

TOMASZ PANECKI

Polish Academy of Sciences

Tadeusz Manteuffel Institute of History, Department of Historical Atlas

Warsaw, Poland

<https://orcid.org/0000-0003-3483-2035>; [tpanecki@ihpan.edu.pl](mailto:tpanecki@ihpan.edu.pl)

## Plan of Kalisz by Andrzej Politalski from 1785 – a source edition in the Polish Historic Towns Atlas

**Abstract.** The plan of Kalisz by Andrzej Politalski is the oldest geometrically accurate depiction of the town. Compiled in 1785, it has survived to this day in a redrawing by Ottomar Wolle in 1878 at the scale of 1:3,000. The author discusses the process of developing the edition of Politalski's plan for the "Kalisz" volume of the Historic Towns Atlas (HTA) and compares it with editions in other volumes. The most recent (2021) volumes developed in three different centres were chosen as comparative material: Biecz volume (Kraków); Fordon, 2<sup>nd</sup> edition (Toruń); and Racibórz (Wrocław). Each volume adopts different editorial rules, although, in general, they conform to the overarching principles of redrawing a map at the scale of 1:2,500. The differences touch on virtually all aspects (source material, scope of content, non-cartographic elements), but they are united by the aforementioned common scale and purpose. Developing the edition of Politalski's plan was preceded by genetic analysis and the identification of filiation of its remaining copies. The original (1785) has not survived, nor has the first redrawing (1800). We only have a redrawing by Wolle (1878), which was the basis for the development of the plan for the HTA. In addition to this, we also have several other less significant versions. Politalski's plan was georeferenced, its content was vectorised, and cartographical representation was created. The result has been put together with selected editions elaborated to date. A distinctive feature of the work on the "Kalisz" volume is the use of a redrawing of the original as a source plan, as it is – in fact – its historical edition. The author also draws attention to the issues of standardisation of data models and, consequently, of legends between particular volumes.

**Keywords:** Andrzej Politalski, Historic Towns Atlas, Kalisz; source edition, history of cartography

### 1. Introduction

Cartographic source editing can be defined as the critical representation of map image and content (Panecki, 2021). Such a representation, understood both as a procedure and a product, is multifaceted. In the analogue world, it is most often a reproduction (facsimile) of a map with a basic description, such as title, author or scale. Facsimiles are mostly found in works on the history of cartography where they serve to illustrate the narrative part. An excellent example is the monograph by Buczek (1966) on the history of Polish cartography. There are also analogue editions, in which maps are not re-

produced but redrawn or even reconstructed – for example, the editions of parish sketches of Perthées, edited by Wernerowa (1996), and the reconstruction of the Wapowski map, elaborated by Krzywicka-Blum (1997). In the digital environment, editions are most often geoportals that enable the browsing of georeferenced maps or, in the case of multi-sheet maps, of mosaicked and merged compositions, as in the case of the "Maps Arcanum" geoportal (Biszak et al., 2017). It is not uncommon for digital editions to also include cartographic data, extracted from maps, in the form of cartographic visualisations – also available as downloadable spatial databases (Panecki, 2019). Map editions,

regardless of their material form (analogue/digital) and functionality (map image viewing/database), are an excellent means to facilitate access to valuable cartographic artefacts.

Source editions of maps play an important role in urban historical cartography (Wiberley, 1980), best demonstrated by the “Historic Towns Atlas” (HTA) series. The series, which documents the history of selected towns through maps and texts, has been being published in Western Europe for several decades, and in Poland since the 1990s. The volumes devoted to individual towns are quite homogeneous, due to the primary aim of the project: facilitating comparative research between towns. Each volume includes a historical outline of the town, a list of the literature and, perhaps most importantly, an edition of the most significant cartographic and iconographic sources (Simms, 2015). The most notable example of source editing in HTA series is the edition of a survey map. Each volume contains a map depicting the town in the pre-industrial period at the scale of 1:2,500. Such a map should be drawn based on the old, yet mathematically accurate survey map with only minimal changes (Czaja, 2018). Such generally formulated guidelines raise the issue of the volumes’ similarity. To what extent are the rules followed? What are the differences between maps in terms of editing?

In the paper, the author aims to discuss the process of elaborating such a map for the newly published “Kalisz” volume of HTA (Sowina, 2021) with respect to selected Polish volumes issued recently. The plan by Andrzej Politalski, which was the basis for the development of the pre-industrial map of Kalisz, is very specific and required a special approach. It has survived only in the form of a redrawing from 1878, which was prepared based on another redrawing from 1800. The source of the map is de facto its 19<sup>th</sup>-century source edition. Hence, the article devotes considerable space to an analysis of Politalski’s plan through its history and versions. These issues are followed by technical descriptions (georeferencing, vectorisation, cartographic editing). The last point of the article stems from the wider use of Geographic Information Systems (GIS) in historic map editing and tackles the issue of data standardisation and harmonisation. Cartographic source editions elaborated in a digital environment are in fact cartographic databases, and the harmoni-

sation of thematically similar resources (here: historical urban data) is crucial from the point of view of information sharing.

