have mostly the form of minor additional modification, therefore the former layout is almost entirely preserved. In many of the analysed rural settlement patterns, one can identify the areas that are characterised by a significant scale of urbanisation. In this case it was possible to identify the considerable but incomplete morphological changes. In the former villages which represent this type of transformation, the morphogenetic core was still visible in the cultural landscape. Meanwhile, most of the changes identified were related to the expansion in the former fields. The third group of the analysed villages refers to the most intense spatial development of the city. One can observe a very large scale of the urbanisation process, which is possible thanks to socio-economic development. In this case one can identify the total morphological changes, and the former rural settlement patterns were completely deformed and transformed into new urban structures. It is characteristic that for all these examples there is a gradual or rapid disappearance of the former morphological features.

As a result of the research on former villages on peripheral or semi-peripheral areas of the city, it was possible to make a generalisation and propose some typology of morphological transformations. Three basic types of the identified spatial changes of the incorporated rural settlement patterns can be distinguished based on the analyses carried out:

- orthomorphic transformations, where all spatial modifications were mainly additions and did not destroy the morphogenetic core, so the former layouts have been preserved almost completely;
- semi-metamorphic transformations, where the spatial reorganisation was considerable, but not total, and saved clear relics of the his-

torical rural settlement pattern, so the former layouts have been partially preserved;

- metamorphic transformations, where almost all elements of the former morphological structure have been completely erased and the historical layouts have been totally changed.

Due to the varied scale of morphological changes resulting from urbanisation processes, many former villages incorporated into the city have preserved relics of their historical spatial structure. This makes it possible to separate three basic types of rural settlement patterns, taking into account the criterion of preserving the features of the layout from the period before incorporation:

- well preserved rural settlement patterns (the former layouts have been completely or almost completely preserved); they are characterised by clear morphological features from the period before incorporation and possible spatial modifications were relatively small and insignificant,
- partially preserved rural settlement patterns; they are characterised by partial durability of the former layout, and all spatial changes were quite significant, but did not result in the complete disappearance of the original structure,
- poorly preserved rural settlement patterns (the former layouts have not been preserved

or are residual); they are characterised by the complete disappearance of the morphological features from the period before incorporation, and the spatial changes have been very significant, therefore there are almost no traces of the former morphological structure).

According to the proposed typologies, the orthomorphic changes of the layout correspond to well-preserved rural settlement patterns, the semi-metamorphic changes shaped the layouts, which are partly preserved, while the metamorphic changes of the layout are responsible for the development of rural settlement patterns that are poorly preserved or which former morphological features have completely disappeared.

It is possible to distinguish the three main stages of morphological transformation in connection with functional changes:

1. First stage (initial phase, in which the village retains its original spatial arrangement from the time of incorporation, e.g. Mileszki, Chocianowice),
2. Second stage (transitional phase in which successive expansion of buildings takes place within the location of the former settlement, e.g. Nowosolna or in its close vicinity after the incorporation, e.g. Łagiewniki),
3. Third stage (advanced phase, when the transformation of the building structure is com-

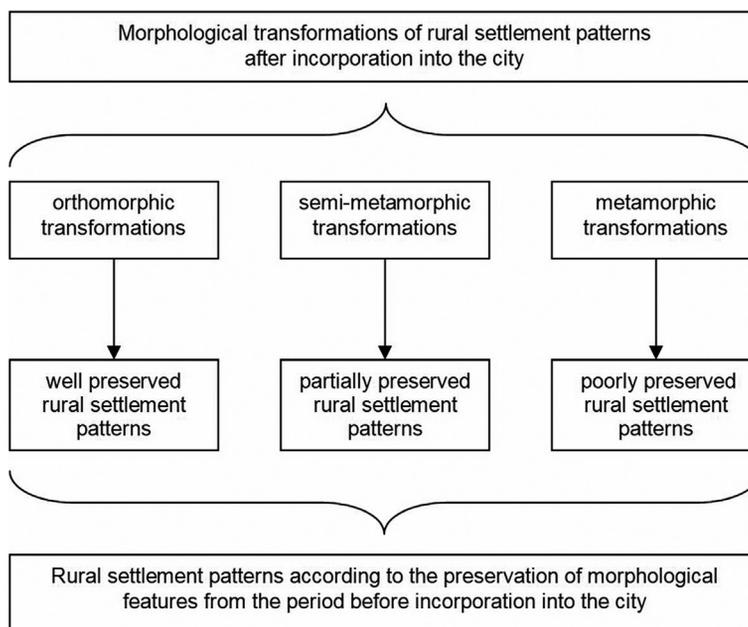


Fig. 8. Model of relations between typologies of morphological transformations and preservation of rural settlement patterns incorporated into the city. Source: own compilation.

