

The Habsburg mapping of Moldavia and Walachia

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Abstract. On the Balkan Peninsula, in the 18th and 19th centuries, the Ottoman Empire was in decline, the Habsburg Empire (and the Russian Empire) became stronger. Between these three powers, Moldavia and Walachia (now the eastern and southern part of Romania) were vassal states of the Ottoman Empire, but sometimes they were occupied by Habsburgs (or by Russians).

The Habsburgs realized two times the topographic survey and map of these two countries, using the period of two occupations.

The first detailed surveys and maps were made between 1788 and 1791. The maps of Khotyn and Western Moldavia were made by Hora von Oztzellowitz at a scale of 1:28,800 (29 and 107 map sheets and index map). The map of Walachia was made by Specht at a scale of 1:57,600 (108 map sheets and index map). These maps could be considered as part of the First Military Survey of the Habsburg Empire. These map sheets are unpublished until now: the original sheets are kept in the War Archives of Vienna, a copy in the Academic Library of Bucharest.

The second detailed survey and maps were made between 1855 and 1864 at a scale of 1:57,600. The area of this survey and map was only Walachia. The survey was directed by August von Fligely. These maps could be considered as part of the Second Military Survey of the Habsburg Empire. The map was drawn in two versions: the original, Austrian version (drawn between 1856 and 1859) and the copied version by Szathmári Pap Károly (Carol Pop de Satmari) in 1864. The two copies were published on the web in geo-referenced version during the year of 2014 by me and my colleagues (Zoltán Imecs, Zsolt Magyar-Sáska and Gábor Timár).

This paper has three aims. The first one is to make an overview of the Habsburg mapping of these countries. The second aim is to call the attention to the recently published second survey. The third aim is to

initiate the publishing of a geo-referenced version of the maps of first survey, the maps by Otzellowitz and Specht.

Keywords: geo-reference, Specht, Otzellowitz, Fligely, Szathmári

1. Introduction: aims

This paper has three aims.

The general studies on the Habsburg mapping (e.g. Jankó 2007) don't describe the Habsburg mapping outside the Empire: the surveys and maps of Moldavia and Walachia. The first aim of the paper is to make an overview of the two major surveys and maps realized during the 18th and 19th centuries. In this paper I will present the surveys (circumstances, surveying organization, area, period, geodetic datum) and the maps (map projection, scale, map sheets, content, reduced maps, preservations in map collections).

The maps of the second survey (by Fligely and Szathmári) were published in geo-referenced version on the web in 2014. The second aim is to call the attention to the used methods and to the results.

The maps of the first survey (by Otzellowitz and Specht) are unpublished. The third aim is to initiate the publishing of a geo-referenced version. Using the presented information we will have all data for publishing these maps in geo-referenced version.

2. Historical and topographical precedents: the first Habsburg maps of Moldavia and Walachia

On the Balkan Peninsula, in the 18th and 19th centuries, the Ottoman Empire was in decline, the Habsburg Empire (and the Russian Empire) became stronger. Between these three powers, Moldavia and Walachia (now the eastern and southern part of Romania) were vassal states of the Ottoman Empire, but sometimes they were occupied by the Habsburgs (or by Russians).

Between 1718 and 1739 Lesser Walachia (the western part of Walachia, now Oltenia) was under Habsburg rule, during this time Friedrich Schwantz made the first topographic survey, and a simple topographical map at a scale of 1: 195,000 of this region in 1722 on 4 map sheets (Schwantz 1722, Docan 1912).

Between 1769 and 1774 Russia occupied Moldavia, the survey was in 1769 and Friedrich Wilhelm von Bauer (Bawr) made a map at the scale of 1:288,000 in 1781 on 6 map sheets (Bauer 1781, Docan 1912).

These surveys and maps at small scale are only the precedents. The Habsburgs made the two major detailed surveys and maps of these countries using periods of occupations.

3. The first Habsburg survey of Moldavia and Walachia (Otzellowitz and Specht)

Circumstances of the survey: During the war Turkey contra Russia and the Habsburgs between 1787 and 1791, the Habsburgs occupied territories of Moldavia and Walachia. During this time they realized the first detailed survey and topographic maps of these countries. (Docan 1912, Mihăilescu 1928, Buchholtzer 1937: 82–85, Andrei 1943, Popescu-Spineni 1978: 180–191)

The surveying organization: The survey was directed by Generalquartiermeisterstab. Parts of Moldavia were represented on two maps directed by Hora von Otzellowitz, the map of entire Walachia was directed by Specht.

