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# Historical Atlas of Poland in the 2nd half of the 16th century. Integration of cartographic data from various sources.

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## Abstract

The Department of Historical Atlas at The Tadeusz Manteuffel Institute of History (PAS) has been conducting a project which has been dealing with a cartographic representation of 16th century administrative landscape. Volumes of "Historical Atlas of Poland in the 2nd half of the 16th century" cover at this moment most of voivodeships of Polish Crown depicting settlements, administrative units, roads and physiography. The idea of the "Atlas" stems from the year 1880 when Stanislaw Smolka proposed elaboration of such maps on the first General Congress of Polish Historians in Cracow. Maps with settlement network and administrative units were to be used by scholars as base maps for historical and geographical studies. The work on the "Atlas" in current format started in 1966 and is to be finished in 2020. Several years ago most of the data from previously elaborated volumes were integrated into spatial database which grows as the project develops.

Each volume includes the so-called "main map" (scale 1:250 000), thematic maps (1:500 000) and plans of the most important cities and towns (1:10 000). The scope of content remains the rather same for each volume from the beginning of the series. However, the introduction of Geographic Information Systems (GIS) to our work radically changed the whole process of historical mapping.

In our talk we would like to focus on the data integration from the "main map". It presents most of all settlement network (with names, types, mereological relations and ownership), administrative divisions (ecclesiastical and secular), most important roads and physiography (forests, rivers, swamps, relief). The goal of the paper is to present and discuss methodical problems which occur during the integration and harmonization of main maps from all previously elaborated volumes as well as these which are currently under development.

First five volumes, concerning Mazovia (voivodeships of Rawa, Plock, and Mazovian), Lesser Poland (voivodeships of Cracow, Sandomierz, and Lublin), and Sieradz and Leczyca Voivodeships were elaborated between 1966 and 2008. In the 2014 maps of eight voivodeships from that volumes were merged and prepared for english publication. They are available online, not only in the form of static map but also in the form of the downloadable database (The map of Polish lands of the Crown in the 16th c. – a spatial database at the Atlas Fontium website [www.atlasfontium.pl](http://www.atlasfontium.pl)). The publication is also available in a paper version, in which the main map is divided into four sheets because of practical reasons.

Subsequently, maps are elaborated with the help of GIS tools, which on the one hand allowed

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to reduce time needed for map preparation, but on the other, introduced new problems. That concerns "Greater Poland" volume, which was published in 2017 and Kuyavia, Podlachia and Royal Prussia which are to be published in 2020. It is worth noting, that not only cartographic team of the "Atlas" works in GIS software, but digital tools have a substantial role in the work of historians involved in the project.

At the end of the project (2020) the goal is to have all previously elaborated volumes integrated into one publication both digital (spatial database) and printed. At this moment we can point out at least four different datasets which need to be merged and unified.

1. Volumes elaborated from 1966 to 2008 were integrated in 2014 using Adobe Illustrator/Photoshop and only partially converted to GIS formats.
2. "Greater Poland" volume (2017) elaborated fully in GIS environment.
3. "Kuyavia" and "Podlachia" which are currently under elaboration (also in GIS software).
4. "Royal Prussia" which were elaborated by M. Biskup (1961), but in lower scale (1:500 000) and different scope of content.

The scope of our works involved at the first stage data transformation from graphic-vector files to GIS-vector files and further georeferencing. Then, data prepared in that way had to be adjusted on the borders of voivodeships (especially between older and newer volumes) so they would not overlap or have gaps. It also involved harmonization of attributes, such as names or types of features. The most important work however still concerns harmonization of settlements and administrative units (work in progress). As the "main map" covers large amount of symbols, settlements are distinguished by their type, role, size, ownership and location precision, a database model for handling such a symbology has to be created rather than storing it in GIS application. In this way, each settlement symbol which is to be depicted on the map has its own symbol identifier in the database linked to particular entity (settlement). Those identifiers are also stored in GIS desktop application allowing to provide fast symbolization directly from the database. Furthermore, for administrative units modelling we use the so-call Least Common Geometry method (LCG) which is based on precinct data from National Register of Borders (pl: Państwowy Rejestr Granic). All historical administrative units are spatially identified with contemporary precincts. If one precinct covers more than one historical unit it has to be splitted. In this way we are actually elaborating a methodology for modelling all historical borders, not only those coming from 16th century.

As final results, we plan to prepare the main map prepared in scale 1:250,000, and a database with the settlements and physiography of the whole Polish Crown. All maps and databases will be available online and downloadable for all interested parties.

**Keywords:** historical mapping, historical GIS, cartography, data integration