

Atlas of the Cherven Towns in South-Eastern Poland

Cyryl Konstantinovski Puntos ^{a,*}

^a Jagiellonian University in Kraków, Poland, ckonstantinovski@gmail.com

* Corresponding author

Keywords: medieval, Cherven, strongholds, hillforts, atlas, Anthropocene, GIS

Abstract:

The atlas concerns the area of the so-called "Cherven Towns" within the current borders of south-eastern Poland. For centuries, and especially in the early Middle Ages, this was a border area between the emerging state organisms of Poland and Kievan Rus. The main objective of the study is to familiarize potential readers with the issue of settlements and their former functioning through visualizations made by means of GIS tools. The second aim is to analyze the mutual relations between the settlements in the study area. The complexity of anthropogenic processes visible in the natural landscape and the size of defensive ramparts will also be characterized on the basis of field studies. In addition, the atlas provides an incentive for learning more about as well as seeing the archaeological sites in today's Podkarpackie and Lubelskie voivodeships. Accordingly, the scientific, cognitive and aesthetic aspects will be combined. The visuals are interdisciplinary, using elements of geoarchaeology and geoinformatics.

Illustrations and figures were made using the basic cartographic convention learned during the classes on "Methodology of cartography and visualization of geographical information" at the Jagiellonian University in Krakow, based on, inter alia, the publication of Pasławski (2010). The softwares used to perform the tasks were QGIS and Inkscape. The first of these is easier to vectorize than, for example, ArcGIS Pro. It was used to develop most of the maps. The second one was helpful for the final stage of development, i.e., detailed aesthetic finishing. Data from two atlases were also used. The "Atlas of Early Medieval Gords in Poland" is an interactive website with a map, where you can see the exact location of a given hillfort. The "Historical Atlas" - Olczak and Tazbir (2009) contains the exact borders of countries in Central Europe over the centuries. Additionally, Google maps and the Digital Elevation Model (DEM) from SRTM data proved helpful in the context of topographical features. The field research was carried out in the summer of 2021, and formed the basis for preparing a geoarchaeological analysis of the southern Cherven Towns as well as their photographic documentation.

The area was delimited on the basis of a historical map and today's administrative maps. The scope of the discussed territory was determined from the reign of Mieszko I and Bolesław I the Brave to its state in the 13th century, when Kievan Rus was established there. Its range comprises the longitudinal belt of land from Polesie to the Bieszczady Mountains, with the main hillforts located in Przemyśl and Czeremno (the legendary Czerwień). There were also strongholds in today's Ukraine, but they will not be considered in the developed maps. The eastern border is certainly the subject of historical considerations. They were repeatedly passed over to the State of Gniezno and the East Slavic principalities throughout the early Middle Ages.

This atlas is not only a collection of the maps themselves, but it also contains explanations and descriptions. The entire atlas is divided into 10 maps (Table 1). The layout of each page with a map is as follows. Above the centrally placed map is the title, and below is a list of settlements with labels marked with a specific number. Next, below are the data sources and map description. Three relief maps and after that the Kernel Density map of occurrence for particular settlements differ in terms of subject matter and the process of realization. In addition, two maps created by means of a point symbol map demonstrate the distribution of fortresses with a specific diameter of the courtyard and the size of these fortifications in the space. The result of the analysis of landforms was also shown. The maps additionally list the location classes with the difficult-to-measure surface and blurring of individual parts of the gord. The last four maps were made using Voronoi polygons (Figure 1). For the sake of distinction, a different color tone was used for each selected time range.

Methods	Number of maps	Specification of visualizations
Relief	3	Hypsometric, hill-shading and hachure maps of terrain in the region
Kernel density	1	Two main separately areas of the Cherven Towns (around Przemyśl and Czeremno)
Point symbol	2	The size of entire hillforts and area of "kotlinka" – central space of stronghold
Voronoi polygons	4	Polygons of hillforts influence (9-10 th , 11 th , 12 th and 13 th century)

Table 1. Characterisation of maps from the atlas about Cherven Towns

It can be concluded from the visualizations that the hillforts are situated in space in an uneven manner. On their basis, I learned that forts are more than merely military locations; they combine into a network of mutual dependencies, creating an entire province. This is mainly due to geographical factors: the proximity of the river and frequent construction in strategic, resource, and observation sites. This region is characterized by the division of fortresses into northern (around Czeremno) and southern (around Przemyśl) fortresses. It certainly has to do with the watershed between the two territories. The plains have the most favorable terrain for the expansion of fortresses. The settlements functioned within specific time frames, therefore, from the sources based on archaeological data, some of them collapsed, and some were only just being developed. Just a few castles show continuity of use and the consequent transformation from a fortress into a city (and town charter in the later Middle Ages). The past has been reconstructed with the help of maps, where the basic conclusion is the existence of a well-thought-out defense system in the territory of the Cherven Towns.

The atlas is addressed to "demanding" readers who are interested in the geoarchaeological topics of early medieval Poland and the influence of former Kievan Rus on these areas. The presentation will include photos and diagrams illustrating the issue of the examined settlements. The atlas has already been presented by the author during an exhibition at the Zamek Przemyśl Centre of Culture and Science entitled "GEO & ART Dialogue of Space" at the Kazimierzowski Castle in Przemyśl on January 21, 2022 (Figure 2).

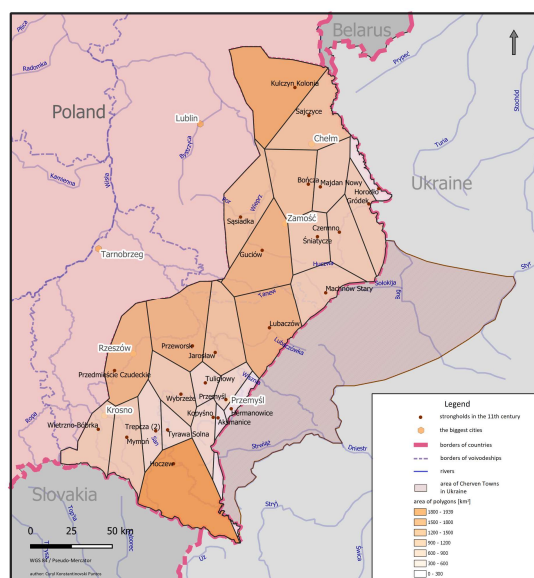


Figure 1. Voronoi polygons map of the Cherven Towns in 11th century (author: Cyryl Konstantinowski Puntos)



Figure 2. Atlas (in the form of posters) at the gallery of the Kazimierzowski Castle in Przemyśl, Poland (author: Cyryl Konstantinowski Puntos)

Acknowledgements

This research has been supported from the Anthropocene Priority Research Area budget under the program "Excellence Initiative – Research University" at the Jagiellonian University

References

- Olczak, E. and Tazbir, J., 2009. *Wielki Atlas Historyczny*. Wydawnictwo Demart. Warszawa, Poland, pp. 20-21
- Paślawski, J., 2010. *Wprowadzenie do Kartografii i Topografii*. Wydawnictwo Nowa Era. Wrocław, Poland, pp. 196-234
- <https://cyryl.rzezba.com>
- <https://www.atlasgrodzisk.pl>