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APPLICATION OF GIS TOOLS TO DELIMIT THE HISTORIC CENTERS OF SMALL TOWNS

Abstract: Preservation and continuity of cultural heritage is an important task for local authorities, especially concerning the historic centers of small towns that have taken their shape over the course of past centuries. To this end, one develops revitalization programs that require the spatial extent of such centers to be determined. Indeed, accurate delimitation of the area to be revitalized based on transparent criteria is crucially important. Therefore, this study aims to formulate the rules that need to be followed when delimiting historic centers of small towns using GIS technology. The suggested solutions have been tested on selected examples, i.e. several historical towns from the Polish regions of Warmia and Powiśle qualified for the research. The proposed methodology for delimiting the historically shaped centers of small towns may be applied by city authorities to designate areas where various types of revitalization undertakings and repair works are to be carried out, as well as manage and implement effective spatial planning that allows for the conservation of cultural heritage.

Keywords: historical town, town center, town center boundaries, revitalization area

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Introduction with analysis of the state of the problems

The generic features of small towns, notably quality of life, clean environment, geographical anchoring and historical character, are key elements of sustainable urbanization. Since the second decade of the 20th century, increasing attention has been paid to local investments that may contribute to the development and activation of small towns, including cultural self-actualization. New ideas have been revived, such as localism, which involves using internal resources to satisfy local needs (Zuzańska-Żyśko, 2007; Lamprecht, 2008; Majewska, et al. 2022). Introduced several years ago, European Union programs aimed at sustainable development and cohesion policy through revitalization have brought about a positive transformation of the urban landscape of the towns, which in many respects are classified as small.

It is vital for the programs and plans to be comprehensively combined into thematic projects that boost the attractiveness of municipalities and the adjoining localities while preserving the history and past of towns (Kardaś, 2014). That history and past are reflected in the urban fabric preserved in the historic centers of small towns, saturated with historical urban interiors, tenement houses, and public squares with characteristic architectural features such as town halls, churches, and castles. The historic centers of small towns represent a continuum of what used to be and are a wealth of history and cultural heritage. That is why various programs aimed at revitalization in such areas are so important.

Maintaining the continuity of the urban fabric in the context of history and cultural heritage is a major task delegated to the local governments. In effect, the latter develop revitalization programs which, among other things, concern the modernization of buildings and public spaces in the historic centers of small towns. Revitalization programs should be based on thorough analyses, including spatial and cultural aspects (Russek, 2017). All of this may require the actual area of the historically shaped center to be determined.

This study aimed to formulate the rules according to which the historic center of a small town is determined and to test the proposed method on selected examples using GIS technology. The study spanned a number of towns dating to the Middle Ages where a historic center is to be found. The towns in question are located in the Warmia and Powiśle regions of Poland.

Historic city features. The history of a town influences its spatial layout. The period when an urban center was founded determines whether it has a historical character or whether it is a new city without a long history (Chmielewski, 2001; Oers & Roders, 2012; Paszkowski, 2015; Jopek, 2018). The terms used in the literature include *historical city model* and *town with a historical character*, which is characterized by, e.g.:

- a market square/public square in the city center,
- rectangular street layout,
- compact development with no empty spaces,
- a substantial amount of historical features,
- two-storey structures,

- presence of natural elements of the landscape that directly affect the shape of the area and its boundaries, e.g. a watercourse, a hill, wetlands that originally served a defensive function,
- distinctive religious and public structures, e.g., town hall, church, castle, abbey,
- remnants of defensive walls (records of their existence),
- a substantial amount of public spaces.

The various city models tend to be mixed (postmodern model, smart city, slow city, contemporary city model, garden city, linear model); cities are rarely based entirely on one model alone. Despite the development and interpenetration of different models, certain cities partially (usually in the center) retain the historical model, with a core that reflects the make-up of towns at the time of their foundation (Fiedorowicz, 2012; Anthopoulos et al., 2016; Kołodziejczyk, 2017). Over hundreds of years, the spatial and architectural characteristics of the central area in such cities have not changed, nor have their original functions: social, stately, and public (in the context of services).

The town center. As the location with which a town or city is identified, it is referred to as the citywide center, with the highest significance – in terms of planning and artistic qualities – for the composition of the entire town; it constitutes the historical core of the overall urban layout and the dominant feature of the central district (Mitković & Dinić, 2004). Depending on the historical period, different elements of the urban space have served as the center. The Athenian agora or the Roman forum invariably remain the archetypes of the local center. Terms such as the market square, cathedral square, central district (Pol. *śródmieście*) or the old town complex are also widely known, and, although they do not directly mean the town center, they do denote the concept in the public awareness (Kuśnierz-Krupa & Krupa, 2008; Zagroba et al., 2020). Approaching the notion of the *town center* from a historical perspective, one cannot fail to note that its distinguishing features include compact development and easy accessibility. In a sense, that area is also separated and distinguished in terms of architectural and historical assets, which are perceived as valuable by both residents and tourists (Bernaciak, 2015; Al-Djaji & Musa, 2022). The historic town center is nothing else than the central area saturated with elements typical of the historic city model (Bernaciak, 2015; Morawska & Michalski, 2017; Wojnarowska, 2017a).

Since the earliest time, the town center has been a special space because the most important aspects of city life have been focused there. The center is also an important part of the public space system in the urban structure. According to Wallis (1979), the town center is a symbol, an accumulation of material values that possess historical significance. It is an area which displays considerable diversity and cultural complexity observed on many spatial and functional levels. Wallis notes (1979) that the town center may be regarded as a social and urban subsystem in which, besides its perceived attractiveness, the society's most important political, informational, legal, cultural, and even worldview processes take place. Hence, the center bears on the formation of an emotional bond with a given locality, enabling residents to identify with it and with other inhabitants while participating anonymously in urban life (Wallis, 1979; Rafiemanzelat & Emadi, 2015; Sobierajska & Sikorska, 2019; Al-Dioji & Musa, 2022). This multifunctionality of the town

center depends on the circumstances which have shaped it, from the initial defensive role to later political, social and economic factors.

In an analysis of how the town center was established and subsequently transformed, one should identify major changes in its spatial layout and the differences in appearance over the course of successive periods. The appearance of the center of a town founded under a charter, where tradition and history have shaped it for hundreds of years, differs greatly from what may be seen in the cities built in the 19th and 20th centuries. After 1989, the intensive transformation of a socialist city into one governed by a market economy caused town centers to change as well, leading to various conflicts between investors, entrepreneurs and residents. Here, changes occurred with regard to the two most important functions, economic (services and industry) and social (housing and culture) (Boryczka, 2013; Borsa, 2016; Tolqinovich & Inomovich, 2021). Numerous towns have preserved the unique character of their centers but, regrettably, it does happen today that the symbolic space of architectural and cultural representation – with its town hall or church – also includes a large car park, housing developments and even a shopping center (Kobylarczyk, 2012; Sobierajska & Sikorska, 2019).

In many cases, the present-day *town center* overlaps with the entirety of the erstwhile town, usually at the time when it received the charter, around which the rest grew later. Currently, *town centers* differ from those of the past, while their role is no longer as important as it used to be. Each settlement had its origins in the center, the nucleus of social and political awareness. Gradually, often due to destruction and wars, the character of the center could be lost. More and more studies demonstrate that town centers disappear and their historical role is much diminished following a reduction in area, functionality and structure, leaving the center as a symbolic location. Increasing attention is paid to the adverse factors which cause the character of town centers to change, prompting the residents to take advantage of more remote areas, such as the outskirts of the city, instead of spending time in the historical center with its monuments (Bernaciak, 2015; Rafiemanzelat & Emadi, 2015; Horbliuk & Stepanets, 2021).

