

## LAZARUS' MAP OF HUNGARY

*Tivadar Gaudenyi*<sup>1\*</sup>, *Mladen Jovanović*<sup>\*\*</sup>

\*Geographical Institute "Jovan Cvijić" SASA, Belgrade

\*\* Faculty of Sciences, Novi Sad

Received 19 april 2011; reviewed 3 August 2011; accepted 14 August 2012

**Abstract:** Lazarus' map, *Tabula Hungariae*, is considered the oldest survived map of Hungary. The original was made around 1515, while a printed version appeared in 1528 in Ingolstadt. The technology used was stereotypical - printed in wood carving after which it was hand-painted. The map included the areas of present day Hungary, Slovakia, parts of Austria, the Czech Republic, Romania, Serbia, Croatia, Slovenia, Poland, and Ukraine. It was a much more detailed depiction, than anything produced up to that point, illustrating fortifications, settlements, and some historical events. It is an authentic and very valuable document with respect, also, to the situation in the northern part of present day Serbia, just before the Battle of Mohács and the Ottoman expansion after the battle. After its "re-discovery" in 1906, it represents a subject of study for a large number of researchers. It also represents a segment of planetary cultural heritage and, as of 2007, has found its place on UNESCO's Memory of the World Register. The original is kept in the Map Collection Hungarica, at the National Széchényi Library in Budapest.

**Key words:** Lazarus' map, cartography, map projection, Hungary, Serbia.

### Introduction

Lazarus' Map of Hungary (*Tabula Hungariae*) is one of the most important medieval maps of Europe. At the same time, this is the oldest surviving state map of Hungary and one of a small number of survived maps of Europe from the period between the 15<sup>th</sup> and 16<sup>th</sup> centuries.

The presented content represents a valuable document of historical circumstances during this period in a significant portion of Central Europe. Additionally, it was a model and a source for subsequent maps. In particular this applies to southern parts of Hungary, which passed into the hands of the Ottomans after the Battle of Mohács, immediately after the map was made.

---

<sup>1</sup>Correspondence to: [gaudenyi@gi.sanu.ac.rs](mailto:gaudenyi@gi.sanu.ac.rs)

The map is a rich archive of materials on areas which are located in present day Northern Serbia. The map illustrates present day Vojvodina, the part of Mačva, northern part of Šumadija and the Iron Gate (Đerdap) section of the Danube. However, it has been insufficiently utilized as a source of information on the geographical characteristics of the area, the development of settlements and historic events.

### **Earlier maps of Hungary**

After the fall of Constantinople (1453) and the strengthening of Ottoman influence over Europe, the Hungarian King Matthias Corvinus was occupied organizing forces before the imminent threat from the Orient, yet he devoted attention to mapping out the Kingdom. That is the reason why he entrusted Italian Francesco Roselli with the task of making a state map of Hungary. Little information is available on Roselli's work in Hungary, most likely due to the fact that due to his poor map making skills hospitality was quickly denied to him. However, it seems that the professional failure experienced in Hungary was not coupled with financial failure, and shortly after his return to Italy, in 1480, he founded a workshop for map making. In addition to the workshop, he also opened up a map store considered to be the first in Europe. Making cards had become a family trade, and by 1527 the inventory list showed that the workshop had at its disposal rollers for printing several World maps, the prints were not preserved (Gábor & Horváth, 1979). The inventory mentions a map named *Ungheriadopia d'un foglioreale*, which was most likely made during Roselli's stay at the Palace in Buda (1478-1484) (Banfi, 1956).

