

From the digital contentual facsimile of a globe map to a contemporaneous facsimile globe in 3D (The rebirth of Perczel's globe)

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Abstract:

The final result of the Perczel Project was born after ten years of research at the Department of Cartography and Geoinformatics of Eötvös Loránd University by end 2019. The plan was to completely reconstruct Perczel's giant globe. The globe, dated 1862, was made by László Perczel and it is now kept in the Map Room of the National Széchényi Library. It is a unique manuscript globe with a diameter of 127.5 cm, but its condition was very poor (several serious defects and illegible labels). In addition to the cartographic tasks by the Department, it was necessary to involve graphic designers and object restorers, model makers, a wood restorer, a coppersmith and an engraver; they were all coordinated by the Archiflex Studio. As a result of their collaboration such globes were born which most probably look like the original manuscript product looked almost 160 years ago. The facsimile was made in three copies.

Before the Archiflex Studio started to organize the work, the Department created – by processing 800 photographs – a digital virtual 3D facsimile to register the state of the globe. This globe was entered into the Virtual Globes Museum (<http://terkeptar.elte.hu/vgm>). The original large-resolution photos were also used for making the segments of the digital contentual globe map between 2008 and 2012. This intensive work (with the cooperation of several BSc, MSc and PhD students of cartography) produced a series of digitally recreated segments of the globe map, which were redrawn, recoloured, and registered the legible letters. The digital contentual facsimile was used to prepare the virtual 3D model, which was also placed in the Virtual Globes Museum in 2012.

The work on the globe at the Department ceased in 2012–13, but continued in a half-year project in 2019, before the start of the actual physical reconstruction. The project was undertaken by Mátyás Márton, the head of the former Perczel Project. The work meant that the digital contentual facsimile completed in 2012 had to be further processed: namely, the digital reconstruction of the globe map. Various cartographic challenges had to be solved to accomplish this task:

- The possible sources had to be identified: those maps and atlases had to be found that Perczel may have used for the preparation of his globe. The collected publications were compared to the easily readable parts of the globe; in this way, it was possible to select those that were probably used. These sources were considered basic sources for further work.
- The selected sources made it possible to achieve two goals: first, to complete the letters of place names that were partly illegible, and second, to add the graphical elements to those parts of the globe that had been completely destroyed.
- There was only limited time to carry out the above tasks, and at the same time, we had to serve those who were working on the production of the three facsimile globes under the direction of the artistic director of the project.

This paper gives only an outline of the events of the progress of the digital recreation, that is the digital (virtual) contentual facsimile of the globe at the Department in the past more than ten years. It gives details on the cartographic tasks needed before the physical reconstruction. This made it possible to make the digital restoration and digital reconstruction of the globe map as complete as possible. As a result, it also became possible to prepare the virtual 3D model of the content of the reconstructed facsimile globe. In comparison to the state of the globe in 2012, altogether 2,872 graphical elements and 3,252 place name amendments and corrections were made in the project. Hill shading was added or completed on 318 places – mostly on the damaged parts. Further, the content of the badly damaged calendar ring was explored. (The

study and reconstruction of the artistic drawing of the signs of the zodiac was done by a designer-graphic artist.) It is a cartographic interest that the points of the compass were written in old-style Hungarian words on the calendar frame (horizon ring), which are not used today.



Figure 1. The original (left) and the reconstructed (right) globe.

Finally, the authors present the contemporaneous facsimiles in their physical form, which is the result of the project coordinated by the Archiflex Studio (the 3D models can be seen in the VGM). The completion of these facsimiles makes this work of art – known as Perczel’s globe in map history – a common property representing great scientific and cultural value.

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