Medieval towns in the Warmia and Powiśle regions. One of the assets in the regions of Warmia and Powiśle is its diverse cultural heritage and the rich historical fabric that offers much scope for research, especially where it concerns town center architecture. This should be attributed to the turbulent history of the region, the presence of various nationalities and ethnicities and, in effect, cultural and religious diversity (Achremczyk, 1992; Bieniek, 2010; Domagała, 2015).

The earliest towns of Warmia and Powiśle date their beginnings to the 13th and 14th centuries. Historically, the first municipal rights in the Warmia region were granted in the final stage of the Middle Ages. Over time, the economic structure of urban and rural centers changed as trade, including long-distance exchange, increased. A definite network of towns and settlements with a regional capital emerged. The stage of specialization of centers in terms of their functions began. The spatial structure of towns also witnessed intense transformations (Białyński, 1996; Wielgus, 1998; Filbrandt-Czaja et al., 2015).

It was in the Middle Ages that some of the most interesting urban layouts were deliberately created. The towns were ideally integrated into the terrain and the natural

surroundings. The oldest towns of Warmia and Powiśle usually have a centrally located town hall in a square (marketplace); the latter is predominantly quadrangular or rectangular, though triangular or trapezoid ones do occasionally occur. It is surrounded by regular blocks and buildings with shops on the ground floor (premises of craftsmen or merchants). This arrangement is characterized by spatial regularity, perpendicular street intersections, and closed urban interiors, as towns were built following a checkerboard plan. The original town limits were demarcated by defensive walls with additional elements such as turrets and fortified gates. Historic street layouts and remains of defensive walls still survive, but the wars and successive intense developments contributed to the destruction of numerous historic buildings (residential, religious and administrative alike). Some of them were rebuilt based on the data from plans, and others passed into oblivion (Okulicz, 1985; Gwiazdzińska-Goraj, 2006). The development of settlements was affected by wars, conflicts and recurring epidemics (Popieliński, 2016). Most of the towns in the region were granted municipal rights in the 14th century (Table 1).

Table 1. Medieval towns in the Warmińsko-Mazurskie Voivodeship

Name of town	Municipal charter
Elbląg; Braniewo; Pasłęk; Tolkmicko; Frombork;	13th cent.
Olsztyn; Ostróda; Iława; Kętrzyn; Bartoszyce; Działdowo; Lidzbark Warmiński; Morąg; Nidzica; Nowe Miasto Lubawskie; Biskupiec; Dobrze Miasto; Lubawa; Orneta; Lidzbark; Olsztyn; Barczewo; Susz; Reszel; Górowo Iławieckie; Jeziorany; Pieniężno; Miłakowo; Pasym; Miłomłyn; Bisztynek; Zalewo; Kisielice; Sępólno; Młynary	14th cent.

Source: Andrzejewski et al., 1967

Material and methods

Selection of towns. In the first stage of the research, a group of small towns with historic centers in the Warmia and Powiśle regions was selected. For this purpose, the following classification of urban centers was adopted. The towns were divided into three groups:

- Group I – Remnants of historical buildings have been preserved/rebuilt or transformed while retaining their original features. The city center has retained its historical character, public spaces, rectangular street layout (or its remnants), compact, low-rise development, with minimal proportion of empty spaces. There are remarkable buildings in the center, such as the town hall, church, castle, or monastery. The area can be partially demarcated using the outline of existing city walls (their remnants) or historical records of their limits; in addition, the urban area was created

within the boundaries shaped by nature. The center still serves major urban functions: administrative, social and tourist.

- Group II – Several historical buildings have been preserved in the city; they have been rebuilt or transformed while retaining their original character. However, the existing city center has not retained its historical character, lacking the elements and buildings typical of the historical city model. The town center cannot be defined using records that describe defensive walls, and there are no natural boundaries of the central area. The center does not serve important functions, as another central district has developed.
- Group III – No remnants of historical buildings have been preserved, single structures have been rebuilt or transformed without retaining their original character, or there are isolated historical features. The center and the central district have developed in modern times.

Determination of the boundaries of the historically shaped town center. In the second stage, the boundaries of the historic center in small, historically shaped towns were delimited. In Polish literature, the following methods of determining the center are distinguished: historical-geographical, functional, and physiognomic (Chmielewski, 2001; Ogrodnik, 2012). The functional method is not suitable for small towns, as nowadays, administration and services are often dispersed throughout the entire town. The physiognomic method relies on the characteristics and unique buildings found in towns and the manner of land use (squares, historical structures, street layout); as such, it could be effectively adapted for application in small towns. Drawing on the history of a town and its evolution, the third method is particularly useful in the context of this research. The combination of the historical-geographical and physiognomic methods seems to be the most advantageous given the subject matter of this study.

Considering the subject matter of this study, i.e. historic town centers, it was necessary to establish the rules according to which such areas would be determined. It was assumed that four essential elements inform the determination of the center area: I. Defensive town walls, II. Original town area, III. Natural terrain, IV. Historical, spatially concentrated urban fabric of the town (historical features). Supplementary elements include V. Planning studies and VI. Cadastral parcels (Fig. 1).

I. Defensive town walls. The central area of the town (in a historical approach) may be determined by tracing the remnants of the defensive walls, which either actually exist in the area or are described in historical records; also, their boundary may be clearly preserved in the new development or the layout of the plots (Molski, 2010; Kulig, 2011).

II. Original town area. The limits of the central area roughly overlap with the town boundaries at the time of its foundation, when the locality was granted its first city rights (Krzysztofik, 2007; Gwiaździńska-Goraj, 2006).

III. Natural terrain. The natural terrain, vegetation and watercourses are helpful in determining the boundaries. When towns were founded in the past, such features were the main factors which influenced their establishment and, in many cases, those natural areas have not been transformed to these days (Kowalczyk, 2009b; Słodczyk, 2014b).

IV. Historical, spatially concentrated urban fabric of the town (historic features). The area is highly saturated with historic features, their remnants preserved in an unchanged state or rebuilt/modernized with respect for the past. They can be identified based on the list of structures in the Register of Historic Monuments or the Historic Monuments Preservation Programme. The historical layout of streets and public spaces has been retained.

V. Planning studies. Protected conservation and archaeological zones described in planning documents constitute officially designated areas where the most historically significant locations in the town are found.

VI. Cadastral parcels. In problematic cases, registry parcels are a very helpful element. If the limits of an area are demarcated by watercourses or green spaces, they help to determine the accepted boundary of the site. If there is doubt as to where the boundaries of the historic center should run, the parcels are the component that defines the purpose of the area and indicates its boundary.



Fig. 1. Elements informing the determination of the historic town center

Source: own elaboration

It is important to have the central historical area taken in conjunction with the surrounding greenery and watercourses/waterbodies. The natural features of the landscape form a coherent part of the center. They are its extension and often happen to be preserved in such locations in a state close to its original form or transformed into recreational areas. In order for the analysis to remain consistent, the areas under investigation should be enclosed by natural spatial boundaries (natural barriers), e.g. described elements of nature, roads, rivers, or the end lines of structural development.

The spatial analysis conducted and the areas delimited should be juxtaposed with historical sketches which show the original areas of urban centers at the time when the most important buildings in their history existed.

Spatial analyses were carried out using QGIS software and publicly accessible geoportals to obtain registry data as well as information on the terrain, the limits of conservation zones and the listed features. This was supplemented by the available historical materials, including cartographic resources.

Results and discussion

Qualification of research areas: selection of small historic towns in Warmia and Powiśle. In the historic regions of Warmia and Powiśle, 22 small historic towns can be identified (Fig. 2 and Fig. 3). There are 10 such towns in Powiśle, among which – according to size-based classification (number of inhabitants) – only one represents a large urban center (Elbląg), one is a medium urban center (Iława), and as many as eight are small urban centers (Kisielice, Miłakowo, Młynary, Morąg, Pasłęk, Susz, Tolkmicko, Zalewo). The remaining 12 towns are located in Warmia, with one large urban center (Olsztyn) and 11 small towns (Barczewo, Biskupiec, Bisztynek, Braniewo, Dobrze Miasto, Frombork, Jeziorany, Lidzbark Warmiński, Orneta, Pieniężno, Reszel). In the preliminary selection, eight small towns in Powiśle and 11 small towns in Warmia have been chosen for further consideration.