In the early studies of Italian cartography (late XIX century) it was assumed that Roselli's map represented the first map of Hungary (Draskovits & Tardy, 2006). Research suggests that Roselli's map could have been detailed, with a large number of toponym's (Hrenkó, 1975). Presumably, Lazius used Roselli's map as a source for toponyms. His map of the Transdanubia area shows 301 toponyms, while Lazarus', who collected his data on the field, named only 110 toponyms (Draskovits & Tardy, 2006). The other significant argument could be the format of the map. Roselli's map bears the name: *Hungary on two real lists*. Based on Bologna standards for paper formats, used by Hungarian and German manufacturers, until the beginning of the XIX century, a *real* was 44.5 x 61.5 cm. A double *real* is obtained by merging the long edges, and, if the loss on the margins is taken into account, Roselli's map could have been 60.7 x 87 cm. In relation to the subsequent Lazarus' map (1528), Roselli's could have been larger by 973 cm<sup>2</sup>, and therefore could have contained more toponyms (Draskovits & Tardy, 2006).

According to available information, particular segments of Bernard Wapowski's map were preserved (Bagrow, 1928; Banfi, 1956). The map was issued in Krakow in 1526 under the title *Polonia et etiam Hungaria ac Valachia, Turcia, Tarcia et Masovia* (Chowainec, 1955).

### **Lazarus' Map of Hungary "*Tabula Hungariae*"**

#### *The "discovery" of the Map*

During celebrations on the occasion of the 50<sup>th</sup> Anniversary of the Geographical Society of Vienna in 1906, an exhibition of relevant maps was organized. For this occasion, the Count Sándor Apponyi bestowed Lazarus' map, from his own personal collection. The exhibition, the accompanying publication "Austro-Hungarian cartography during the Renaissance" (Oberhummer, 1907) and an article by Oberhummer and von Wieser published the preceding year (Oberhummer & von Wieser, 1906), brought back Lazarus' map, after several centuries of oblivion, into the focus of the scientific public (den Serres, 1814; Penck, 1907). One copy of the map was saved (Irmédi-Molnár, 1964; Kalić, 1986; Stegena, 1982), and in 2007 the map received international recognition of extreme importance when UNESCO put it on the Memory of World Register. The original is located in the Map Collection Hungarica, at the National Széchényi Library in Budapest, as well as Sándor Apponyi's legacy from 1925. (Figure 1)

#### *Methods and techniques on Lazarus' map*

Although the map has been studied in detail, few biographical facts exist on the author. One of the reasons is the conflict between the scientific circles in Vienna and Budapest during the XX century about research into the author's origins.

Lazarus was the Secretary of Esztergom (lat. Strigonia) of archbishop Tamás Bakócz, to whom the drafting of a map of Hungary was entrusted around 1515. On this project, Lazarus most likely worked with a Bavarian mathematician Jacob Ziegler (lat. Jacobus Ziegler), who later became a professor at Vienna University, and for a period of time was the Dean of the Faculty of Theology. Ziegler's name, among cartography circles, is known because of a book on Palestine from 1532 which contained a map of biblical places (Gábor & Horváth, 1979).



Figure 1. Lazarus' Map of Hungary (*Tabula Hungariae*), Ingolstadt, 1528

Lazarus most likely began capturing the field around 1510. A gnomon was used for determining the latitude, while determining the longitude proved more complicated and the extracted data is quite unreliable (Gábor & Horváth, 1979).

The intricate system of measuring units resulted in the original map scale of 1 : 281 340, which corresponded to what was then the relationship of a Viennese *klafter* (Wiener Klafter 1.8-1.9 m) (on the map) and four Austrian miles (in nature) (Hrenkó, 1974).

Four hand-drawn maps were stored in the Royal Library (*Bibliotheca Corvinia*). After the death of King Matthias Corvinus and chaotic situation in the Kingdom (Gábor & Horváth, 1979, 48) many units from the royal library fund were alienated (Gábor & Horváth, 1979).

Through still unknown circumstances, the original of the map made its way to Viennese map makers. Georg Tanstetter (lat. Collimitus Tannstetter) Bavarian cartographer and university professor in Vienna in co-operation with Peter Apianus (lat. Petrus Apianus) a Bavarian geographer and astronomer, revised the original drawings of the map and prepared them for printing. The patron, and possibly the inspiration of this enterprise, was the royal adviser Johannes Cuspinian (born Johan Splëshelmer or Johan Splëshaymer, lat. Johannes Cusipinianus) The map prints in the new projection, and in the ratio of 1:1,093,000, with the dimensions 67.8 x 53 cm, were completed in Ingolstadt in mid-May of 1528. As far back as 1522, Tanstetter had received a five-year monopoly on all map editions he edited. In addition to this edition, six other different editions of Lazarus' map are known (Hrenkó, 1974b; Gábor & Horváth, 1979; Irmédi-Molnár, 1964).