## **2. Historic Towns Atlas as a source edition**

In 1955, a Europe-wide project for national historical atlases of towns was launched by the International Commission for the History of Towns. The idea behind the project was to use maps and cartography to understand the development of urban spaces by identifying periods of growth, and to facilitate comparative studies of towns in Europe. The fundamental aim of the HTA was, and still is, to enable comparative research (Simms, 2019). The Commission recommended that each atlas volume (each town) should have a uniform and standardised structure and form; therefore, each volume consists of a cartographic and a textual part. The cartographic part is primarily a survey plan from the pre-industrial period at the scale of 1:2,500. This map appears in the atlas both as a redrawing (modernised map) and a reproduction (facsimile). The cartographic part also includes thematic maps showing the spatial development of the town and other key issues from the research point of view. In this section, there are also reproductions of other relevant plans and historic maps, including a contemporary plan of the town, an orthophotomap and a topographical map. The textual part is the town’s history with an emphasis on its spatial development: from the earliest times to the present, and an up-to-date bibliography (Simms, 2015).

In Poland, the project has been running since 1990 and, three years later, the first volume was published (Elbląg). Currently, the editor of the Polish HTA series is Prof. Roman Czaja (Toruń), and the atlases are developed and published by the centres in Toruń (vol. I – Royal Prussia and Warmia, vol. II – Kuyavia, vol. III – Masuria); Wrocław (vol. IV – Silesia); Kraków (vol. V – Lesser Poland); and Warsaw (vol. VI – Greater Poland). Up to 2020, 581 atlas volumes were published, 34 of them in Poland (Simms et al., 2022).

Considering the main objective of the series (comparative research) and the cartographic means by which this objective is achieved (the editing of the oldest map), certain rules and recommendations have been developed

regarding – primarily – the editing of a survey plan. This should consist of redrawing (modernising) and rescaling a survey or cadastral map to the scale of 1:2,500 – therefore, elaborating a new map. Contour lines or additional annotations facilitating map use can be added (Czaja, 2013, 2018). Such a map provides knowledge on urban space and its topographical elements (e.g. land use/cover, roads, plots, fortification, watercourses) from the pre-industrial period and might be a starting point also for retrogressive studies. Some authors underline the fact that using survey maps in urban history is limited, however, due to the possibility of extensive changes in the urban fabric, conducted before the survey map was drawn (Gräf & Pühringer, 2013).

For some time now, GIS have been used to facilitate the gathering, managing and visualising of cartographic data related to historical urban spaces (Czaja & Golba, 2016; DeBats & Gregory, 2011). The use of GIS also has consequences in relation to the need for the conceptual harmonisation of the data underpinning the work on HTA, as demonstrated by Słomska-Przech and Słomski (2022) by analysing the concept of “urban plot”. In addition to the survey map, there are also reproductions of old maps and plans in the HTA in the form of facsimiles. For example, the map that was the basis for the development of the survey map would be represented in this way. Until the 1990s, the number of reproductions in atlases was low, mainly due to printing limitations. For some time now, the publishers of the HTA have tried to include as many cartographic and iconographic sources as possible that can be presented and thus disseminated. For example, in the case of small towns, the aim is to publish all maps and plans up to the early 20<sup>th</sup> century (Czaja, 2018).

It is worth taking a slightly closer look at selected Polish HTA volumes in the context of cartographic source editing and the guidelines regarding the elaboration of the survey map. The three most recent HTA volumes prepared in three centres, Kraków, Toruń and Wrocław, have been selected as examples. These are, respectively, Biecz (Noga, 2021), Fordon (Czaja, 2021) and Racibórz (Barciak & Sepiał, 2021). The editions of the survey plan at the scale of 1:2,500 and their facsimile reproductions are of particular interest in the study.

The volume of Biecz contains a plan from 1850, redrawn from the original at the scale of 1:2,880 (fig. 1). The edition is a redrawing almost without any changes: contour lines have been added and the graphics have been modernised. Such a redrawing, on the one hand, adds little (if anything) to the source map, or even makes it less informative by omitting some elements of the content (e.g. annotations); on the other hand, it provides better readability, especially from the perspective of modern users. As said, only selected annotations have been included in the edition. They have been transcribed directly from the source map – for example, the inscription “Stadt Biecz.” appears twice with a dot (as it is on the original) and is arranged in the same way. Other annotations (e.g. related to buildings) have been omitted, and no additional labels have been added (e.g. street names to help orientate the reader in the topography of the town). Plot numbers were also omitted. The plan is missing a scale bar and scale, a legend, and a title (there is only a small label outside the map frame). The missing elements (apart from the scale bar) are in the textual part of the atlas. There is also no arrow indicating north on the plan and, since the plan does not face north, it would be relevant to include it (this remark also applies to the reproduction). The original plan was reproduced on two sheets: one covering the town at the scale of 1:2,500 and the other covering Biecz in its contemporary boundaries scaled to 1:10,000. Information about the scale (or the degree of scaling) does not appear on the sheet but only in the descriptive part.