plete and leads to the disappearance of the spatial layout from the time before the incorporation, e.g. Retkinia, Grabieniec).

In relation to many former villages previously analysed, after World War II, the authorities decided to create new housing estates near large industrial complexes, new communication routes appeared, and some areas after the political and economic changes in 1989 gave the opportunity for the development of new housing investments for many development companies. The dynamics of morphological transformations and the duration of individual phases depend on various factors. However, it seems that the dominant role is played by the distance from the centre and the main communication routes, or the direction of the spatial and functional development of the city.

## References

- Baker A.R.H., 1968. A note on the retrogressive and retrospective approaches in historical geography. *Erdkunde: archiv für wissenschaftliche geographie* 22: 243–244.
- Baker A.R.H., 1975. *Historical geography and geographical change*. Macmillan Education, London.
- Baker A.R.H., Butlin R.A., 1973. Progressive and retrogressive approaches. In: Baker A.R.H., Butlin R.A. (eds), *Studies of field systems in the British Isles*. Cambridge University Press, London: 39–41.
- Bandurka M., 1995. *Zmiany administracyjne i terytorialne ziem województwa łódzkiego w XIX i XX wieku* (Administrative and territorial changes of the Łódź voivodeship in the 19th and 20th centuries). Archiwum Państwowe w Łodzi, Łódź.
- Bański J., 2005. Przestrzenny wymiar współczesnych procesów na wsi (Spatial dimension of the contemporary processes in the rural areas). *Studia Obszarów Wiejskich* 9. IGiPZ PAN, Warszawa.
- Bański J., 2008. Strefa podmiejska – już nie miasto, jeszcze nie wieś (Suburban area – not a city anymore, not a village yet). In: Jezierska-Thole A., Kozłowski L. (eds), *Gospodarka przestrzenna w strefie continuum miejsko-wiejskiego w Polsce* (Spatial management in the urban-rural continuum zone in Poland). Instytut Geografii i Przestrzennego Zagospodarowania PAN, Toruń: 29–44.
- Bański J., 2012. Problematyka definicji i zasięgu przestrzennego obszarów wiejskich i stref podmiejskich (Definition and spatial extent of rural and suburban areas). *Acta Scientiarum Polonorum. Administratio Locorum* 11/3: 5–15.
- Bański J., Wesółowska M., 2010. Transformations in housing construction in rural areas of Poland's Lublin region – Influence on the spatial settlement structure and landscape aesthetics. *Landscape and Urban Planning* 94: 116–126.
- Baranowski B., 1974. *Zmiany w sieci osadniczej na obszarze obecnej Łodzi od końca XVI w. do roku 1820* (Changes in the settlement network in the area of today's Łódź from the end of the 16th century to 1820). Rada Naukowa przy Prezydencie Miasta Łodzi, Materiały i Studia 3, Łódź.
- Baruch M., 1903. *Pabianice, Rzgów i wsie okoliczne: monografia historyczna dawnych dóbr Kapituły Krakowskiej w sieradzkim i łączyckim* (Pabianice, Rzgów and surrounding villages: Historical monograph of the former property of the Kraków Chapter in Sieradz and Łęczycza regions). Skład Główny w Księgarni E. Wende i S-ka, Warszawa.
- Bassand M., 1982. *Ville, regions et societies* (Cities, regions and societies). Presses Polytechnique Romandes, Lausanne.
- Berbesz A., Szmytkie R., 2016. Przeobrażenia morfologiczne jednostek o wiejskiej genezie w strukturze przestrzennej miasta średniej wielkości. Przykład Lublińca (Morphological transformations of units of rural origin in the spatial structure of a medium-sized town. An example of Lubliniec). *Acta Geographica Silesiana* 24: 51–59.
- Bloch M., 1966. *French rural history: An essay on its basic characteristics*. Translation by Janet Sondheimer. Routledge & Kegan Paul, London.
- Cherry G., 1976. *Rural planning problems*. Leonard Hill, London.
- Chin N., 2002. *Unearthing the roots of urban sprawl: A critical analysis of form, function and methodology*. Centre for Advanced Spatial Analysis Working Papers Series 47. University College London, London.
- Clawson R., 1962. Urban sprawl and speculation in urban land. *Land Economics* 38: 99–111.
- Cloke P., Goodwin M., 1992. The changing function and position of rural areas in Europe. In: Huigen P., Paul L., Volkers K. (eds), *The changing function and position of rural areas in Europe*. *Netherlands Geographical Studies* 153: 19–35.
- Connell J., 1974. The metropolitan village. In: Johnson J.H. (ed.), *Suburban growth*. Wiley, London: 77–10.
- Conzen M.R.G., 1960. *Alnwick, Northumberland: A study in town-plan analysis*. Institute of British Geographers Publication 27, George Philip, London.
- Conzen M.R.G., 1962. The plan analysis of an English city centre (Newcastle upon Tyne). In: Norborg K. (ed.), *Proceedings of the international Geographical Union Symposium in Urban Geography, Lund 1960*. *Lund Studies in Geography* B, 24: 383–414.
- Conzen M.R.G., 1968. The use of town plans in the study of urban history. In: Dyos H.J. (ed.), *The study of urban history*. Edward Arnold, London: 113–130.
- Dziegieć E., 1995. Urbanizacja terenów wiejskich w Polsce (Urbanisation of rural areas in Poland). *Turyzm* 5(1): 5–56.
- Figlus T., 2017. Geneza, rozwój i zanik Wiączyń. Próba rekonstrukcji geograficzno-historycznej osadnictwa w aspekcie przemian zagospodarowania przestrzennego i rozplanowania wsi (Origin, development and disappearance of the village of Wiączyń. An attempt at geographical and historical reconstruction of settlement in the aspect of spatial development changes and village layout), *Studia z Geografii Politycznej i Historycznej* 6: 183–208.
- Figlus T., 2018. The past and present of historical morphology of rural and urban forms in Poland. *Studia Geohistorica* 6: 149–168.
- Gilg A., 1985. *An introduction to rural geography*. Edward Arnold, Baltimore.
- Golachowski S., 1965. Proces semiurbanizacji w województwie opolskim (The process of semiurbanisation in Opolskie Voivodeship). *Kwartalnik Opolski* 2: 54–58.
- Golachowski S., 1966. Urbanizacja wsi w województwie opolskim (Urbanisation of villages in Opolskie Voivodeship). In: *Problemy ewolucji układów osadniczych na tle procesów*