This is one of the first maps which utilized stereotype (cliché) technology in the printing process: printed using the woodcut technique (engraved elements), after which it was manually colored (Hrenkó, 1974b, Irmédi-Molnár, 1964).

The peculiar orientation of the map is noticeable at first glance. Although the upper edge is marked as the north, and on the left or right edges - west and east, the true orientation can be obtained if the card is rotated 45-50° toward the east (Irmédi-Molnár, 1964) (Figure 2). It seems that Cholnoky (Cholnoky, 1943a, 1943b) was among the first to understand the true orientation of the map, for whose development the modified Ptolemy's cordiform projection was used. Today it is more commonly known as the Stabius-Werner projection (Keuning, 1955; Irmédi-Molnár, 1964) (Figure 3).



Figure 2. Proper orientation of Lazarus' Map (Background: Zentai, 1996).

The text is written in German and Latin, the official language in Hungary until 1784, in Gothic cursive. Most of the settlements have Hungarian names written according to German or Latin spellings, with a lot of orthographic mistakes (Kalić, 1986). It is believed that the settlements on the original Lazarus' map were written according to Hungarian names using Latin spelling, while in the first printed edition the names are written according to German spelling (Irmédi-Molnár, 1964).

In later Roman re editions, some of the names have been changed - such as the example of Vienna (ger. Wien), which is indicated by the Italian (or some say Latin) name Vienna (Pokoly, 2006).

The content in the lower part of the map is condensed most likely due to lack of data, while it may have been done deliberately - in order to emphasize the emblem of the Emperor Ferdinand I. If the orientation of Lazarus' map is interpreted properly, it may be noted that the hydrography, given the opportunities at the time, was well-shown although the rivers were out of



place by Golubac, Emperor Sigismund sadly lost the battle against Turkish emperor Mehmed I in the year 1409" (*Hic Imperator Sigismundus Galombecio cum Mahumete septino Turcarum imperatore infoeliciter pugnauit 1409*).

Many cartographers were confused by the line drawn next to Tisza, from Szeged to Vác, and then to Győr, where it crosses the Danube and parallel with it continues in the direction of Pécs and Šabac. Initially, it was thought that the line represented a road, but in mid 20<sup>th</sup> century it was confirmed to be the border line up to which the Ottoman army seized after the battle at Mohács in 1526 (Cholnoky, 1943a, 1943b). It seems that the line, which reached the confluence of the Rába and the Danube, was introduced by Georg Tanstetter (Irmédi-Molnár, 1964; Kalić, 1986).

According to its character, the map is most often considered to be historical and military (e.g. Tomović, 1991; Brunner, 2006) as it has the sites of battles and places which were taken over by the Ottoman Empire.

#### *Reprints of Lazarus' map*

Thanks to Italian reprints, Lazarus' map was used for the next hundred years. The first re-edition of Lazarus' map is connected to a Venetian Vavassore (Valvassori or lat. Vadagsinus) who published the map in 1553 (Irmédi-Molnár, 1964), to be followed by reprints from Roman editors. Two basic copies of Lazarus' map were done in Rome, and as a result of the use of printing plates they had more versions. The first and fifth Roman copper plate copies of Lazarus' map were copied by Pirro Ligorio, engraved by Sebastiano di Re, and printed in 1559 and 1602 by Michelle Tramezzino. For the second basic copy, the copiers and engravers are anonymous, while the printer is indicated on the fourth version as Claude Duchet (Bak, 2006). Cartographic corrections of content have not been conducted on these editions, with the exception of some name changes, but were graphically re-designed using innovative printing techniques.