In the case of Fordon, the survey plan was drawn based on two plans at the scale of 1:5,000 from 1863–1907 (fig. 2). Thusly, we deal here with a double enlargement of the source plans and their compilation. Such a map has contemporary graphics, and its content has been supplemented with contour lines based on a contemporary map at the scale of 1:10,000. The most important public buildings and street names are given in German only, as on the source plan. The plan is accompanied by a title, a legend and a short description with information on the data sources. Users are provided with a scale and a north arrow (the map faces towards north), but there is no scale bar. Unfortunately, the volume lacks reproductions of these maps.

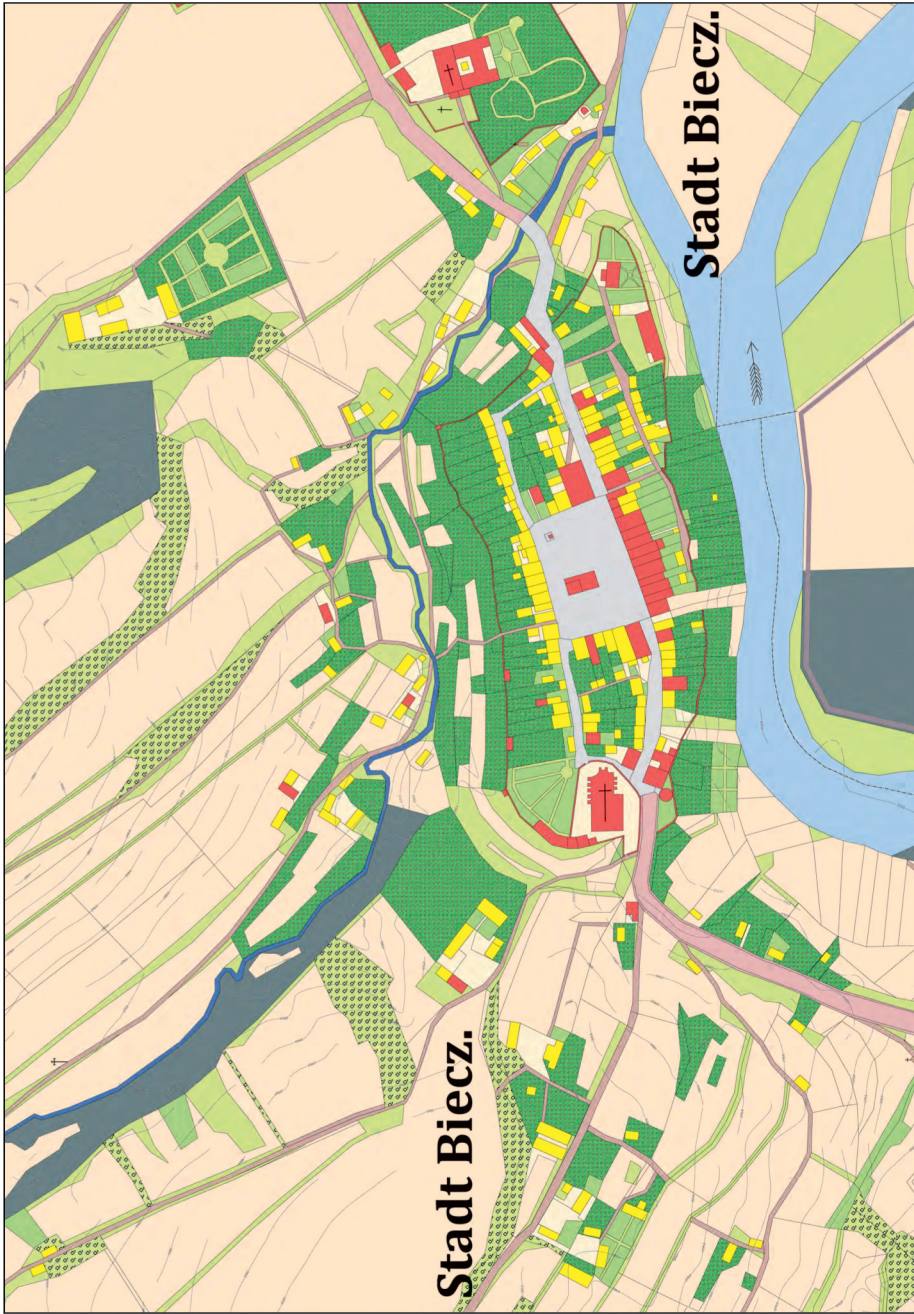


Fig. 1. Part of cadastral map elaborated for "Biecz" volume of HTA. Source: own elaboration based on Noga (2021). Map reduced to 40% of its original size





Fig. 2. Part of cadastral map elaborated for "Fordon" volume of HTA. Source: own elaboration based on R. Czaja (2021). Map reduced to 40% of its original size



For Racibórz, the survey map depicts the town in 1865 and, as in the case of Fordon, we are dealing with a compilation of two plans at the scale of 1:2,500 – from 1863/1865 and 1864 (fig. 3). The authors, in their description of the plans, justify this decision by the fact that a survey plan of the whole town had not been drawn up by this period, and that the two selected were drawn up by the royal cadastral controller. The edition of these two plans as a single map is characterised by modernised graphics, and supplemented with contour lines. In addition to the typical content of the historical town plan (including plot numbers!), the authors have also added the town boundaries in 1865, so that the enclave of the “Stara Wieś” in the urban area can be seen. Unlike the Fordon plan, some descriptions also have a Polish version. Streets and districts have historical German and contemporary Polish names. However, this does not apply to the most important buildings, where the German version is the only one provided. The map is accompanied by a title, a legend, a short description with information on data sources, and a scale and scale bar. The map faces north and lacks an arrow. Only the 1864/1865 plan is reproduced as a facsimile.