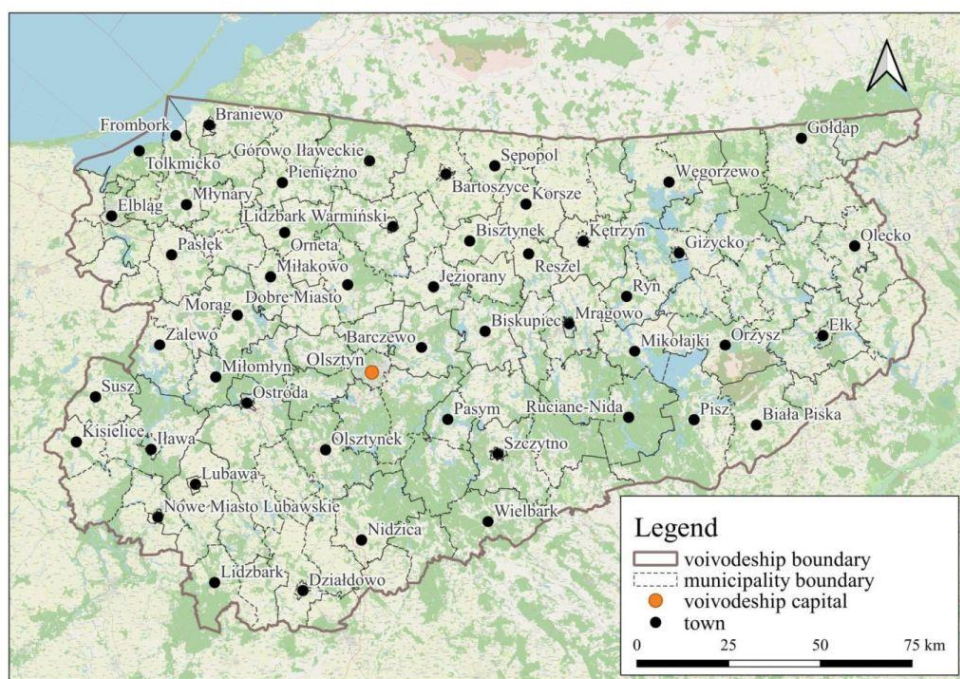


Fig. 2. Towns of the Warmińsko-Mazurskie Voivodeship
Source: own elaboration (in overview scale) based on PRG data
<https://www.geoportal.gov.pl/dane/panstwowy-rejestr-granic>

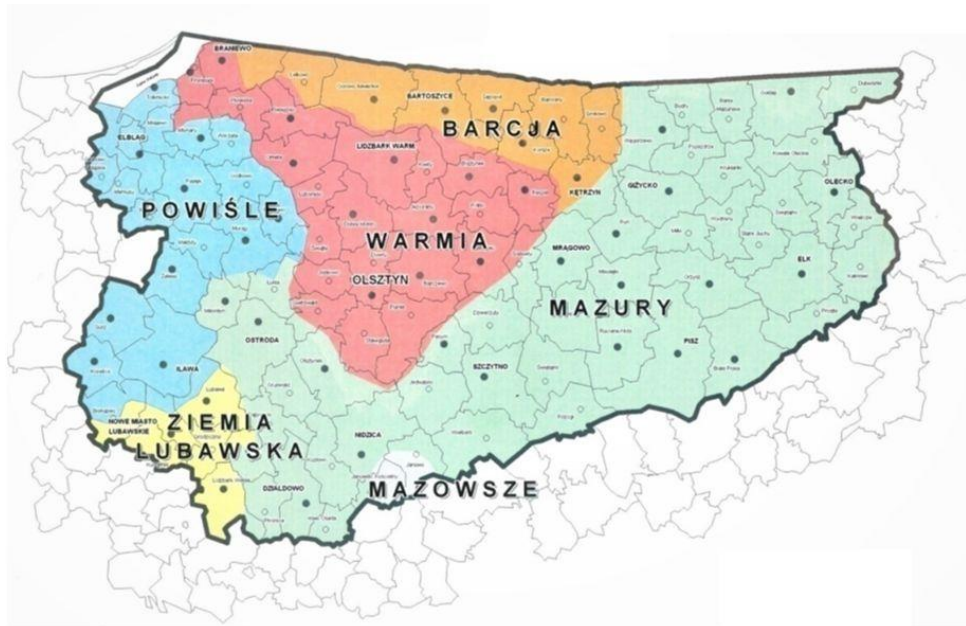


Fig. 3. Historical regions of Warmia and Powiśle in the present-day
Warmińsko-Mazurskie Voivodeship
Source: Kowalczyk 2009a, p. 55

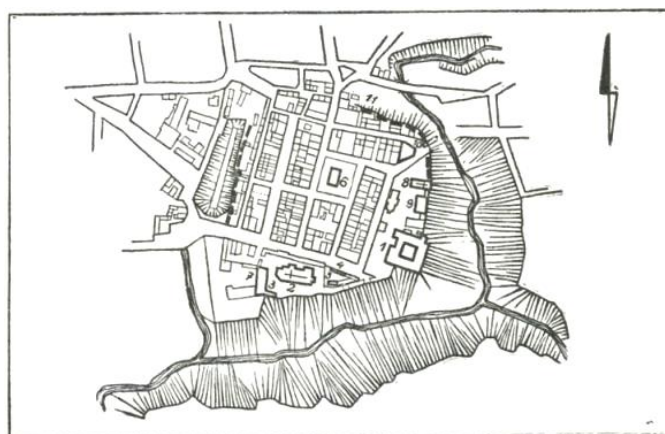
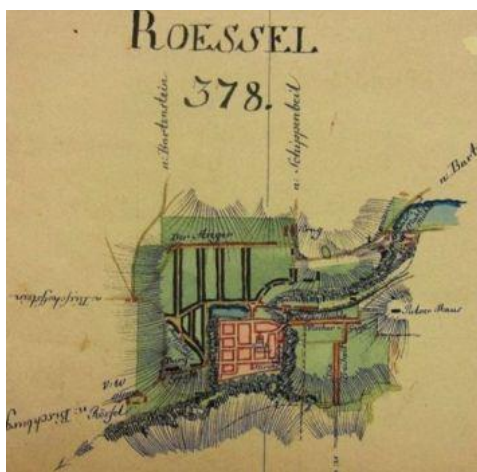
In the historical area of Warmia, 11 towns are classified as small urban centers. In line with the adopted criteria for selecting small historical towns, i.e. those where a historic center is to be found, only those which possess Group I characteristics could qualify for further research. The towns were categorized into these groups following analysis of relevant literature concerning the history of small urban centers, a review of their history, further analysis using the Google Street View tool, field surveys in each urban center as well as based on visual and spatial data from the National Heritage Institute geoportal. In summary, seven towns in Warmia and three towns in Powiśle (three cities) were ultimately classified as small historic cities. Two example towns were then selected for further research (Table 2), i.e. Morąg in the Powiśle region and Reszel in Warmia.