- urbanizacyjnych w Polsce (Problems of evolution of settlement systems against the background of urbanisation processes in Poland). Materiały i Studia Międzyuczelnianego Zakładu Podstawowych Problemów Architektury, Urbanistyki i Budownictwa 5. PWN, Warszawa: 45–66.
- Goldberg J., 1957. Osadnictwo ołęderskie w dawnym województwie łęczyckim i sieradzkim (Oleđer settlement in the former Łęczyca and Sieradz voivodeships). *Zeszyty Naukowe Uniwersytetu Łódzkiego, Ser I, Nauki Humanistyczno-Społeczne* 5: 67–110.
- Gramsz A., 2002. *Las Łągiewnicki i okoliczne wsie* (Łągiewnicki Forest and surrounding villages). Grako, Łągiewniki.
- Gulley J.L.M., 1961. The retrospective approach in historical geography. *Erdkunde: archiv für wissenschaftliche geographie* 15: 306–309.
- Jäger H., 1968. Reduktive und progressive Methoden in der deutschen Geographie (Reductive and progressive methods in German geography). *Erdkunde. Archiv für wissenschaftliche Geographie* 22: 245–246.
- Jakóbczyk-Gryszkiewicz J., 1991. Zróżnicowanie urbanizacji wsi w strefie podmiejskiej Łodzi (Diversification of village urbanisation in the suburban area of Łódź). *Acta Universitatis Lodziensis, Folia Geographica* 13: 75–99.
- Jakóbczyk-Gryszkiewicz J., 1998. *Przeobrażenia stref podmiejskich dużych miast. Studium porównawcze strefy podmiejskiej Warszawy, Łodzi i Krakowa* (Transformations of suburban areas of large cities. A comparative study of the suburban area of Warsaw, Łódź and Kraków). Wydawnictwo Uniwersytetu Łódzkiego, Łódź.
- Kacprzak E., Staszewska S., 2008. Rozwój obszarów mieszkaniowych w strefie podmiejskiej miasta Poznania (Development of residential areas in the suburban area of the city of Poznań). In: Jezińska-Thole A., Kozłowski L. (eds), *Gospodarka przestrzenna w strefie kontinuum miejsko-wiejskiego w Polsce* (Spatial management in the urban-rural continuum zone in Poland). Wydawnictwo Naukowe UMK, Toruń: 127–144.
- Kacprzak E., Staszewska S., 2011. Wpływ suburbanizacji na wiejskie struktury osadnicze (Impact of suburbanisation on rural settlement structures). In: Słodczyk J. (ed.), *Procesy suburbanizacji w wybranych miastach Polski* (Suburbanisation processes in selected Polish cities). *Studia Miejskie* 3: 99–112.
- Kajdanek K., 2011. *Pomiędzy miastem a wsią. Suburbanizacja na przykładzie osiedli podmiejskich Wrocławia* (Between the city and the village. Suburbanisation on the example of Wrocław suburban housing estates). Wydawnictwo Nomos, Kraków.
- Kirk W., 1980. The rural-urban continuum: Perception and reality. In: Enyedi G., Meszaros J. (eds), *Development of settlement systems*. Hungarian Academy of Sciences, Budapest: 11–19.
- Kossmann O., 1966. *Lodz. Eine historisch-geographische Analyse* (Łódź - geographical and historical analysis). Holzner-Verlag, Würzburg.
- Koter M., 1969. Geneza układu przestrzennego Łodzi przemysłowej (The origin of the spatial layout of industrial Łódź). *Prace Geograficzne IG PAN* 79, Warszawa.
- Koter M., 1976. Relikty osadnictwa średniowiecznego w planie współczesnej Łodzi (Relics of medieval settlement in the plan of modern Łódź). *Przegląd Geograficzny* 48(4): 667–687.
- Koter M., 1979. Struktura morfologiczna wielkiego miasta na przykładzie Łodzi (Morphological structure of a big city on the example of Łódź). *Acta Universitatis Lodziensis, Ser. II* 21: 25–52.