#### *Map content of present day Serbia*

Lazarus' map represents a valuable source of data on settlements and the history of areas found in present day Serbia. Slavic toponyms are diversely represented. Some names have been accurately recorded while others enumerators acquainted with certain mistakes. As is the case with Hungarian toponyms, there are orthographic and other errors, poor translations, incorrect details (Irmédi-Molnár, 1964) (Figure 4).





Figure 4. Segment of Lazarus' Map of Hungary illustrating parts of present day Serbia

Fortified cities have been carefully mapped, smaller forts, towers, and all types of medieval fortification. Symbols indicating cities and forts differ, and were obviously done according to different criteria. One gets the impression that the goal was to represent a typical part of a city.

Settlements without fortifications are marked with empty circles and/or place name or characteristic symbols. The total number of such settlements is considerably less.

It is apparent that the author was well acquainted with the physiognomy of these settlements although some mistakes can be perceived. Debrecen has been illustrated as the largest city in Hungary, although according to historical sources it was not so (Gábor & Horváth, 1979).

In Belgrade one notes a large fortress with a prominent flag - evidently the Upper Town. Numerous sources and travel journals spanning centuries testify to the fact that this was precisely how travelers experienced the topography of Belgrade, (Kalić-Mijošković, 1967, Popović, 1982). One comparison is worth mentioning: Belgrade is represented as one of the largest fortresses, larger than Buda and Esztergom. Ranked according to military standards of the era, Belgrade rightfully earned a special place on Lazarus' map. Contemporaries accurately evaluated its importance to the defense system in Central Europe. Other Serbian cities in the 16<sup>th</sup> century have been unevenly illustrated, so that the Smederevo fortress appears as an almost meaningless fortress, even smaller than Golubac, its symbol reducing it to smaller fortifications along the Danube (Kovin, Haram and others.) (Kalić, 1986).

Zemun is illustrated with a single prominent edifice less rampart. This manner of representation, with the present day Gardoš tower, was used on other well-known Hungarian maps from the late XVI century (Kalić, 1986). The symbol used to represent Zemun differs from the one used for Kupinovo or Slankamen. It appears that the symbols used to represent towns are very often adjusted to the state on the ground, and have not been arbitrarily assumed by the drawers. Such a finding emphasizes analysis of particular details provided with places such as Bač, Pécs, Sibiu... Therefore, the manner of illustrating cities represents sound material for the study of different types of medieval fortification (Kalić, 1986).

On the map, Bečkerek is surrounded by a large lake into which the Tamiš flows, connected to Tisa and the Danube. *Dombo* (Rakovac) and *Erdnek* (Vrdnik or Erdevik) are drawn on Fruška Gora (Kalić, 1986).

### Lazarus' map of Hungary

This map, for the first time, mentions the Slavic toponym Bistrica (Bistritz) for the area east of Futog, across from the Petrovaradin fortress (Figure 4)

Various notes of historical content can also be found on the map. They indicate the homeland of prominent people, important battle sites or other details. For the most part, the map is an accurate record of events from the war history of the Hungarian-Ottoman conflict. According to research by J. Kalić (1986) one of the most fascinating notes pertains to the city of Golubac. A brief text reports that this was the place where Emperor Sigismund fought the Turkish Sultan Mehmed I in 1409. However, the information on the defeat of Emperor Sigismund at Golubac raises certain doubts.

Although the battle at Golubac from 1428 is far better known, it is almost certain that another took place there in 1409. Indeed, Mehmed I was not yet a Sultan at that time, but by 1428 he was not among the living. The fact is that the Ottoman army waged war in Serbia over several months in 1409, and information attests to the fact that the Hungarian King Sigismund spent several months in Serbia during that year (Kalić, 1986).

In any event, Lazarus' map is not the only one which speaks of the Hungarian-Ottoman conflict at Golubac. It was passed on later as well. Zsámboky (lat. Sambucus) incorrectly labeled his map as 1496 instead of 1409, while on maps from the 17<sup>th</sup> century the year 1409 once again appears (Hrenkó-Stegená, 1973; Bagrow, 1951).