The area and the period of the survey: Only parts of Moldavia were surveyed. One map represents the Khotyn district in Northern Moldavia (now in Ukraine) – here the survey was between March and September 1788. The other map represents 5 districts in Western Moldavia, between the Siret River and the frontiers in Carpathians (districts of Suceava, Roman, Neamț, Bacău and Putna). The survey of Moldavia was realized in 1788–1789. The survey continued between September 1790 and May 1791 in Walachia, where the whole country was surveyed.

Geodetic datum and projection: These maps could be considered as part of the First Military Survey of the Habsburg Empire. According to Jankó (2007), the survey has neither triangulation basis, nor clearly defined map projection.

Scale and map sheets: The two maps of Moldavia are at a scale of 1:28,800 on more sheets; each sheet has a dimension of 63 x 42 cm (16 x 24 inch on the map, 1.6 x 2.4 miles on terrain). The map of Khotyn district in Northern Moldavia contains 29 sheets. The map of Western Moldavia contains 107 map sheets (and an index map). The map of Walachia was made at a scale of 1:57,600 contain 108 map sheets (and an index map), the dimension of the sheets is the same as above (63 x 42 cm, 16 x 24 inch on the map, but 3.2 x 4.8 miles on terrain). (Otzellowitz 1788, Otzellowitz 1790, Specht 1791)

The content of the map: the maps are similar to the first military mapping. See Figure 1.

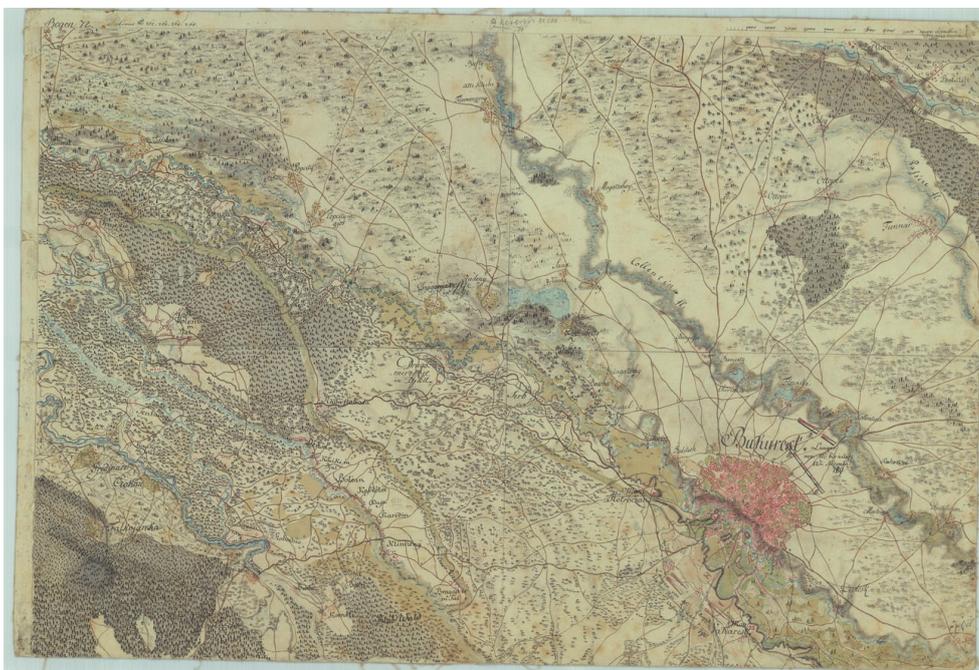


Figure 1. The map sheet of Bucharest (Specht 1791, map sheet No. 72).

Reduced maps: The scales of the reduced maps are the followings 1:115,200, 1:230,400. (Docan 1912)

The preservation of the maps: These map sheets are unpublished until now: the original sheets are kept in the War Archives of Vienna, a copy in the Academic Library of Bucharest.

4. The second Habsburg survey of Walachia (Fligely)

Circumstances of the survey: During the Crimean War Austria occupied Walachia and Moldavia as a peacekeeping force from August 1854 until March 1857. Austria contracted with Walachia; according to the contract Walachia had to pay an amount to get a copy of the map surveyed by Austrians. (Bartos-Elekes 2014)

The surveying organization was the Austrian Institute of Military Geography (Militärgeographisches Institut, MGI) and it was directed by August von Fligely.