- Koter M., 1980. Rozwój przestrzenny i zabudowa miasta (Spatial development and built-up areas of the city). In: Rosin R. (ed.), *Łódź. Dzieje miasta* (Łódź. History of the city), vol. 1. PWN, Warszawa – Łódź: 148–191.
- Koter M., 1985. Kształtowanie strefy podmiejskiej w świetle badań historyczno-geograficznych (Shaping the suburban area in the light of historical and geographical research). *Acta Universitatis Lodziensis, Folia Geographica* 5: 61–73.
- Koter M., 1994a. Od fizjonomii do morfogenezy i morfologii porównawczej. Podstawowe zagadnienia teoretyczne morfologii miast (From the physiognomy to the morphogenesis and the comparative morphology. Essential theoretical issues of the urban morphology). In: Koter M., Tkocz J. (eds), *Zagadnienia geografii historycznej osadnictwa w Polsce* (Issues of the historical geography of the settlements in Poland). Uniwersytet Mikołaja Kopernika, Uniwersytet Łódzki, Toruń – Łódź: 26–31.
- Koter M., 1994b. Rola wiejskich elementów morfologicznych w procesie kształtowania układu przestrzennego Łodzi (The role of rural morphological elements in the process of shaping the spatial layout of Łódź). In: Koter M., Tkocz J. (eds), *Zagadnienia geografii historycznej osadnictwa w Polsce* (Issues of the historical geography of the settlements in Poland). Toruń-Łódź: 63–88.
- Koter M., 2002a. Łódź w prehistorycznych i tak zwanych rolniczych czasach (Łódź in prehistoric times and so-called agricultural period (from prehistory to the early 19th c.)). In: *The Łódź Atlas*, sheet IV. Łódzkie Towarzystwo Naukowe, Łódź.
- Koter M., 2002b. Łódź and its environs in the first half of the 19th c. In: *The Łódź Atlas*, sheet IV. Łódzkie Towarzystwo Naukowe, Łódź.
- Koter M., 2009. The urban tissue of Łódź in 1918–1989. In: Liszewski S. (ed.), *Łódź: A monograph of the city*. Łódzkie Towarzystwo Naukowe, Łódź: 173–206.
- Koter M., Kulesza M., 2010. The study of urban form in Poland. *Urban Morphology* 14(2): 111–120.
- Koter M., Liszewski S., Marszał T., Pączka S., 1993. *Man, environment and planning in the development of Łódź urban region*, Kronika Miasta Łodzi 1, Łódź: 9–34.
- Krzysztofik R., 2008. Osiedla zurbanizowane bez formalnego statusu miejskiego na obszarze Polski w rozwoju historycznym – próba typologii (Urbanised housing estates without a formal urban status in Poland in historical development – an attempt at typology). In: Gierańczyk W., Kluba M. (eds), *Problemy i metody oceny kontinuum miejsko-wiejskiego w Polsce* (Problems and methods of an urban-rural continuum assessment in Poland). *Studia Obszarów Wiejskich* 13: 186–193.
- Larkham P.J., Conzen M.P., 2014. *Shapers of urban form: Explorations in morphological agency*. Routledge, London.
- Lienau C., 1973. A matter of terminology: Rural settlements. *Geoforum* 4(4): 92–94.
- Lisowski A., Grochowski M., 2009. Procesy suburbanizacji. Uwarunkowania, formy, konsekwencje (Suburbanisation processes. Conditions, forms, consequences). *Biuletyn Komitetu Przestrzennego Zagospodarowania Kraju* 240 (1): 216–280.
- Liszewski S., 1987. Strefa podmiejska jako przedmiot badań geograficznych. Próba syntezy (Suburban area as a subject of geographical research. An attempt at synthesis). *Przegląd Geograficzny* 59(1–2): 65–79.