Although all of the editions fall within the general model of survey map editing for the HTA series, they differ in many aspects. As far as the source basis is concerned, it is only in the case of Biecz that we are dealing with a survey plan from the pre-industrial era (1850). In the case of Fordon and Racibórz, much later plans were used, but this is due to the lack of any other reliable source basis. The plans of the latter two towns are a compilation of plans rather than a redrawing of one. The content of the plans is largely similar. They use similar, modernised graphics and symbols, where public buildings or buildings with important functions are marked in red, forests and meadows in green, and water in blue. However, it is not possible to speak of consistency in the data models. For example, on the Fordon plan we have “forests”, “meadows” and “gardens”; on the Racibórz plan, “public greenery” and “private greenery”; and on Biecz, “green areas”. The extent of the content and the data model are, of course, driven by the source materials and the characteristics of the area, but surely some standardisation would have been possible. As far as annotations are concerned, there is

no uniformity here either: the Fordon plan has annotations only in German (presumably as on the source plan); on the Racibórz plan, most have contemporary (Polish) versions; and the Biecz plan is almost devoid of them. The typical content characteristic of a historical town plan is in some cases supplemented with additional elements, such as the town boundaries in the case of Racibórz. The content of all the analysed plans was – as recommended by Czaja (2018) – supplemented with contour lines. As far as typical non-cartographic elements such as title, description, scale, scale bar, legend and north arrow are concerned, the plan of Biecz comes off the least favourably, as it is completely devoid of these elements, including the north arrow, which would seem essential in this case. The Racibórz plan is the only one supplemented with a scale bar. Before we discuss the “Kalisz” volume of the HTA in this respect, we need to take a closer look at the main source for the survey plan.

### 3. Plan of Kalisz by Andrzej Politalski and its versions

The so-called plan by Andrzej Politalski used in the “Kalisz” volume of the HTA is extremely important for researchers of the history of the town. This is because it was drawn up in 1785 at the behest of the Kalisz Commission of Good Order (in Polish: Komisja Dobrego Porządku; *boni ordinis*) on the occasion of reforms and changes in the town’s spatial development (Rusiński, 1977). The plan was intended to be a spatial inventory of the town’s possessions, but its importance is greater than this. On 13 September 1792, a fire broke out that lasted several hours and consumed almost all of the town’s buildings (almost 300), including the town hall and castle. The rebuilding of the town was already in the hands of the Germans: in the following year, the town was to be incorporated into the Kingdom of Prussia as a result of the Second Partition of the Polish-Lithuanian Commonwealth. Politalski’s plan is therefore the only accurate one showing the town before the fire and before Prussian rule.

The history of the plan and its versions is especially relevant. This is because it has not survived in the original, but only in copies and redrawings, whose rather complicated relationships are presented in Figure 4. Andrzej