The area and the period of the survey: The area of this survey and map is only Walachia. The survey took part in 1855 and 1856.

Geodetic datum and projection: These maps could be considered as part of the Second Military Survey of the Habsburg Empire. So, the ellipsoid and projection was similar to ones used in Habsburg Empire. According to original documents, the Walbeck 1821 ellipsoid was used but it can be substituted with a datum on the Zách–Oriani ellipsoid too. The projection of the survey was the Cassini–Soldner-projection centered at Dealul Sibiului point (close to Sibiu).

Scale and map sheets: The map was made at a scale of 1:57,600 on more sheets; each sheet has a dimension of 63 x 42 cm (16 x 24 inch on the map, 3.2 x 4.8 miles on terrain). The map contains 112 map sheets (and index map, title sheet and legend).

The content of the map: the map was similar to the maps of the second military survey. The map was drawn in two versions: the original, Austrian version (drawn between 1856 and 1859) and the copied version for Romania by Szathmári Pap Károly (Carol Pop de Satmari) in 1864. (Fligely 1859, Szathmári 1864) See Figure 2 and 3.

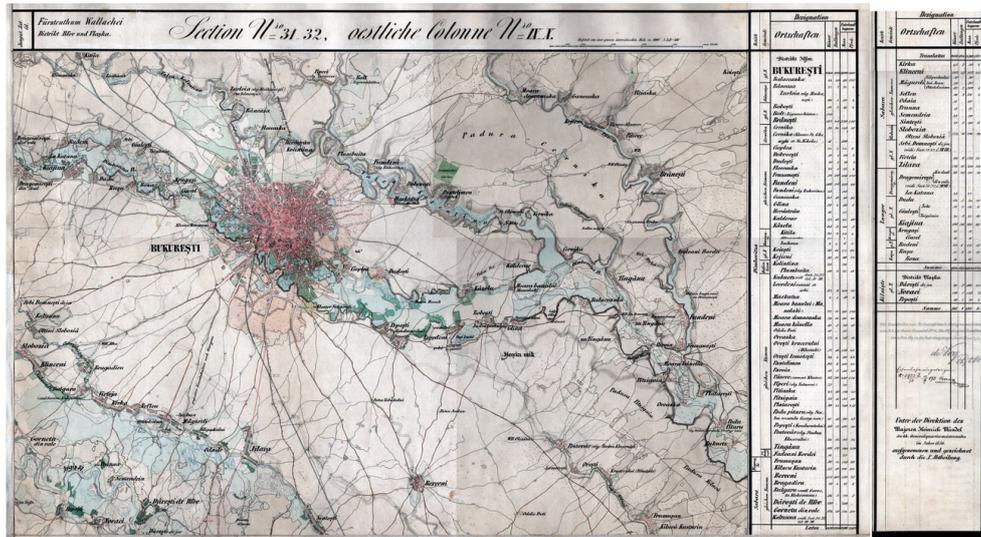


Figure 2. The map sheet of Bucharest (Fligely 1859, Section No. 31–32, oestliche Colonne IX–X).