Table 2. Small historical towns of Warmia and Powiśle

Historical regions	Name of town		
	Group I	Group II	Group III
Warmia	Pieniężno, Jeziorany, Reszel, Barczewo, Orneta, Biskupiec, Lidzbark Warmiński	Dobre Miasto, Braniewo	Frombork, Bisztynek
Powiśle	Morąg, Pasłęk, Susz	Zalewo	Młynary, Kisielice, Miłakowo, Tolkmicko

Source: own study

Delimitation of the center boundaries



Reszel. 1 – castle; 2 – parish church; 3 – former parish school; 3 – presbytery; 5 – former stables; 6 – town hall; 7 – monastery complex of the Congregation of St. Catherine; 8 – former Jesuit church; 9 – former Jesuit college; 10 – former oratory of the Sodality of Our Lady; remnants of the defensive walls

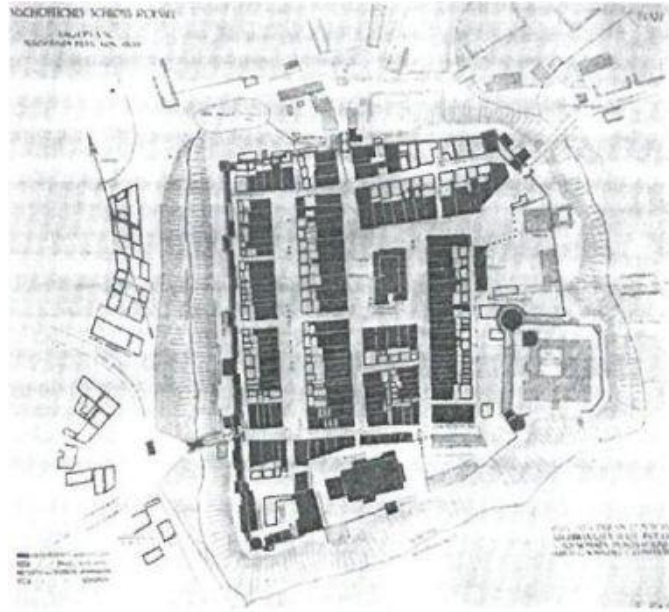


Fig. 6. Medieval plan of the town center in Reszel (pre-1806)

Source: Rawa, 2017, p. 14

Following the analysis, the most important source data were superimposed, which directly or indirectly indicated the boundaries of the historic center of the small town. The outline of the remnants of the defensive walls overlaps the area of the town at the beginning of its existence. It is in that area that the highest concentration of historic features can be found. To the east and south, the boundaries of the analyzed area were extended to include the natural features surrounding the historic center, i.e. green areas transformed into a city park and the Sajna River. The determination of the northern and western boundaries proved problematic as the area continuity could not be established; in consequence, further elements demarcating the area of the center were examined.

The Study of Conditions and Directions of Land Use for the Town and Municipality of Reszel ("Town of Reszel. Study of Conditions and Directions for Land Use. Directions for the Protection and Shaping of the Cultural Environment – Fig. 7) includes a map showing the extent of the protected conservation Zone "A", where so-called strict protection applies. The zone covers the part of the town delineated by the remnants of the defensive walls as well as the greenery and watercourse adjacent to the walls, the features which are a natural extension of the former fortifications. The historic central district is subject to a local zoning plan, which, as in the previous case, specifies protected conservation zones. The most important, separate zones of strict protection include protected archaeological Zone IV and Zone I for the protection of the historical urban spatial structure and historic architectural substance (*Resolution No. XXXIII/235/2017 of the Reszel Town Council of 23 February 2017 on the adoption of amendments to the Study of Conditions and Directions of Land Use for the Town and Municipality of Reszel, Resolution XXX/170/09 of the Town Council of Reszel of 21 May 2009 on the adoption of the local land use plan for the town of Reszel, the village of Święta Lipka and the pilgrimage route Reszel – Święta Lipka*).

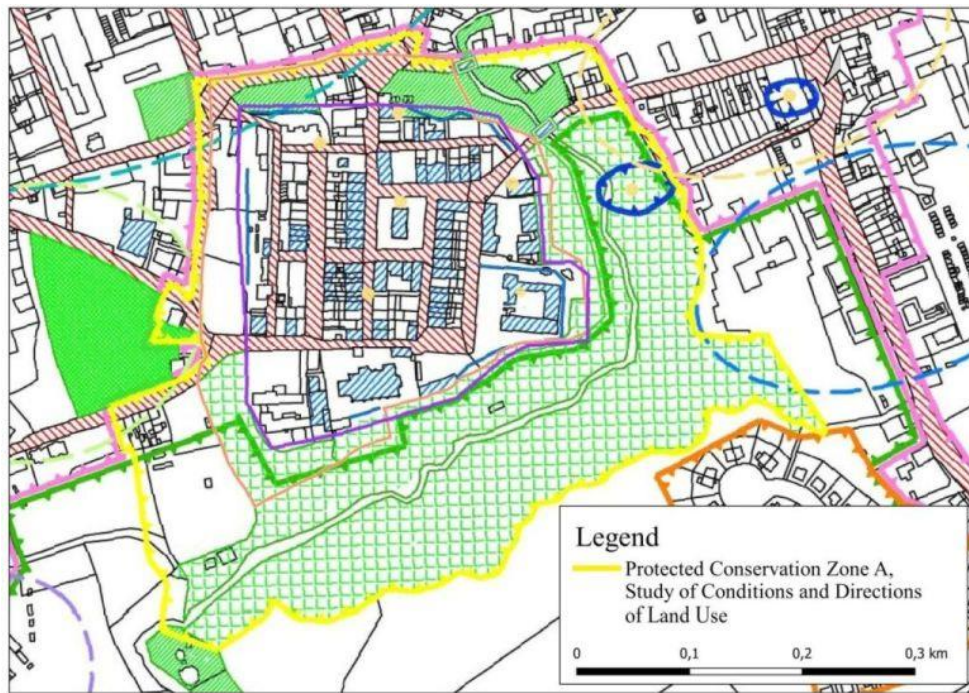


Fig. 7. Directions for the Protection and Shaping of the Cultural Environment
Source: Study of Conditions and Directions of Land Use
for the Town and Municipality of Reszel

National Heritage Institute data concerning the designation of protected features and structures entered in the register of historic monuments was also used (Fig. 8).

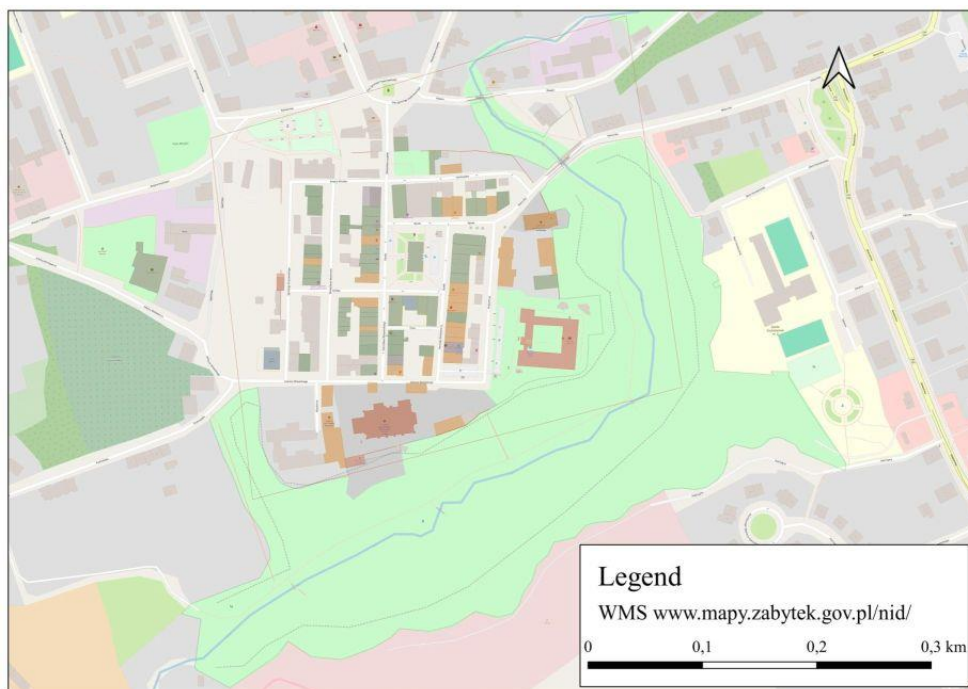


Fig. 8. Centre of Reszel
Source: <https://mapy.zabytek.gov.pl/nid/>

The boundaries of the cadastral parcels also proved helpful, as they made it possible to establish the boundaries in uncertain locations (Fig. 9).

