Roman Catholic Diocese of Varaždin (Dioecesis Varasdinum)

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ABSTRACT

The paper describes the research and creation of the map of the Diocese of Varaždin. After many changes in the Diocese over the years, this map has finally been completed and published for the first time. The process of the map making is described. Furthermore, it points at the problems related to some specific contents of the map and provides solutions to those problems, specifically, the divergence of the borders gathered from different sources. This extensive project resulted in the creation of a map in A2 paper format on a 1:225,000 scale. The GIS and the data collected about the specific map content were both the starting point and the source of data for the visualization of the map of the Diocese of Varaždin. This is important because there are none that precede it. Such a thematic map would therefore mark an advance in the field and be appropriate.

1. Introduction

Regarding the cartographic representation of the spatial organization of the Roman Catholic Church, it is important because there are none that precede it and to emphasize that it is a spatially and hierarchically well-structured system. Such a thematic map would, therefore, mark an advance in the field and be appropriate. This system changes in accordance with social, especially political changes, as well as the practical needs of organizing religious life. Of course, there is a need to use a mapping of the church spatial units in order to gain a good insight into the spatial scope of such an entity, but also to perform various spatial analyses.

The presented research of the map of the Diocese of Varaždin is a continuation of the projects of drawing a thematic map with the depiction of the ecclesiastical spatial organization of Croatia launched by the Faculty of Geodesy. Tradition of the making of maps with the depiction of Diocese of Varaždin throughout the history is almost non-existent, so nowadays it is very difficult to find sufficient and adequate map sources. Although it has recently become quite popular to collect and automatize the map making processes, sometimes it is not possible because cartographers cannot always rely on the available data sources. Instead, they must focus on the investigative cartography and collecting of spatial data. The Diocese of Varaždin was established by Pope John Paul II at noon of 5 July 1997, by the decision and Bull Clarorum Sanctorum (on the division of the Zagreb Archdiocese) (Varaždinska biskupija, 2017). As such, this new ecclesiastical province had no defined borders of the Diocese, deanery or parishes. The territory of the Diocese of Varaždin covers mostly territories of Varaždin county and Međimurje county. Also, it covers some parishes that belong to the neighbouring counties, for example to Bjelovar-Bilogora, Krapina-Zagorje and Virovitica-Podravina counties, the latter being units or territories of the regional self-government in the Republic of Croatia. This means that we could not establish a relation between the bishopric and county borders or with any other existing data. Another problem was the division into even smaller spatial units, such as deaneries and parishes. The only solution was to do fieldwork on the geodata collection at hand, and focus, for example, on the parts of the deanery borders. Some data were also available from the small-scale maps, but first, they had to be updated and amended. This was achieved and presented on the new map of the Diocese of Varaždin, which we have released for the first time on the large scale and in large format. The similar method was used in the creation of the maps of the Gospić-Senj Diocese (Župan, Lapaine, & Frangeš, 2010) and the Diocese of Požega (Župan & Frangeš, 2015), which had been completed, described and published earlier. We will show problems and opportunities in the thematic representation of spatial units. It is commonly posed by the question of precision in the presentation of boundary lines surrounding the spatial units, especially when they are not clearly established by some regulation or are not marked in the field.

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2. Diocese of Varazdin in the Roman Catholic Church hierarchy

Christianity spread in present day northern part of Croatia from Late Antiquity. It encompasses the territories within the counties of Varazdin and Čakovec and parts of the Hrvatsko Zagorje and Podravina regions, covers the area of 3100 km² and has the population of 387,100, of which a total of 95.2% are Catholics (HBKa, 2017). Including Slovenian, Italian, Hungarian, Czech, Slovakian, partly Albanian and other minorities, 86.3% of the population declare as Roman Catholics, according to the 2011 census (Magaš, 2015). Some 4.4% of the population (mostly Serbs, some Croats, Montenegrins, Macedonians, Bulgarians, etc.) are Orthodox Christians, while only 0.3% of the population are Protestants or members of other Christian denominations. Muslims account for 1.5%, while other religious communities (Jewish, other religions, Eastern religions, movements and world views) account for 0.13% of the population. Only 2.2% of the population did not declare their religion, 3.8% are atheists, 0.8% are agnostics or sceptics, while 0.3% did not respond. Since 2010, after various geographical changes in terms of territorial organization of the Roman Catholic Church in Croatia, the Catholic Church in Croatia was territorially divided into four provinces (Metropolises) and ten corresponding dioceses, the Military Ordinariate, 85 parishes, and 105 parishes: 