- Maik W., 1992. *Podstawy geografii miast* (Basics of urban geography). Uniwersytet Mikołaja Kopernika, Toruń.
- Maik W., 2012. *Podstawy teoretyczno-metodologiczne studiów geograficzno-miejskich. Studium z metodologii geografii miast* (Theoretical and methodological foundations of geographic and urban studies. A study in the methodology of urban geography). Wydawnictwo Uczelniane Wyższej Szkoły Gospodarki w Bydgoszczy, Bydgoszcz.
- Mantey D., 2011. *Żywiotowość lokalizacji osiedli mieszkaniowych na terenach wiejskich obszaru metropolitalnego Warszawy* (The spontaneity of the location of housing estates in the rural areas of the Warsaw metropolitan area). Uniwersytet Warszawski, Warszawa.
- Matczak A., 1991. Przemiany przestrzenne wsi położonych w strefie podmiejskiej Łodzi na przykładzie rejonu Grotnik (Spatial transformations of villages located in the suburban area of Łódź on the example of Grotniki), *Acta Universitatis Lodzianis, Folia Geographica* 14: 33–46.
- Merriam S.H., 2009. *Qualitative research. A guide to design and implementation*. Jossey-Bass, San Francisco.
- Miszewska B., 1996. Struktura morfologiczna peryferyjnych osiedli Wrocławia (Morphological structure of peripheral housing estates in Wrocław). *Prace Instytutu Geografii, Seria B: Geografia Społeczna i Ekonomiczna* 14, *Acta Universitatis Wratislaviensis* 1904: 53–61.
- Miszewska B., 2002: Wsie jako jądra genetyczne osiedli wrocławskich (Villages as genetic cores of Wrocław housing estates). *Rocznik Wrocławski* 8: 107–119.
- Miszewska B., Szmytkie R., 2015: Morphological processes in the spatial structure of the southern district of Wrocław city. *Bulletin of Geography, Socio-economic Series* 27: 133–151.
- Miszewska B., Szmytkie R., 2017. Rozwój przestrzenny i przemiany morfologiczne osiedli Wrocławia wyrosłych wokół dawnych wsi kmiecych (Spatial development and morphological transformations of housing estates in Wrocław raised around former villages). *Studia z Geografii Politycznej i Historycznej* 6: 51–70.
- Pacione M., 2001. *Urban geography. A global perspective*. Routledge, New York.
- Popławska I., 1992. *Architektura mieszkaniowa Łodzi w XIX wieku* (Łódź residential architecture in the 19th century). PWN, Warszawa.
- Prochownik A., 1975. Urbanizacja wsi czy deruralizacja? (Urbanisation of the village or deruralisation?). *Czasopismo Geograficzne* 46(4): 399–405.
- Rakowski W., 1975. Procesy urbanizacji wsi na przykładzie województwa warszawskiego (Rural urbanisation processes on the example of the Warsaw Province). *Studia KPZK PAN* 50, Warszawa.
- Reissman L., 1970. *The urban process. Cities in industrial societies*. The Free Press & Collier Macmillan, New York-London.
- Rippon S., 2013. Historic landscape character and sense of place. *Landscape Research* 8(2): 179–202.
- Rynkowska A., 1960. *Początki rozwoju kapitalistycznego miasta Łodzi (1820–1864)* (The beginnings of capitalist development of the city of Łódź (1820–1864)). Książka i Wiedza, Warszawa.
- Sauer C.O., 1925. *The morphology of landscape*. University of California, Berkeley.
- Schlüter O., 1899. Bemerkungen zur Siedlungsgeographie (Some remarks for settlement geography), *Geographische Zeitschrift* 5: 65–84.