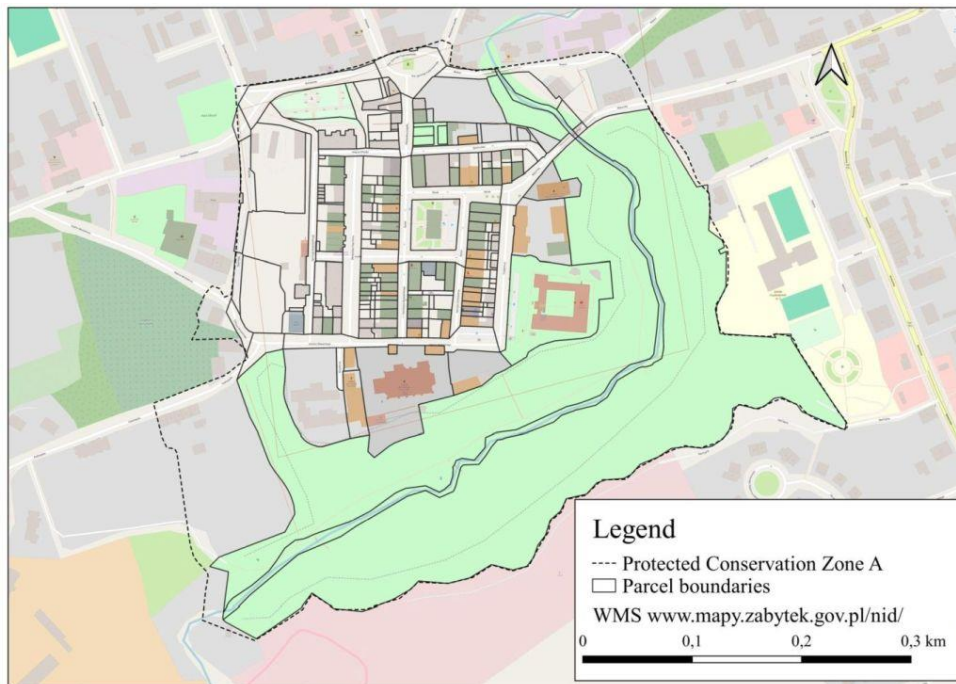


Fig. 9. Boundaries of cadastral parcels in the center of Reszel

Source: <https://reszel.e-mapa.net/>

The final outcome is presented in Fig. 10, where the elements mentioned above are superimposed, and the boundary of the historically shaped center of Reszel is delimited.

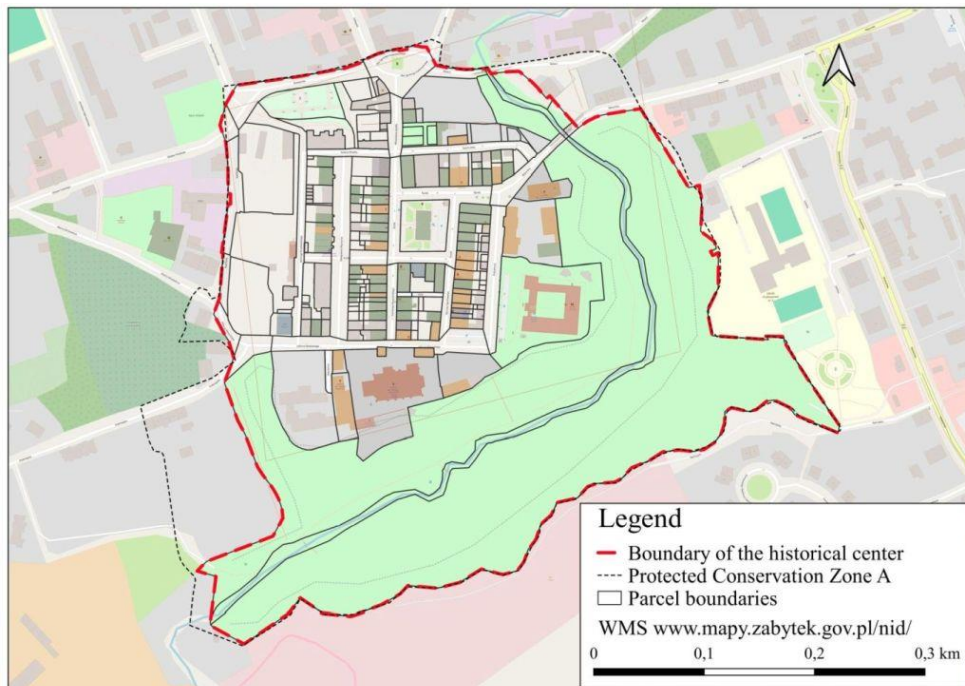


Fig. 10. Boundary of the historically shaped center in the town of Reszel

Source: own elaboration

With regard to Protected Conservation Zone A, the boundary of the historically shaped center has been shifted in the northeastern and southwestern parts. Protected Conservation Zone A coincides with the areas designated by the archaeological protection zone boundary, which includes historic sites but , “hidden underground” and not visible in today's public space. For this reason, these parts of the area were excluded from the historically shaped center area.

Finally, the boundary of the historically shaped center in the town of Reszel was determined by the remains of the town's defensive walls, delimiting the area of the town, from its beginnings. Additionally, this area was extended by natural elements that are a natural extension of the old fortification.

Morąg. Another town included in the study was Morąg, founded at the turn of the 13th century. Located on a small hill, it was surrounded by water bodies (not directly adjacent to the original city limits), which offered protection in medieval times. The town of Morąg exemplifies the 14th century spatial layout that may still be discerned on its map today. Numerous prints have been preserved thanks to the J. G. Herder Museum in Morąg and the Morąg Chamber for Historical Memory. The Morąg Town Hall also has its archival resources, such as the 18th century town plan shown in Fig.11.

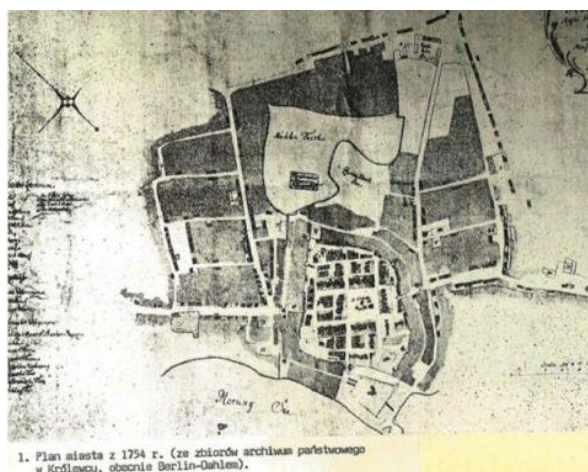


Fig. 11. Morąg, town plan from 1754

Source: Abridged Historical and Urban Planning Study. Conservation Guidelines and Requirements for the Town of Morąg 1993

Preserved historical features in Morąg include remnants of the defensive walls. Built in the 14th century using bricks and stones collected in the vicinity, they have survived to this day in fragmentary sections. The walls may be seen during a walk in the center of the town as standalone features or elements integrated into the walls of buildings.