The seat of this Diocese is in Varaždin. Its current bishop is Josip Mrzljak and it covers the area of 3100 km² and has a population of 387,100, of which a total of 95.2% are Catholics (HBKa, 2017). Including Slovenian, Italian, Hungarian, Czech, Slovakian, partly Albanian and other minorities, 86.3% of the population declare as Roman Catholics, according to the 2011 census (Magaš, 2015). Some 4.4% of the population (mostly Serbs, some Croats, Montenegrins, Macedonians, Bulgarians, etc.) are Orthodox Christians, while only 0.3% account for other religious communities (Jewish, other religions, Eastern religions, movements and world views) account for 0.13% of the population. Only 2.2% of the population did not declare their religion, 3.8% are atheists, 0.8% are agnostics or sceptics, while 0.3% did not respond. Since 2010, after various geographical changes in terms of territorial organization of the Catholic Church in Croatia was territorially divided into four provinces (Metropolises) and ten corresponding dioceses, the Military Ordinariate, 85 parishes, and 105 parishes: 

In the beginning, the Diocese of Varazdin consisted of the deaneries of Bednja, Čakovec, Donje Međimurje, Donji Varazdin, Đurđevac, Gornje Međimurje, Gornji Varazdin, Koprivnica, Ljubljana, Varazdinske Toplice and Virje. Further deaneries are divided into parishes. We could not find a map that shows dioceses, only a small-scale map that shows the todays Archdioceses and Metropolitanates in Croatia (Figure 1).

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As for the universality of the Church, i.e. its global character and changes in the organization of the Catholic Church in Croatia, a comparative analysis was provided by Kajinić (2016) and in that analysis, he depicts also spatial changes of Diocese of Varazdin.

The seat of this Diocese is in Varazdin at the Church of the Assumption of Virgin Mary, which was proclaimed cathedral after the establishment of the Diocese. The patron saint of the Diocese is St. Marko Križevčanin. Its current bishop is Josip Mržljak and the Metropolitan Archbishop is Cardinal Josip Bozanić.

3. Overview of the project strategy used in the creation of the first or student map version

The creation of the map of the Diocese of Varazdin was part of the scientific research project at the Faculty of Geodesy (Department of Cartography). The project began as a students’ assignment at the graduate course in Practical Cartography at the same Faculty. We aimed to produce a map of A2 format (594×420 mm). Students usually rely on a few basic parameters. As for the rest, e.g. data collecting, designing and shaping of the map, etc. this is where his or her creativity, resourcefulness and knowledge of cartography adopted during the studies come to the fore. The data were collected online but also checked and additionally obtained through fieldwork from the vicars and priests in the Diocese of Varazdin. All other data were collected as free spatial data, including
some work done in free open-source applications and some using commercial specialized cartographic software e.g. OCAD. The combination of softwares was necessary for the best results.

3.1. Coordinate system

The coordinate system used in this project is the official Croatian coordinate system, i.e. HTRS96/TM (Transverse Mercator, conformal projection). This projection uses the GRS80 reference ellipsoid. The central meridian is the 16°30’ E. False Easting is set to 500,000 m and the projection deformation scale is 0.9999 (Lapaine & Tutić, 2007).

3.2. Data collecting

The key questions need to be answered regarding data collection were: Which data to use for base map and where to find them? Which data to use for special church map content and where to find them? The most data used for the student version of the map is available online and used for the base map. Special church content was also available online but only in a descriptive form which has to be visualized on map (e.g. seats of deaneries and the parishes). The biggest challenge was the Diocese’s borders, which can be found on small-scale maps and there is a generalization issue. In the final version of the map, the border issue was solved by receiving a correct border-line from Msgr. Koprek. The most important feature of the map is the border structure (degree of generalization in accordance with the map scale) of the Diocese of Varaždin and its deaneries and parishes. A simple raster map of the borders can be found on the web page of the Diocese (HBKa, 2017). It shows the borders of the diocese, deaneries and the locations of the parishes’ seats, including also names of the

Figure 1. Classification units of Roman Catholic Church in Croatia (HBKb, 2017).
deaneries and the parishes. Conclusion regarding data collecting efforts is that one needs to make a serious investigation and for best results is contacting with church representatives although some data remains inaccessible.