- Ślodziński J., 2003. *Przestrzeń miasta i jej przeobrażenia* (Urban space and its transformations). Wydawnictwo Uniwersytetu Opolskiego, Opole.
- Sobotka S., 2014. Przekształcenia historycznych układów przestrzennych wsi w strefie podmiejskiej Olsztyna, ze szczególnym uwzględnieniem Brąswału, Dorotowa i Jonkowa (Transformation of the historical spatial arrangements of the villages in the suburban area of Olsztyn, with particular emphasis on Brąswałd, Dorotowo and Jonkowo). *Acta Scientiarum Polonorum. Administratio Locorum* 13(2): 39–57.
- Sokołowski D., 1999. *Zróżnicowanie zbioru małych miast i większych osiedli wiejskich w Polsce w ujęciu koncepcji continuum wiejsko-miejskiego* (Diversification of the collection of small towns and larger rural settlements in Poland in terms of the concept of rural-urban continuum), Wydawnictwo Uniwersytetu Mikołaja Kopernika, Toruń.
- Squires G.D., 2002. *Urban sprawl: Causes, consequences and policy responses*. The Urban Press Institute, Washington DC.
- Staszewska S., 2012. Przekształcenia urbanistyczne osiedli wiejskich strefy podmiejskiej dużego miasta (Urban transformation of rural settlements of the suburban area of a large city). *Barometr Regionalny, Analizy i Prognozy* 4: 53–68.
- Stefański K., 2001. *Jak zbudowano przemysłową Łódź* (How industrial Łódź was built). Regionalny Ośrodek Studiów i Ochrony Środowiska Kulturowego, Łódź.
- Straszewicz L., 1954. Strefa podmiejska Łodzi (Suburban area of Łódź). *Przegląd Geograficzny* 26(4): 182–197.
- Szambelan Z., Stępniewski M., 2009. Rozwój terytorialny Łodzi w świetle dokumentów i źródeł kartograficznych (Territorial development of Łódź in the light of documents and cartographic sources). *Rocznik Łódzki* 56: 37–50.
- Szczepańska M., Wilkaniec A., 2014. Przekształcenia krajobrazu kulturowego wybranych wsi strefy podmiejskiej Poznania (Transformations of the cultural landscape of selected villages of the suburban area of Poznań). *Studia Obszarów Wiejskich* 35: 29–45.
- Szlązak W., 2016. *Śladami starej Retkini* (In the footsteps of old Retkinia). Księży Młyn, Łódź.
- Szmytkie R., 2011. Osiedla wiejskie w granicach administracyjnych dużego miasta [przykład Wrocławia] (Rural settlements within the administrative boundaries of a large city [the case of Wrocław]). In: Ślodziński J. (ed.), *Procesy suburbanizacji w wybranych miastach Polski* (Suburbanisation processes in selected Polish cities), *Studia Miejskie* 3: 159–186.
- Szmytkie R., 2014. *Metody analizy morfologii i fizjonomii jednostek osadniczych* (Methods for analysing morphology and physiognomy of settlement units). *Rozprawy Naukowe Instytutu Geografii i Rozwoju Regionalnego* 35. Uniwersytet Wrocławski, Wrocław.
- Szulc H., 1995. *Morfogeneza osiedli wiejskich w Polsce* (The morphogenesis of rural settlements in Poland). Instytut Geografii i Przestrzennego Zagospodarowania PAN, Warszawa.
- Tkocz J., 1998. *Organizacja przestrzenna wsi w Polsce* (Spatial organisation of villages in Poland). Wydawnictwo Uniwersytetu Śląskiego, Katowice.
- Wesołowska M., 2006. Rozwój budownictwa mieszkaniowego a przemiany przestrzenne wsi województwa lubelskiego (The development of housing construction and spatial changes in the villages of the Lubelskie Voivodeship). *Studia Obszarów Wiejskich* 10. IGI PAN, Warszawa.