Morąg is an example of a town with a clearly preserved historical, medieval urban fabric. The Town Hall, surrounded by historic tenement houses (Fig. 12), is the dominant point in the center. Nearby, there is a 14th century church and the remnants of a castle of the Teutonic Knights. The spatial distribution of the historic features can be determined through field surveys, as they are well-marked. Even so, data from the National Heritage

Institute geoportal and entries in the Register of Historic Monuments (<https://mapy.zabytek.gov.pl/nid/>) were also used for identification purposes.



Morąg. 1 — fragmenty zamku z XIV—XV w. (przebudowany); 2 — kościół p.w. św. Piotra i Pawła z XIII—XIV w.; 3 — ratusz gotycki z XIV w. przeb. w XVII wieku; 4 — fragmenty murów miejskich z XIV—XV w.; 5 — Pałac Dohnów z XVI—XVIII w. (ruina).

Morąg. 1 – fragments of the castle (14th – 15th cent., rebuilt); 2 – church of St. Peter and St. Paul (13th – 14th cent.); 3 – Gothic-style town hall (14th cent.), rebuilt in the 15th cent.; 4 – fragments of town walls (14th – 15th cent.); Zu Dohna Palace (16th – 18th cent., ruined)

Fig. 12. Map of the town center in Morąg
Source: Czubiel & Domagała, 1969, p. 206

The organization of urban space is based on well-thought-out decisions. The authorities of Morąg are guided by the principle of sustainable urban development in their urban policies. Consequently, the town is covered by a local zoning plan and a study of conditions and directions of land use. These planning documents include protected conservation zones, indicating areas of value in view of their history, presence of historic features, unique landscapes, and archaeological relics. Such zones encompass the center of the town – their extent is shown in Fig. 13 (Resolution No. III/20/14 of the Morąg Town Council of 30 December 2014 on the adoption of amendments to the Local Zoning Plan for the town of Morąg; Resolution No. XIV/238/20 of the Morąg Town Council of 7 February 2020 on the adoption of amendments to the Study of Conditions and Directions of Land Use in the Urban and Rural Areas of the Morąg Municipality).

As in the case of Reszel, National Heritage Institute data concerning the designation of protected features and structures entered in the register of historic monuments was also used (Fig. 14), the boundaries of the cadastral parcels also proved helpful, enabling the boundaries to be determined in uncertain locations (Fig. 15).

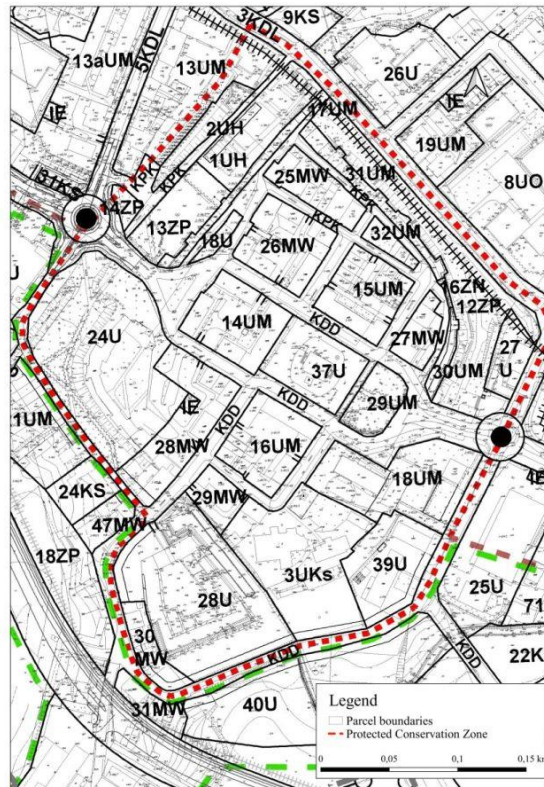


Fig. 13. Protected conservation zone

Source: Resolution No. III/20/14 of the Morąg Town Council of 30 December 2014



Fig. 14. Morąg town center – protected features

Source: <https://mapy.zabytek.gov.pl/nid/>



Fig. 15. Boundaries of cadastral parcels in the center of Morąg

Source: <https://morag.e-mapa.net/>

In terms of boundary delimitation, Morąg was a more difficult case. The procedure was carried out in accordance with the adopted rules for delimitation of the research area. The original town area and the layout of the town walls could be readily determined, but difficulties arose when trying to close off the outline of the area in a manner that would include the greenery surrounding the center, given that it constitutes part of the latter. To the north and north-east, the boundary was traced along the defensive walls, including the centuries-old town park. The remainder of the eastern boundary follows the course of a section of the city walls, but no further areas have been included due to the fact that a fire station and a hotel built in recent years are located in that area. In addition, the green spaces have been privatized or used as a site for private garages. The south-western boundary includes the town park adjacent to the town walls, which is directly connected to the Dohna Palace, while the north-western border encompasses the green area outside the town walls and the town marketplace, a site of great historical value. The southern boundary is demarcated by the castle moat and the continued section of the town park. The final outcome is shown in Fig. 16, where the elements mentioned above are overlaid to delimit the boundary of the historically shaped city center of Morąg.

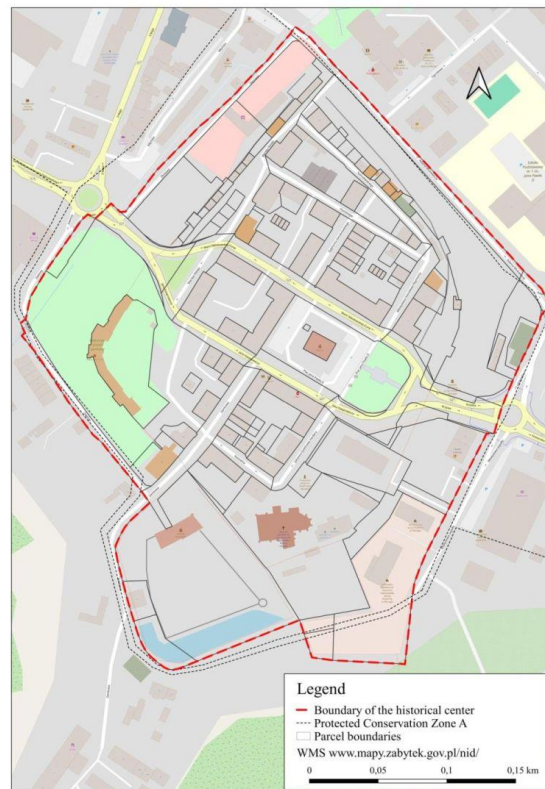


Fig. 16. Boundary of the historically shaped center in the town of Morąg

Source: own elaboration

Conclusions

Preserving the cultural heritage is one of the most important objectives that every user of a historically shaped urban space should consider. Historically shaped centers require revitalization and humanizing measures that should be implemented by local governments (Sobierajska & Sikorska, 2019). Here, the aim is to activate towns and promote their socio-economic potential.

Revitalization should be a process that ensures harmonious, multifaceted development and town revival by integrating historical and contemporary resources. In the case of the towns studied here, their historically shaped centers represent a major historical resource, with significant cultural heritage features which, often enough, are protected under law. In order to formulate a program of revitalization measures, it is necessary to define their spatial extent. Indeed, accurate delimitation of the area to be revitalized – based on transparent criteria – is crucially important.

In the literature, city centers are described as classic examples of areas with undefined boundaries, resulting in a lack of consensus on how best to delimit them (Soares et al., 2022). Most studies refer globally to the delimitation of city centers, but these cannot always be applied to the delimitation of a historical center in a small towns. Hence the proposal for a new way to delimit them. Similar examples of studies, but based on other principles and data sources, were presented by Alonso et al. (2017), Jiménez-Espada et al. (2022), Soares et al. (2022), de Oliveira et al. (2023).

As mentioned earlier, the proposed method is the combination of the historical-geographical and physiognomic methods, which makes it relatively universal. It makes it possible to determine the boundaries of the center both for towns with historically established center boundaries and for those where extensive transformation processes have taken place and historical boundaries have been obliterated.