Lazarus' map prominently marked the place of the Battle of Mohács in 1526. It is accompanied by a brief text, considered the oldest representation of the event, as the map was printed only two years after the defeat of the Hungarian army.

When Lazarus' map is viewed in this manner, it remains unclear why other large battle fields are neither marked nor inscribed. War scenes from Golubac and Mohács evoke defeats of Hungarian rulers. If this was the measure for selecting battle fields, then it is understandable that the siege of Belgrade by the Ottomans in 1456 did not attract the author's attention, although in its time it was understood as an event of European importance, far more memorable than others. Neither was the second major battle from 1521 labeled. Lazarus had worked on the map prior to that event, in the second half of the 16<sup>th</sup> century, and it is clear that he could not have entered that information. However, on the flag raised on the Belgrade Fortress, the crescent moon sign is visible, as could be seen on some other cities which had already fallen under the power of the Ottomans. Most likely someone else added those symbols at a later time. If this

was not a later intervention by Lazarus himself (the year of his death is not known and so this may not be claimed with any degree of certainty), then it can most likely be attributed to Tanstetter (Kalić, 1986) (Figure 4).

In addition to cities on the right bank of the Sava and Danube rivers (Šabac, Smederevo, Belgrade, Golubac), on the territory of today's central Serbia, two other forts can be found on Lazarus' map: *Žrnovo* (*Czarnow*) and *Zenowtz* (Kalić, 1986).

The fortification at Avala, *Žrnovo*, is shown on Roselli's map (about 1480), where *Gernovo - Guardia de Turcowas* noted. It is also noted on the map from Leiden (around 1495) and on maps from the early 16<sup>th</sup> century. Some cards from the 16<sup>th</sup> century bear only *Guardia di Turchi* without the mention of the name *Žrnova* (Hrenkó & Stegena, 1982). Turks, the Thracians and Dalmatians call it *Cavala* while the Hungarians called it *Sarno* (Dinić, 1951, 1958).

The only attempt to take *Žrnovo*, by the Ottomans, was conducted precisely at the time Lazarus' map originated. The Hungarian army under the leadership of Duke of Transylvania Johann Zápolya launched a surprise attack in 1515 on the fortified city on Avala, but suffered a terrible defeat (Dinić, 1951, 1958; Sanudo, 1878).

Given that on Lazarus' map of Hungary, in addition to *Žrnovo*, south of Belgrade, another fortification called *Zenowz* can be found, it is not without importance that Hungarian writers of the 16<sup>th</sup> century are quoted as using the form *Cernovicium* for *Žrnovo*. It is the *arx Cernovicium*, unsuccessfully attacked by the Dukes of Transylvania in 1515, as noted by Jovan Mihailo Brut (Dinić, 1951). In any case, in later maps of Hungary, the fortification of *Czenobicz*, southeast of Šabac, is also illustrated (Kalić, 1986).

Based on the presentation of the territory of modern-day Serbia, outside the borders of Hungary, Kalić (Kalić, 1986) concludes that: "Conquered Serbia under the Ottomans in early 16<sup>th</sup> century is of no interest to the Habsburg Court. The interest of the compilers ends at the Danube cities, Posavina, and Bosnia. There, at that moment, is the end of Hapsburg's anti-Ottoman policy. Serbia remains blank of all that which European maps of the Balkans carefully noted, as far back, as the 16<sup>th</sup> century (fra Mauro, Francesco Roselli and others). Instead of settlements and hydrography, county names, state names and general terms are noted: *Rascia, Rassen, Servia olim Misia Superior, Syrffen*" (Kalić, 1986, 434). However, Kalić's conclusions cannot be unconditionally accepted, because as the name of Lazarus' map stated, the theme was Hungarian territory,

and it showed some places and events which took place on the edge of the monarchy. Serbia was most certainly interesting to the Hapsburg as the Ottoman danger arrived from that direction. In a similar manner to that in which the territory of Serbia was illustrated, were shown parts of present day Poland, Moldavia, Austria, Styria and Istria. Regardless of the fact that only county and state names and general terms were recorded (e.g. *Poloniae Pars, Moldaviae Weta, Pannonia Superioris fiue Austriae pars, Stiriae pars, Histria*) (Figure 4), the border areas of Hungary were certainly within the sphere of interest of the ruling dynasty.