Next data to be collected was the topography of the area. The topography on the first map version is represented with a hill shade map and a land cover map. They were both obtained as WMS (Web Map Service) from the OpenStreetMap (OSM, 2017). The OSM data covers a global level and it is available under the following license:

All OpenStreetMap derived data on the download server is licensed under the Open Database License 1.0. You may use the data for any purpose, but you have to acknowledge OpenStreetMap as the data source. Derived databases have to retain the same license. (Geofabrik, 2017)

The data on roads, railroads and rivers were collected at OSM Geofabrik. Geofabrik has a server for free download of OSM spatial data (GF, 2017). The data were grouped by continents and then by countries. We collected the data for Croatia, but also for Hungary and Slovenia. The country file from Geofabrik contains spatial data on buildings, land use, populated places, railways, roads, waters, etc. They are vector files, all available in .shp (Shape File) and .dxf (Drawing Exchange Format). Sometimes we rely on the general geographic content of the map, because the borders of the diocese and other special objects found in documents or oral source of ecclesiastical representatives are often found along with natural objects such as rivers, lakes, forests etc.

Land border is obtained from free program DIVA-GIS and free spatial data (DIVA-GIS, 2017). The server contains free spatial data grouped per countries. The available data include administrative borders, waters, roads, railroads, etc. Spatial data for the country border from DIVA-GIS is coarse and will only be used for the overview map.

Border data can also be obtained using WFS (Web Feature Service) from Natura2000 service or from (DGU, 2017) State Geodetic Administration (DGU-Državna Geodetska Uprava). Natura2000 is an ecological network for Croatia. It contains spatial data about protected areas, wildlife habitats, natural regions, etc. (NA, 2017). Natura2000 is also used for obtaining spatial data on the rivers in Croatia. Colours and some symbols were harmonized in accordance with the official Croatian cartographic symbols (Landek et al., 2010). A buffer was added for every label for better legibility (Figure 2). The individual maps of three towns were added. Varazdin, Cakovec and Koprivnica are shown in the upper right corner as maps inserted in the Main Map of the Diocese of Varazdin on a 1:80,000 scale.

Figure 2. First version of the map drawn by J. Jagetić. The complete map can be seen at Jagetić’s website (2017).
4. Map design of second and final version

The final map was created after the thorough analysis of the first version and the removal of its flaws in cartographic terms. The first version of this student map was deficient in data and was available only in the Croatian language. It missed the specific cartographic content of sacral topics and also attributive data pertaining to the areas outside the Diocese of Varaždin. Also, it abounds with inconsistent degrees of generalization and the choice of contents, which is inappropriate and contrary to the cartographic rules. In addition, the background of the map largely diminishes the legibility of other important contents.

The new map was therefore drawn when the gathered data were thoroughly checked and verified, and new data on the sacral features added (seats and borders of parishes, names of churches). The data were then visualized in accordance with cartographic rules, using OCAD software. Thanks to church representatives as sources we manage to gather enough data for second (improved version) of the map, which had a big impact upon the construction of the map.

Since the colour palette did not provide enough contrast between deaneries, in the final version we replaced it with different colours.

Owing to the cooperation with the representatives of the church community in the area of the Diocese of Varaždin we have acquired valuable data. We are particularly thankful for the data on the specific sacral topics.

4.1. Sources, selection of special sacral map content

One of our initial research assignments was to investigate what changes actually took place after the establishment of the Diocese of Varaždin (BVa, 2017). The establishment of the new parish was proposed by the priest of the Koprivnica Deanery headed by the dean and the parish priest from Močile, Msgr. Leonard Marčič. They thought that there should be a new parish established in the wider area of the town of Koprivnica. As stated in the edict released on the memorial day of St. John Vianney on 4 August 2010, the parish should cover the larger part of the former parish of the Assumption of Virgin Mary in Močile and the smaller part of the Holy Trinity parish in Reka (BVb, 2017). Besides, the same descriptive borders as those mentioned in the edict can be found in some other documents. The edict mentions that the Koprivnica parish borders with the parishes of Bishop St. Nicolas and Blessed Mother Teresa in the east, as far as the Koprivnica-Zagreb railway line. In the west, the parish shall border with the parish of Močile as far as Andrije Hebranga Street, Tina Ujevića Street and the upper section of Dubovečki breg. These streets shall remain part of the Močile parish. St. Leopold Bogdan Mandić Chapel shall serve as parish church during the construction of the new one. In addition, the Holy Spirit subsidiary chapel at the municipal cemetery shall be attached to the newly established parish.

The suburban parish of Resurrection of Jesus seated in Kućan Marof in the grater area of the town of Varaždin was established in 2009. 11 November 2017 will mark the 38th anniversary of the arrival of the first priest, Rev. Matija Vlahovac, when the life of the new parish began, while 22 November 2017 will mark the 43rd anniversary of its establishment, since until 22 November 1974 all four settlements in the parish (Kućan Gornji, Kućan Donji, Zbelava and Kućan Marof) belonged to the parish of Biškupec. That was the day when Zagreb Archbishop Franjo Kuharčić reached the decision on the establishment of several new parishes in the Varaždin area, including the parish of Resurrection of Jesus. The first priest was appointed on 24 March 1978, while the edict on the borders of the parish was issued on 29 October of the same year.