The developed solution also has the advantage of being partially automated by using GIS software to overlay successive layers depicting boundaries determined based on historical, environmental, ownership, functional criteria. These form the basis for determining the boundaries of the historically shaped center, but the final determination of the boundary can be adjusted by an expert. This is due to the fact that often such boundaries are based on social definition, and not only on a clearly defined physical boundary.

The proposed methodology for delimiting the historically shaped centers in small towns may be applied by town authorities to designate areas where various types of revitalization undertakings and repair works are to be carried out, as well as manage and implement effective spatial planning that allows for the conservation of cultural heritage.

References

- Achremczyk S. (1992). Historia Warmii i Mazur. Od pradziejów do 1945 roku (*History of Warmia and Mazury. From prehistory to 1945*). Ośrodek Badań Naukowych im. Wojciecha Kętrzyńskiego, Olsztyn, DOI: 10.25627/19954436003.
- Al-Dioji M., Musa E. (2022). Contextual Integration in Iraqi City Center Development Projects. *IJSET – International Journal of Innovative Science, Engineering & Technology*, vol. 9, no. 4, pp. 182–197.
- Alonso-Rodriguez M., Alvaro-Tordesillas A., Carazo-Lefort E. (2017). Infographic restitution of the historic centre of the Spanish town of Oviedo. *Computers, Environment and Urban Systems*, 64, 154–168. <https://doi.org/10.1016/j.compenvurbsys.2017.01.009>.
- Andrzejewski S., Arnold S., Filip M., Gieysztor A., Haisig M., Herbst S., Pazyra S., Rączka E. (1967). Miasta Polskie w Tysiącleciu. Tom Drugi (*Polish Cities in the Millennium. Volume Two*). Zakład Narodowy imienia Ossolińskich, Wrocław, Warszawa, Kraków.
- Anthopoulos G.L., Janssen M., Weerakkody V. (2016). A Unified Smart City Model (USCM) for smart city Conceptualization and Benchmarking. *International Journal of Electronic Government Research*, vol. 12. DOI: 10.4018/IJEGR.2016040105.
- Batyk I. (2010). Dziedzictwo kulturowe Warmii (*The cultural heritage of Warmia*). *Infrastructure And Ecology of Rural Areas*, vol. 2, pp. 35–43.
- Bernaciak A. (2015). Współczesne przemiany centrów miast w świetle wybranych doświadczeń amerykańskich i europejskich (*Current transformations of city centers in light of some American and European experience*). *Ruch prawniczy, Ekonomiczny i Socjologiczny*, vol. 4, pp. 265–274.
- Białyński G. (1996). Czynniki oddziałujące na osadnictwo regionu Wielkich Jezior Mazurskich do XVIII wieku. *Komunikaty Warmińsko-Mazurskie* (*Factors influencing*

- the settlement of the Great Masurian Lakes region until the 18th century*), vol. 4, pp. 503–523.
- Bieniek M. (2010). Wielokulturowe dziedzictwo oraz losy ludności Warmii i Mazur po 1945 roku – przegląd tematyki i literatury przedmiotu pod kątem nauczania dziejów regionu (*The multicultural heritage and fate of the population of Warmia and Masuria after 1945 – the review of subject matter and literature under the angle of a history teacher's needs*). Przegląd Wschodnioeuropejski, vol. 1, pp. 267–296.
- Borsa M. (2016). Powrót do centrum miasta – siły sprawcze, uczestnicy, motywacje (*Return to the city center – driving forces, participants, motivations*). Studia Komitetu Przestrzennego Zagospodarowania Kraju PAN, vol. 168, pp. 11–22.
- Boryczka E. (2013). Town center management – Koncepcja zarządzania centrum miasta na przykładzie miast europejskich (*Town center management as based on European cities*). Zeszyty Naukowe Politechniki Częstochowskiej, Zarządzanie, 12, pp. 119–130.
- Chmielewski M.J. (2001). Teoria urbanistyki w projektowaniu i planowaniu miast (*Theory of urban planning in city design and planning*). Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa.
- Czubiel L., Domagała T. (1969). Zabytkowe ośrodki miejskie Warmii i Mazur (*Historic urban centers of Warmia and Mazury*). Pojezierze, Olsztyn.
- Domagała B. (2015). Warmia i Mazury. Procesy konstrukcji i dekonstrukcji regionalnej tożsamości (*Warmia and Mazury: processes of construction and deconstruction of a local identity*). Warmińsko-Mazurski Kwartalnik Naukowy, Nauki Społeczne, vol. 4, no. 16, pp. 11–40.
- Fiedorowicz J. (2012). Kształtowanie struktury przestrzennej miasta zrównoważonego (*Management and planning of urban spatial structure of sustainable city*). Zeszyty Naukowe Politechniki Śląskiej, Seria: Architektura, vol. 51, pp. 117–132.
- Filbrandt-Czaja A., Czaja R., Kamiński D. (2015). Przyrodnicze uwarunkowania rozwoju miast w Prusach w średniowieczu (*The influence of natural conditions on the development of towns in Prussia in the middle age*). Prace i Materiały Muzeum Archeologicznego i Etnograficznego w Łodzi. Seria Archeologiczna, vol. 46, pp. 71–85.
- Horbliuk S., Stepanets I. (2021). Public policy on city center revitalization based on the Town Centre Management concept. E-mentor, vol. 92, pp. 36–44. DOI: 10.15219/em92.1539.
- Gwiaździńska-Goraj M. (2006). Zabytkowe układy urbanistyczne i ruralistyczne (*Historic urban and rural layouts*). In: J. Wysocki (ed.). Dziedzictwo kulturowe Warmii – Mazur – Powiśla. Stan zachowania, potencjały i problemy. Warmińsko-Mazurskie Biuro Planowania Przestrzennego, Olsztyn, pp. 86–113.
- Jiménez-Espada M., García F.M.M., González-Escobar R. (2022). Urban Equity as a Challenge for the Southern Europe Historic Cities: Sustainability-Urban Morphology Interrelation through GIS Tools. Land, 11(11), 1929. <https://doi.org/10.3390/land11111929>.
- Jopek D. (2018). Czynniki kształtujące przestrzenną formę miasta (*Factors forming the spatial form of the city*). Rozwój Regionalny i Polityka Regionalna, vol. 42, pp. 81–89.