### Conclusion

Lazarus' map of Hungary, which will be used as a cartographic model for many years to come, contains rich material on settlements in Vojvodina as well as areas south of the Danube and Sava (except for parts which are not next to Posavina or the Danube Region), only labeled but not illustrated. For more than a century, Lazarus' map has attracted attention from many researchers who are still finding new historical or geographical information on the map. Lazarus' map is most certainly a precious cartographic work, which must be included in one of those historic maps of paramount importance, as it marks a period for part of present day Serbia.

Lazarus' map of Hungary, in electronic form, is available on UNESCO's Memory of the World Register (URL 1), while the original, a copy and a copy in digital format can be found in the National Széchényi Library in Budapest (URL 2).

### Acknowledgments

The authors would like to express their gratitude to the Ministry of Education and Science for the support within the project MNTR 47007.

### References

- Bagrow, L. (1928). *A. Ortelii Catalogus Cartographorum, I*, 25-26. Gotha
- Bagrow, L., (1951). *Die Geschichte der Kartographie*. Berlin.
- Bak, B. (2006). Roman editions of the Lazarus Maps'. *Studia Cartologica (Térképészeti Tanulmányok)* 13, 31-42. Budapest.
- Banfi, F. (1954). Two Italian Maps of the Balkan Peninsula. *Imago Mundi* 11. 17-34.

- Banfi, F. (1956). Sole Surviving Specimens of Early Hungarian Cartography. *Imago Mundi* 13, 89-100.
- Brunner, K. (2006). Gedruckte Regionalkarten des 16. und 17. Jahrhunderts. *Studia Cartologica (Térképészeti Tanulmányok)* 13, 71-80. Budapest.
- Cholnoky, J. (1943a). Magyarország első jó térképe. *Magyar Katonai Szemle*, 3, 93–98. (In Hungarian)
- Cholnoky, J. (1943b). Elnöki megnyitó a Magyar Földrajzi Társaság 1943. évi közgyűlésén. *Földrajzi Közlemények*, 71, 91–100. (In Hungarian)
- Chowaniec, C. (1955). The First Geographical Map of Bernhard Wapowski. *Imago Mundi* 12. 59-64.
- Ćirković, S. (1968). Golubac u srednjem veku. *Požarevac* 14-16.
- de Serres, M. (1814). *Voyage en Austiche, ou essai statistique et géographique sur cet empire*. Chez Arthus Bertrand Libraire-Editeur. Paris.
- Dinić, M. (1951). *Gradja za istoriju Beograda u srednjem veku, I*. Istorijski arhiv Beograda.
- Dinić, M. (1958). *Gradja za istoriju Beograda u srednjem veku, II*. Istorijski arhiv Beograda.
- Draskovits, Zs. T., & Tardy, J. (2006): Some Hungarian aspects of early European maps. *Studia Cartologica (Térképészeti Tanulmányok)* 13. 397-401. Budapest.
- Gábor, I., & Horváth, Á. (1979). *A haditérképek históriája – Fejezetek a térképészet és a katonaföldrajz történetéből*. Zrínyi Katonai Kiadó. 267. pp. Budapest (in Hungarian)
- Hrenkó, P. (1974a). Lazarus (Rosetus) Magyarország első térképének alkotója. *Geodézia és Kartográfia*, 26, 463–466. Budapest (in Hungarian)
- Hrenkó, P. (1974b). A Lázár-térkép szerkezete. *Geodézia és Kartográfia*, 26, 359–365. Budapest (in Hungarian)
- Hrenkó, P. (1975). Magyarország Gastaldi térképén (Hungary on Gastaldi's map). *Geodézia és Kartográfia*, 27 (2), 110-121. Budapest (in Hungarian)
- Hrenkó, P., & Stegena L. (1973): A török háborúk eseményei Magyarország korabeli térképein. *Studia Cartologica (Térképészeti Tanulmányok)* 4. 3-14.
- Irmédi-Molnár, L. (1964). The Earliest Known Map of Hungary. *Imago Mundi* 18, 53-59.
- Kalić, J. (1964). Prilog istoriji Beogradske banovine. *Zbornik Filozofskog fakulteta, Univerziteta u Beogradu*, 8, 533-540. (in Serbian)
- Kalić, J. (1978). Srbija i Beograd počekom XV veka. *Godišnjak grada Beograda* 25, 103. (in Serbian)
- Kalić, J. (1986). La plus ancienne carte de Hongrie. Recueil des travaux de l'Insitut d'études byzantines XXIV-XXV. In: *Belgrade* 423-435. (in Serbian, summary in French)

