



## Mueller's map of Bohemia and its vector data model

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The Mueller's map of Bohemia is one of the most important maps in Czech history. In last couple of years this map was scanned and analyzed a few times. The aim of this new project is thorough analysis of this map. As written in many articles, the most important information on the old map is the spatial position of point symbols (towns, villages), line symbols (rivers, roads) and area symbols (water areas). These symbols are usually compared with current situation. Using this method we can explore changes of water bodies or watersheds, changes of settlement (e.g. disbanded villages), changes of major travel routes. The crucial problem of this approach is georeferencing raster image into some well defined coordinate system. The best way how to do that is using ground control points (GCPs) and appropriate type of transformation. The problem of choosing the best GCPs is not solved correctly yet. Usually there are used a few "well identifiable" points. From our point of view the best method how to choose right identical points is to make full vector data model of the map. Once we have complete vector model of the map, we can test many combinations of GCPs (only towns, only roads crossings etc.) and many types of transformation. Working with the vector data is also more comfortable. Another advantage of vector database is making spatial statistics of the data. We can count the number of villages or towns; we can count the sum of water bodies areas; we can count the number of monasteries, castles, mines etc. As we want to make new thorough analysis of the Mueller's map of Bohemia, we decided to create its vector model. In the first phase the map legend was studied and compared with the content of the map. ArcGIS geodatabase was designed for storing the data. As the Mueller's map of Bohemia is printed on 25 map sections, 25 databases were created. Every map section was reconstructed into its original size and then the database was filled. At the end, all 25 databases were merged together. Now we have complete seamless database of the map (several thousands of points) and we can test many transformations for georeferencing created vector model into some well defined coordinate system.

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