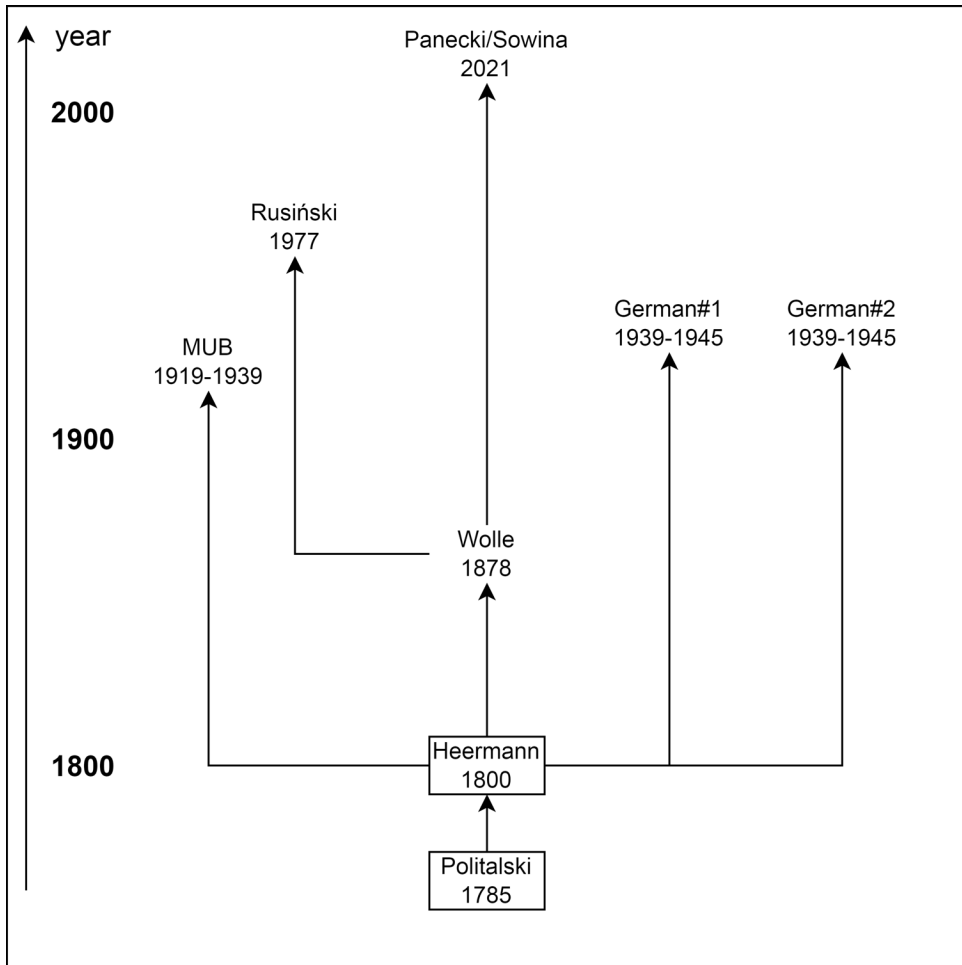


Fig. 4. Diagram depicting the provenance of Politalski map (1785) copies and version.  
Maps given in square are no longer existing. Source: own elaboration

Politalski, the author of the plan, is not a well-known figure. From the redrawing of this plan, made by Ottomar Wolle in 1878 (see below), we know that Politalski was a geometrician (surveyor) of the Commission of Good Order in Kalisz, and was paid 2,990 Polish zlotys and 27 groszy for his work (i.e. the plan). According to Splitt and Dobak-Splitt (1988), Politalski was a surveyor from Łęczycza. A surveyor from this town and of this name and surname can be found in the list of geodesists of the Kingdom of Poland, but the reference is from 1873 (Czochański & Kowalski, 2014). There is also an Andrzej Pitalski (it might be a different form

or a mistake in the spelling of the same surname), but no information on the origin or date of the mention is given. We can certainly conclude that the author of the plan of Kalisz was an experienced surveyor and cartographer, as evidenced by the fact that he was employed to draw up a plan of the capital of one of the palatinates of the Commonwealth.

The plan drawn up in 1785 was taken to Berlin after the Partitions of Poland, and in 1800 it was redrawn there, on the order of the Prussian authorities, by Heermann,<sup>1</sup> about whom no

<sup>1</sup> Name unknown.

further information is available. This redrawing was sent back to Kalisz (perhaps along with Napoleon's army) and became the source of several others before traces of it disappeared. The best known is the one made and published in print in 1878 by Wolle. This copy was used as the basis for the development of the survey plan for the "Kalisz" volume of the HTA. Wolle's plan is a redrawing from a redrawing, as he used the aforementioned redrawing prepared by Heermann and not the original, which probably remained in Berlin or was destroyed. Wolle notes in the margin of his plan that Heermann's redrawing was stored at the magistrate's office at the time and was "in a state of great deterioration". This is probably why it has not survived to the present day. Wolle was a surveyor at the Government Revenue and Treasury Commission (in Polish: Komisja Rządowa Przychodów i Skarbu) from 1856 to 1858 (Czochoński, 2021) and, in the 1860s, he made maps on behalf of the Land Credit Society (in Polish: Towarzystwo Kredytowe Ziemskie) (Bartoszewicz, 2010). A resident of Kalisz, he compiled a quasi-historical atlas of the town in three charts (sections) in 1878, which he was selling for four roubles each (Kunicki, 1991). The first sheet was based on the above-mentioned redrawing of the plan by Politalski (1785/1800), the second was based on Jan Bernhard's plan (1825),<sup>2</sup> and the third was drawn by himself in 1878. Each plan bears the same name ("Plan of the town of Kalisz"; in Polish: "Plan miasta Kalisza"), followed by information on the source of the data, as follows: in the case of the plan by Politalski, "section I according to a copy of surveyor Politalski's map of 1785 redrawn and published by Ottomar Wolle (...)" (in Polish: "sekcya I według kopji mapy jeometry Politalskiego z roku 1785 przerysował i wydał Ottomar Wolle (..."); for Bernhard's plan – "section II according to engineer Bernhard's map of 1825 redrawn and published by Ottomar Wolle (...)" (in Polish: "sekcya II według mapy inżyniera Bernharda z roku 1825 przerysował i wydał Ottomar Wolle (..."); and for Wolle's original plan – "section III was worked out and originally published by Ottomar Wolle (...)" (in Polish: "sekcya III wypracował i oryginalnie wydał Ottomar Wolle (...").

<sup>2</sup> Jan Bernhard (1776–1837) – Polish engineer of German origin, surveyor, town planner, engineer of the Kalisz Voivodeship of the Kingdom of Poland (Barańska, 2002).