## Lazarus' map of Hungary

- Kalić-Mijušković, J. (1967). Beograd u srednjem veku. *Beograd*. 106 pp. (in Serbian)
- Keuning, J. (1955). The History of Geographical Projections until 1600. *Imago Mundi* 12, 11-24
- Kuchar, K. (1957). Lazar's Landkarte, des älteste geografische Bild der Slowakei. *Sbornik československé společnosti zeměpisné*, 62, 88–110.
- Mályusz, E. (1984). *Mátyás király uralma Magyarországon*. Budapest. 60. (in Hungarian)
- Oberhummer, E. & von Wieser, F. (1906): Wolfgang Lazius' Karten der österreichischen Lande und des Königreichs Ungarn. Innsbruck
- Oberhummer, E. (1907). Österreich-Ungarn im Kartenbild der Renaissance, *Mittelungen der k. und k. geographischen Gesellschaft in Wien* 50, 94-95.
- Penck, A. (1907). Wolfgang Lazius' Karte von Österreich-Ungarn. *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, 2, 76-86.
- Pokoly, B. (2006). On exonyms and their use in the Hungarian language. *Studia Cartologica (Térképészeti Tanulmányok)* 13. 350-355.
- Popović, M. (1982). *Beogradska tvrđjava*. Beograd (in Serbo-Croatian)
- Stegena, L. (1982). Lazarus Secretarius: The First Hungarian Mapmaker and His Work. Akadémiai, Budapest
- Sanudo, M. (Ed.) (1877). *Történelmi Tár* 24. MTA Történelmi Bizottsága, 56-62, 81-89. (in Hungarian)
- Sanudo, M. (Ed.) (1878). *Történelmi Tár* 25. MTA Történelmi Bizottsága, 13. (in Hungarian)
- Stojanović, Lj. (1921). Stari srpski rodoslovi i letopisi, *Srpska kraljevska akademija - Zbornik za srpski jezik i književnost - Prvo odeljenje XVI.*. 382 pp. Beograd-Sremski Karlovci (in Serbian)
- Tomović, G. (1991): Serbia on Early Maps from the Classical Times to the End of the 16<sup>th</sup> Century. In Srejović, D. (Ed.) *Serbia and the neighboring countries on early maps. Gallery of the Serbian academy of Art and Sciences* 70, 21-52 (In Serbian with English abstract)
- Zentai, L. (1996). *Relief of the Carpathian-basin and its surroundings* (based on Atlas of Central Europe).

### Sources from the Internet:

URL 1: <http://www.unesco.org/new/en/communication-and-information/flagship-project-activities/memory-of-the-world/register/full-list-of-registered-heritage/registered-heritage-page-8/tabula-hungariae/#c183698> (4. 11. 2011)

URL 2: [http://setaria.oszk.hu/peldinfo\\_spring/peldinfo.htm?id=2812575&language=hu&view=1](http://setaria.oszk.hu/peldinfo_spring/peldinfo.htm?id=2812575&language=hu&view=1)