- Kardaś A. (2014). Aktywizacja funkcjonalna małych miast przy pomocy środków z funduszy europejskich na przykładzie miasta i gminy Gołdap (*Functional activation of small towns with eu funds on the example of town and community Gołdap*). Acta Universitatis Lodzensis, Folia Geographica Socio-Oeconomica, vol. 18, pp. 105–116.
- Kobylarczyk J. (2018). The directions in development for small towns in Podkarpacie considering the contemporary needs of their inhabitants. W: E3S Web of Conferences. vol. 45, no. 3/1, pp. 1–7. DOI: 10.1051/e3sconf/20184500031.
- Kołodziejczyk P. (2017). Krajobraz miast historycznych. Znaczenie i ochrona (*Landscape of historical cities. Meaning and protection*). Topiarius. Studia krajobrazowe. Wydanie monograficzne, vol.2, pp. 106–116.
- Kowalczyk B. (2009a). Podziały administracyjne (*Administrative divisions*). In: J. Wysocki (ed.). Dziedzictwo kulturowe Warmii – Mazur – Powiśla. Stan zachowania, potencjały i problemy. Warmińsko-Mazurskie Biuro Planowania Przestrzennego, Olsztyn, pp. 54–59.
- Kowalczyk B. (2009b). Procesy osadnicze (*Settlement processes*). In: J. Wysocki (ed.). Dziedzictwo kulturowe Warmii – Mazur – Powiśla. Stan zachowania, potencjały i problemy. Warmińsko-Mazurskie Biuro Planowania Przestrzennego, Olsztyn, pp. 40–53.
- Krzysztofik R. (2007). Lokacje miejskie na obszarze Polski. Dokumentacja geograficzno-historyczna (*Urban locations on the territory of Poland. Geographical and historical documentation*). Wydawnictwo Uniwersytetu Śląskiego, Katowice.
- Kulig A. (2011). Historia miasta zapisana w jego murach – refleksje o autentycznych pozostałościach i przeszłości odczytanej z ikonografii (*History of a city recorded in its walls – reflections on authentic relics and the past deciphered from iconography*). Wiadomości Konserwatorskie, vol. 29, pp. 126–134.
- Kuśnierz-Krupa D., Krupa M. (2015). Zmiany w aranżacji placów rynkowych miast lokacyjnych w Polsce południowo-wschodniej po 1945 roku (na wybranych przykładach) (*Changes in arranging market squares of foundation towns in the south-eastern Poland after 1945 (selected examples)*). Wiadomości Konserwatorskie, vol. 41, pp. 49–58.
- Lamprecht M. (2008). Functional changes in 20th century industrial areas of small towns in central Poland. European Spatial Research and Policy, vol. 15, no. 1, pp. 25–38.
- Łapo J. (2018). Wieści z Reszla w mazurskich gazetach przełomu XIX i XX wieku (*News from Reszel in Masurian newspapers at the turn of the 19th and 20th centuries*). In: G. Białuński, R. Klimka (ed.) Reszel. 680 lat historii miasta. Towarzystwo Miłośników Reszla i Okolic, Reszel.
- Majewska A., Denis M., Krzysztofik S., Cysek-Pawlak M.M. (2022). The development of small towns and towns of well-being: Current trends, 30 years after the change in the political system, based on the Warsaw suburban area. Land Use Policy, vol. 115, pp. 1–12, DOI:10.1016/j.landusepol.2022.105998.
- Mitković P., Dinić M. (2004). City center organization and its influence on the city structure. Facta universitatis – series Architecture and Civil Engineering, vol. 3, no. 1, pp. 41–56, DOI: 10.2298/FUACE0401041M.

- Molski P. (2010). Ochrona zabytkowych murów obronnych (*Protection of historic fortress walls*). In: B. Szmygina (ed.). Trwała ruina II. Problemy utrzymania i adaptacji. Ochrona, konserwacja i adaptacja zabytkowych murów. Lubelskie Towarzystwo Naukowe, Politechnika Lubelska, Polski Komitet Narodowy ICOMOS, Lublin – Warszawa, pp. 121–128.
- Morawska A., Michalski T. (2017). Obszary problemowe śródmieścia Gdańska (*Problem areas of downtown Gdansk*). Wydawnictwo Bernardinum, Gdańsk-Pelplin.
- Oers R., Roders P.A. (2012). Historic cities as model of sustainability. *Journal of Cultural Heritage Management and Sustainable Development*, vol. 2, no. 1, United Kingdom, pp. 4–14. DOI: 10.1108/20441261211223298.
- Ogrodnik D. (2012). Strukturalne przesłanki rewitalizacji śródmieść – przykład Krakowa (*Structural premises of inner city revitalization – case of Krakow*). *Architektura, Czasopismo Techniczne*, vol. 12, pp. 49–54.
- Okulicz J. (1985). Osadnictwo ziem pruskich do XIII wieku (*Settlement of Prussian lands until the 13th century*). In: B. Łukaszewicz (ed.). Warmia i Mazury. Zarys dziejów. Ośrodek Badań Naukowych im. Wojciecha Kętrzyńskiego w Olsztynie, Olsztyn, pp. 9–67.
- de Oliveira A.M., de Oliveira L.N.A., das Neves Santana L., Brito C.A.O. (2023). Remote Sensing Applied to the Delimitation of Historical Centers. *Revista de Gestão Social e Ambiental*, 17(1), 1–18. DOI: <https://doi.org/10.24857/rgsa.v17n1-016>.
- Paszkowski Z. (2015). Historia idei miasta. Od antyku do renesansu (*History of the idea of the city. From antiquity to the Renaissance*). Wydawnictwo Hogben, Szczecin.
- Popieliński P. (2016). Stosunki narodowościowe na Warmii i Mazurach na tle religijnym w I połowie XX wieku (*Ethnic relations in Warmia and Masuria on the religion background in the first half of the twentieth century*). *Język. Religia. Tożsamość*, vol. 2, no. 14, pp. 111–130.
- Rafiemanzelat R., Emadi M. (2015). A Review on Development of Historical City Center and Revitalization Process in Isfahan/Iran. *World Academy of Science, Engineering and Technology, International Journal of Civil and Environmental Engineering*, vol. 6, no. 9, pp. 789–794.
- Rawa T. (2017). Reszel 1337–2017. Gmina Reszel, Reszel.
- Russek K. (2017). Rewitalizacja małych i średnich miast (*Revitalization of small and medium cities*). *Przestrzeń, Ekonomia, Społeczeństwo*, vol. 12/II, pp. 31–44.
- Skrócone Studium Historyczno-Urbanistyczne. Wytyczne i postulaty konserwatorskie dla miasta (*Abbreviated Historical and Urban Study. Conservation guidelines and demands for the city*). (1993). Morąg.
- Słodczyk J. (2014). Rzeka w lokalizacji i przestrzennym rozwoju miasta (*The river in the location and spatial development of the city*). In: M. Śliwa (ed.) *Problemy i wyzwania w zagospodarowaniu przestrzennym terenów nadrzecznych miast*. Wydawnictwo Uniwersytet Opolski, Opole, pp. 47–60.
- Soares M.E., Fonseca F.P.D., Ramos R.A. (2022). A quantitative spatial methodology for delimiting historical centers – an application in Guarda, Portugal. *Journal of Spatial Information Science*, vol 25, pp. 1–28. doi:10.5311/JOSIS.2022.25.164.

- Sobierajska I., Sikorska M. (2019). Przekształcenia centrów małych i średnich miast – dawne a nowe znaczenie historycznych przestrzeni miejskich w wybranych ośrodkach Mazowsza (*Transformation of city centers of small and medium cities – historical and a new importance of historical urban space*). *Studia Regionalne*, vol. 28, pp. 23–48. DOI: 10.21858/msr.28.02.
- Tolqinovich O.J., Inomovich A.N. (2021). Principles of Reconstruction and Formation of Residential Buildings Typical of Historical City Centers. *European Journal of Innovation in Nonformal Education*, vol. 1, no. 2, pp. 29–40.
- Wallis A. (1979). Informacja i gwar. O miejskim centrum (*Information and bustle. About the urban center*). Państwowy Instytut Wydawniczy, Warszawa.
- Wielgus M. (1998). Historia badań archeologicznych starych miast województwa olsztyńskiego (*History of archaeological research of old towns of Olsztyn voivodeship*). In: J. Wysocki (ed). *Badania archeologiczne starych miast Warmii i Mazur a problemy ich rewaloryzacji*. Nidzicka Fundacja Rozwoju NIDA, Nidzica, pp. 37–40.
- Wojnarowska A. (2017). Jakość przestrzeni publicznej centrum miasta. Przykład miast średnich regionu łódzkiego (*Quality of public space of the city center. An example of medium-sized cities of the Lodz region*). Wydawnictwo Uniwersytetu Łódzkiego, Łódź.
- Zagroba M., Szczepańska A., Senetra A. (2020). Analysis and Evaluation of Historical Public Spaces in Small Towns in the Polish Region of Warmia. *Sustainability*, vol. 12, no. 20. DOI:10.3390/su12208356.
- Zuzańska-Żyśko E. (2007). Small towns in śląskie voivodeship. *Bulletin of Geography. Socio-economic Series*, vol. 7, no. 1, pp. 5–14.