As can be seen, the author of the redrawings applied the notion of "editing" to his works, which involved redrawing the plans and giving them a uniform, modernised graphic. Each section, in addition to the town plan, is supplemented with the legend, scale and north arrow, and also contains "Historical Information" (in Polish: "Wiadomości historyczne"), the town's coat of arms, and explanations of the most important buildings and structures, marked as numbers on the plan. It is not known whether these elements were on the original plans or to what extent Wolle changed the scale or orientation of the plans when editing them. The plans he produced are not fully uniform. While the graphics have been standardised, the scales of the three plans are different and described differently: Politalski's plan is in cubits (the scale is about 1:3,000), Bernhard's in "new Polish rods" (about 1:4,500), and Wolle's in fathoms and "new Polish rods" (about 1:4,200). All three plates have the same dimensions (80.0 × 57.2 cm), so it is not clear why the author did not standardise the scales. This allows us to presume that he preserved the original scales of the source maps. Some light is shed by Dudak and Herman (2017) on the extent of the editorial interference that Wolle may have introduced. They note that Wolle's 1879 redrawing of the 1799 Grappow plan of Wieluń has a geometry altered from the original.<sup>3</sup> The authors were able to compare the original and the redrawing. Unfortunately, in the case of the Kalisz plans, neither the plan by Politalski nor that by Bernhard has survived, so such an analysis is impossible.

The plan of Wolle (in fig. 4 as "Wolle, 1878"; cf. fig. 5) is a hand-coloured lithograph (published in Orgelbrand's printing house after approval by the censorship), oriented to the north-east (Wolle, 1878). On the right, in the upper corner, is the title of the plan, and in the lower corner, explanations of the 43 objects whose location is indicated on the plan. In the lower left corner, there is a coloured legend and markings – brick buildings, wooden buildings,

<sup>3</sup> We are dealing here with a similar *modus operandi* as in the case of Kalisz – i.e. Wolle compiled and published an old plan, in this case that of the conductor Grappow, dating from 1799, and supplemented it with a historical outline. The layout and graphics of the plan of Wieluń are similar to those of Kalisz.





Fragment of W. Rusiński map (1977)



Fragment of O. Wolle map (1878)

Fig. 5. Part of the map made by Wolle in 1878 (left) and its copy prepared by Rusiński (1977). Both maps are rescaled to 1:5,000 and the source map is rotated to the north. Source: own elaboration based on Sowina (2021)

property relations, rivers and ponds, roads, gardens and pastures, and sands; and on the left side of the plate, there is “Historical Information” about the town. This begins with the alleged mention of Kalisz by Ptolemy, and ends with the establishment of a Good Order Commission for Kalisz and the preparation of a map by Politalski. The plan shows the town surrounded by the River Prosna and its branch; two Kalisz suburbs – Wrocławskie and Toruńskie; and fragments of land belonging to nearby villages – Dobrzec (“Dóbrzec”), Majków and Tyniec. Also marked are the defensive walls with gates and towers, the castle of the town and the town hall, as well as other public buildings, religious buildings, residential houses (brick and wooden), a water mill, bridges, roads, gardens (with ownership divisions) and pastures. Apart from the three small hills at Tyniec and Majków (marked with dashed lines), the relief of the land is not included.

It should be noted that there is another version of the plan by Politalski (actually by Wolle). We are referring to the edition by Rusiński, which he appended to his monograph on Kalisz (Rusiński, 1977). It is entitled “Plan of the town of Kalisz according to Politalski’s map of 1785 redrawn in 1878 by surveyor O. Wolle. Supplemented by Wł. Rusiński” (in Polish: “Plan miasta Kalisza według mapy Politalskiego z roku 1785 przerysowanej w roku 1878 przez geom[etrę] O. Wollego. Uzupełnił Wł. Rusiński”). The map is in black and white, which necessitated the development of a different legend, and has larger and clearer descriptions. It lacks the “Historical Information”, coat of arms and scales. There are no differences in the content, except for the two “statues of saints” located in Wrocławskie and Toruńskie suburbs: they are marked on the Politalski-Wolle plan but not on the Rusiński plan. A comparison of the two plans is presented in figure 5.

Moreover, we have at least three other versions of the Politalski plan. One was drawn in the interwar period, most probably by the Municipal Building Office in Kalisz (in Polish: “Miejski Urząd Budowlany”; MUB 1919–1939 on fig. 4). It has explanations of 39 objects (buildings and structures) and is entitled “KALISZ/W 1785R”. This sketch is kept in the collection of the State Archive in Kalisz (archival fond: Provincial Spatial Planning Offices) without any inventory number. There are also two further redrawings,