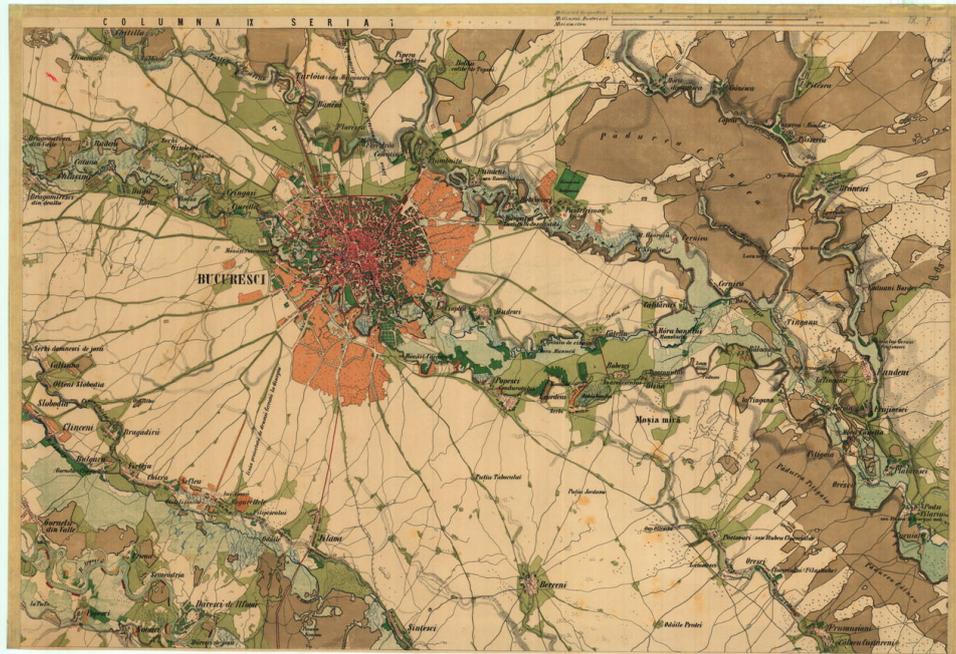


Figure 3. The map sheet of Bucharest (Szathmári 1864, map sheet No. 77).

Reduced maps: General maps at 1:288,000 were compiled in Austria and in Romania, too.

The preservation of the maps: The original Austrian sheets are kept in the War Archives of Vienna, the Szathmári version was made in at about 10 copies, which can be found in more libraries and map collections in Bucharest, Cluj, Budapest, Vienna and Ann Arbor.

5. Geo-referencing the maps of the second survey

The two different copies were published on the web in geo-referenced version during the year of 2014 by me and my colleagues (Zoltán Imecs, Zsolt Magyar-Sáska and Gábor Timár).

The geo-referencing of the sheets was based on: corresponding the pixel coordinates to projected coordinates (calculated from the sheet labeling system and the known terrain extents of the map sheets), and on corresponding the projected coordinates to geographic coordinates (calculated / used the approximated / known parameters of the geodetic datum / projection). (Bartos-Elekes 2014)

The geo-referenced map of Szathmári is published on the webpage <http://www.charta1864.ro> . Here it is an interactive visualization of the map, showing the identification data (coordinates), with a possibility of downloading of the original map sheets, and of geo-referenced parts of the map and searching for settlements. The map is overlaid on Google Maps, too.

The geo-referenced map of the Austrians is published on <http://www.mapire.eu/en/map/collection/secondsurvey> . Here the map is overlaid on Google Maps, Open Street Maps and Google Earth.

6. Initiation of the geo-referencing of the first survey

The significance of our proposed project is based on the fact that we deal with the world leader Habsburg topography mapping. These maps are the best maps which describes the late-18th century landscape of Khotyn, Western Moldavia and Walachia. For these reasons the maps are referenced as the main cartographic source in many historical–geographical studies.

The advantages of these maps are the accuracy and the detailed scale. The mapping was based on topographic survey. The use of these maps has two disadvantages: first – the map sheets are very hardly accessible (only two copies are known in the world) and – second – the maps were drawn in an obsolete projection, so it is complicate to overlap the old maps preciously on a modern one. The scientific motivation of our project is to eliminate the above mentioned disadvantages. The main concept of the project is to digitize and publish on web the map sheets (so there will be accessible for everyone), moreover in geo-referenced form (so they could be used in GIS-environment).

The difficulty of our project is to calculate the ideal parameters of geodetic datum and map projection for a more accurate fitting of the old map on the new maps. The limits consist in the accuracy of the survey and the stretching of the map due to long term storage.

After obtaining all the map sheets in scanned version from the map collections we will geo-reference the raster files.

We will upgrade or geo-referencing method used at the Second Military Survey. The new method is described for the First Military Survey by Molnár (2014). The method consists of two consequent steps. At the first step we will use hundreds of ground control points (GCP) per provinces. The parameters of the best-fitting Cassini projection will be estimated from the coordinates of GCPs. The non-systematic errors will be eliminated by a cor-

rection grid (GSB), compiled again on the basis of the GCP coordinates. We hope that the remaining error will have a magnitude of 100–200 meters.

At the step of publishing we move towards the publishing as an overlay on Google Maps, so the export function will be only a second option.

The importance of our project consists in the opening of several new aspects for scientific research concerning the environmental landscape of Khotyn, Western Moldavia and Walachia in the late-18th century or the historical changes of the landscape. With this project the changes will be searchable for a hundred years longer period for Walachia, or even more than 130 years longer for Khotyn and Western Moldavia.

Acknowledgments

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