- Wesołowski J., 2002a. Łódź in the high industrial period. In: *The Łódź Atlas*, sheet V. Łódzkie Towarzystwo Naukowe, Łódź.
- Wesołowski J., 2002b. Łódź in the interwar period and during the Nazi occupation. In: *The Łódź Atlas*, sheet V. Łódzkie Towarzystwo Naukowe, Łódź.
- Whitehand J.W.R., 1992. *The urban landscape: Issues and perspectives*. In: Whitehand J.W.R., Larkham P.J. (eds), *Urban landscapes. International perspectives*. Psychology Press, London – New York: 1–19.
- Whitehand J.W.R., 2001. British urban morphology: The Conzenian tradition. *Urban Morphology* 5(2): 103–109.
- Whitby M., Willis K., 1978. *Rural resource development*. Methuen, London.
- Woods M., 2005. *Rural geography: Processes, responses and experiences in rural restructuring*. Sage, London.
- Woźniak K.P., 2013. *Niemieckie osadnictwo wiejskie między Prosną a Pilicą i Wisłą od lat 70. XVIII wieku do 1866 roku. Procesy i jego interpretacje (German rural settlement between Proсна and Pilica and the Vistula from the 1770s to 1866. Processes and its interpretations)*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź.
- Wójcik M., 2006. Przemiany siedlisk wsi pod wpływem urbanizacji we wschodnim paśmie aglomeracji łódzkiej (koluszkowsko-brzezińskim) (Transformation of village habitats under the influence of urbanisation in the eastern band of the Lodz agglomeration (Koluszki-Brzeziny). *Acta Universitatis Lodziensis. Folia Geographica Socio-Oeconomica* 7: 201–213.
- Wójcik M., 2013. *Przemiany społeczno-przestrzenne osiedli wiejskich. Studium przypadku Łódzkiego Obszaru Metropolitalnego (Socio-spatial changes in rural settlements. Case study of the Lodz Metropolitan Area)*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź.
- Zaluska L., Załuska P., 1914. *Retkinia. Rys historyczno-społeczny (Retkinia. Historical and social outline)*. Księgarnia Powszechna, Włocławek.
- Zand A., 1931. *Łódź rolnicza 1332-1793. Studium historyczne o topografii, stanie gospodarczym, organizacji prawnej i kulturze Łodzi (Agricultural Łódź 1332-1793. Historical study of topography, economic condition, legal organisation and culture of Łódź)*. *Rocznik Łódzki* 2: 53–222.