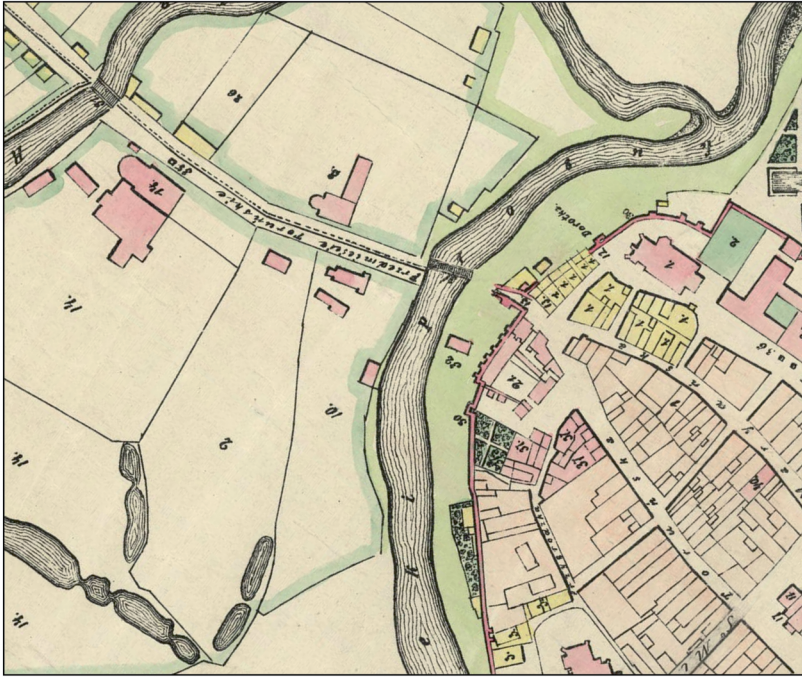
made probably during the Second World War – they both have the title “Kalisz 1785” and explanations in German of the 43 objects marked on the plan. Both of these redrawings differ in the graphics of wooden and brick buildings. They are also stored in the State Archive in Kalisz.<sup>4</sup> These plans were most probably based on the redrawing by Heermann, which means that this one, at least, must have existed in the 1940s.

#### **4. Plan of Kalisz by Andrzej Politalski as an element of the Historic Towns Atlas**

The plan by Politalski, in the version prepared by Wolle, as mentioned earlier, is the oldest mathematically accurate plan of the town depicting Kalisz in the times of Stanisław August and, more importantly, before the great fire in 1792. For this reason, it was chosen as the basic plan for the “Kalisz” volume of the HTA. It was used as the basis for the development of the survey plan at the scale of 1:2,500 in the form of its redrawing and modernised edition, as a facsimile reproduction, and as a source of data for the development of reconstruction maps of the spatial development of the town.

The plan shows the area of the contemporary town centre, bounded to the north by the Toruń suburb and Glinianki, and further to the east and south by the town park; the Wrocław suburb; and – to the west – Piskorzewo. The presented spatial layout reflects the situation at the end of the 18<sup>th</sup> century – that is, before the great fire (1792) and the annexation of the town to the Kingdom of Prussia (1793). Although the elaborated plan is based on a single source, due to the complicated history of the plan, it is difficult to say to what extent this source is uniform and what changes were introduced by Heermann and Wolle to the original. The content of the plan is fairly typical of the survey plans in the HTA and historical town plans in general. The most important buildings (public buildings) are marked in red, and the remaining buildings are in light red. Urban (and suburban) plots have been redrawn from the source plan. Land cover elements include watercourses and reservoirs, arable land, meadows and pastures,

<sup>4</sup> I would like to thank Mr Jerzy Aleksander Splitt for this information.



Fragment of O. Wolle plan (1878)



Fragment of cadastral map in Kalisz HTA

Fig. 6. Part of A. Politalski map edition in the "Kalisz" volume of HTA (left) and source map made by Wolle in 1878 (right). Both maps are rescaled to 1:10,000. Source: own elaboration based on Sowina (2021) and Rusiński (1977)



and public greenery (there were no forests in the Kalisz area). Defensive walls, roads and fords were also marked. For better orientation in the urban topography, the most important objects have been given annotations (in Polish and English): public buildings (town hall, castle), churches and monasteries, and gates. The most important streets within the town walls are labelled as well. The street names come directly from the source plan, and the contemporary name is given if different than the historical one. Unlike survey plans of other towns, the plan of Kalisz does not include contour lines. As for additional (non-cartographic) elements, we have a title with a short description (similar to the atlases published in Wrocław and Toruń), a scale and a scale bar, and a legend. The map is oriented towards the north, so the arrow pointing north has been omitted.

The scope of editorial interference with the source plan included – in terms of changes to the geometry – the rotation (towards the north) and rescaling of the plan (to the scale of 1:2,500). These steps were achieved through georeferencing – namely, adjusting the map image to the geographic coordinate system using pairs of ground control points that were identified on both the old and the modern (reference) topographical map (Affek, 2013). There were almost no errors in georeferencing. Stable ground control points were selected in the town area (*intra muros*) and the total RMS (Root Mean Square) error in ArcGIS was 1.7 metres. However, the measured shift between corresponding points (e.g. important buildings) on Politalski's plan and a topographical map was not higher than 10 metres. The errors outside the town area might be higher, but this is impossible to measure precisely as no corresponding points can be set due to significant changes during the town's spatial development.

Consequently, an appropriate fragment (the centre of contemporary Kalisz) was selected by centring and cropping the map image. The selected map content was then transferred to the digital version using screen vectorisation and symbolised in a similar manner to survey plans from other volumes. Line features include roads, fords and walls. Area features encompass public buildings (e.g. churches, town hall, castle), other buildings, watercourses and reservoirs, farmlands, meadows and grass lands, and public greenery. In the map legend, built-up

areas are called "buildings" (in Polish: "budowle") but, in fact, only public buildings (marked in red on the original plan), represented with clear outlines, can be called as such. Other buildings (marked in light red) represent town plots. The edition does not distinguish wooden buildings highlighted in the original (they were included in the "other buildings"), the relief (in hachures) and the numbering of objects. Only a selection of these has been labelled. A comparison of fragments from the edition and the original is presented in figure 6.