The most recent change and the establishment of new deaneries have been the last and the most significant contribution to the map (Figure 4). The areas that once belonged to the Donjovaraždinski (Lower Varaždin) Deanery and the Varaždin-Toplice Deanery changed their borders and the following deaneries were established in the areas covered by the former ones (Figure 3):

- Istočnovaraždinski (East Varaždin) Deanery and
- Zapadnovaraždinski (West Varaždin) Deanery.

As set out in the edict issued by Bishop Msgr. Josip Mržljack, the borders of the former Donjovaraždinski Deanery (now divided into two deaneries: the Istočnovaraždinski Deanery with the attached parish of Kneginje from the Varaždin-Toplice Deanery, and the Zapadnovaraždinski Deanery) have been changed. In addition, some of the deaneries have been renamed: the Gornjovaždinski Deanery is now Ivaneč Deanery; the Gornjomedimurski Upper Medimurje) Deanery is now Prelog Deanery (so that they are all named after their seats). These changes were discussed under item 4 of the agenda of the 24th session of the Varaždin Diocese Presbytery Council on 13 March 2017, presided by the Varaždin Bishop Msgr. Josip Mržljack. Also discussed was the new organization of the Diocese, i.e. the establishment of an archdeaconry whose borders would follow the natural borders of the three regions that constitute the Diocese of Varaždin. Accordingly, the Diocese would be divided into the archdeaconries of Varaždin-Zagorje, Medimurje and Podravina. Also mentioned was the need to establish a...
new deanery in the area of Varaždin, i.e. to divide the Donjovaraždinski Deanery into Istočnovaraždinski Deanery and Zapadnovaraždinski Deanery, whereas the following deaneries would keep their present names: Bednja, Čakovec, Đurđevac, Koprivnica, Ludbreg, Varaždin-Toplice and Vir. Gornjomedimurski Deanery would change its

**Figure 3.** Before (left) and after (right) changes in the establishment of the new deaneries.
name into Štrigova, Donji Medimurski Deanery into Prelog, Gornjovaraždinski Deanery into Ivanec, and the Donjovaraždinski Deanery into Istočnovaraždinski Deanery and Zapadnovaraždinski Deanery (BVc, 2017).

Data collecting was completed in September 2016. It included editing, updating, fieldwork and interviews with several parish priests of the Diocese of Varaždin, all performed by the senior students during their one-semester Cartography course at the Faculty of Geodesy. Their activities also included revision of the settlement mapping and positioning in accordance with the database provided by Bajić, Husak, Kosina, and Savin (1992) and the Official Gazette (1992, 1997a, 1997b).

5. Conclusion

The creation of the map of the Diocese of Varaždin proved to be a challenge. All of the spatial data were freely collected. Some sources proved to be better equipped with finer data than others, such as Geo fabrick, which has more detailed data than DIVA-GIS, though it lacked in some areas, such as administrative maps. The real problem of this project was the lack of any georeferenced data on the borders of the Diocese of Varaždin and its deaneries. All of the work was done as a synergy of three pieces of software. QGIS was used for georeferencing, editing and preparation for print, OCAD for vectorizing using, and AutoCAD for line editing. Though it could use some more refining, this map can be useful as a starting point for the creation of the GIS in the Diocese of Varaždin administration.

It is very hard and time consuming to collect the data for any part of church map (including map of Varaždin diocese) in Croatia or their special thematic content since there are no previous maps of that kind. Because of that, it was necessary to develop a network of associates who will, through their work and dedication after several years of data collection, provide the necessary raw materials, namely the design of the final map version. The map updates remain as a regular procedure in the future.

Software

Each step taken in the process of collecting data for the map includes the use of OCAD and QGIS softwares. OCAD is a software (sic) used for drawing maps of all types. It was developed by Hans Steinegger with the aim to generate digital orienteering maps. Nowadays OCAD is used in every field of professional cartography as software publisher claims in OC (2017). QGIS is a user friendly Open Source Geographic Information System (GIS) licensed under the GNU General Public License. QGIS is an official project of the Open Source Geospatial Foundation (OSGeo) (QG, 2017). We did not have any of the problems with selected programs and also experienced no limitations associated with the collection and processing of described data.

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