As mentioned, the survey plan was based on the redrawing of the plan of Kalisz by Politalski (1785) by Wolle (1878), based on the redrawing by Heermann (1800). In principle, therefore, considering the fate of the plan and its filiation, we should say that the basis for the survey plan of Kalisz was the Politalski-Heermann-Wolle map (1785–1800–1878).

The second way of presenting the plan of Politalski is its reproduction in facsimile form. The plan in Wolle's 1878 redrawing was placed on one of the plates and reduced to about 60% of the original size.

The third form of presentation of the plan, or rather of some its elements, are the reconstruction maps, most notably map 4: "Kalisz. The most important objects in the town centre, 13<sup>th</sup>–20<sup>th</sup> century" at the scale of 1:2,500 (fig. 7). If we consider the editing of a cartographic source as a representation of its image and content, this form of presentation can also be called – at least partially – an edition of the source plan. This is because the map contains elements redrawn directly from the plan of Politalski: the walls and the historical course of the Prosna River and its branches around Kalisz. Some of the most important objects were also contained in the source plan and, based on that, were included on the reconstruction map – for example, the mills between the historical centre and the Wrocławskie suburb or the "Dorotka" tower located near the former Jesuit monastery. The maps showing the most important objects in the town are, therefore, in a sense, compilations of the content of many old maps, shown on a contemporary cartographic base map.

## 5. Conclusions

The historical atlases of towns are extremely interesting works that make it possible to trace



Fig. 7. Part of the map entitled “Most important buildings in the town center 13<sup>th</sup>–20<sup>th</sup> centuries” in the “Kalisz” volume of HTA. Many topographic features are drawn directly from the Politalski map (e.g. walls, historical river course). Source: own elaboration based on Sowina (2021)

the history and transformation of town spaces not only in textual form but also with maps. Among the array of maps and plans included in the HTA volumes, the most important is the survey plan shown as an edition (modernised redrawing) and a reproduction (facsimile). The preparation of the “Kalisz” volume of the HTA provided an opportunity to reflect on the role of editing cartographic sources in the series. As can be seen from a brief review of the recently published (2021) volumes from three different centres: Kraków, Toruń and Wrocław, the editions of the plans of Biecz, Fordon and Racibórz are quite diverse both in form and content. There is a lack of consistency in the source material, in the scope of the content (data model), and the non-cartographic elements. Nevertheless, they fit within the general model of editing (Czaja, 2018). They were made at the scale of

1:2,500 by redrawing the survey plan with no, or only minor, editorial interventions and supplemented with contour lines. The plan of Kalisz within the HTA also fits into this canon but, unlike the others, it lacks contour lines; instead, it shows the town long before the impact of industrialisation, providing a basis for retrogressive research.

The HTA series is strongly associated with cartographic source editing. The redrawn survey plans are accompanied by their facsimile reproductions and by thematic (historical/reconstruction) maps showing the spatial development of towns and their most important objects. As noted, the latter can also be referred to as editions of maps and plans in a sense. In the volume devoted to Kalisz, the issues of editing were of special interest, as the source plan on which the plan was based was also a source



edition. The original plan by Politalski (1785) was redrawn by Heermann (1800) and then by Wolle (1878) and, for the HTA, by Panecki (2021). The first two copies have been lost. We do not know the extent of editorial interference by Heermann or Wolle in the drawings of their predecessors. Perhaps Wolle modernised the geometry of objects from the redrawn plan, as suggested by Dudak and Herman (2017) in the case of the plans of Wieluń. The basis for the development of the survey plan is therefore not so much the Politalski plan itself, but the Politalski-Heermann-Wolle plan, and the result – if we stick to this nomenclature and genetic analysis – is the Politalski-Heermann-Wolle-Panecki plan.

Another point worth noting is the cartographic data gathered in the course of the work on the survey plans. The result of the editing work carried out in a GIS environment (not only the editing of plans for the HTA) is a digital map and database developed in a specific conceptual model. This model is most often a reflection of the content of the source plan, the needs and requirements of the series, and the users. As the analysis has shown, the legend, and thus the data models, are not standardised

(the “Kalisz” volume is no exception), which may hinder the fundamental purpose of the series – comparative research, especially if we assume that these will increasingly be conducted using databases and other digital tools. So far, there is a consensus regarding the creation of repositories of the most important HTA maps in raster form and the use of GIS for their compilation (Chodějovská et al., 2015). Perhaps the problem of lack of standardisation will be solved within the framework of the urban space projects: “Historical Ontology of Urban Space” (aim: to develop ontologies and rules for the harmonisation of HTA data) and “Historical survey maps and the comparative study of the functionality and morphology of urban space. Standardisation – Digital processing – Research” (aim: to develop six HTA volumes and methodological reflections on HTA). Regardless of the HTA series, the standardisation of data extracted from old maps is becoming increasingly crucial.

**Funding.** This research was funded by the National Science Centre, Poland; grant number 2015/19/B/HS3/00549, “Atlas historyczny miast polskich: Kalisz”.

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