Web-based reconstruction of old educational instruments of Geography

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Since the 18th century, teachers have used instruments to help understanding difficult issues of geography. The most characteristic tools were maps, globes and armillary spheres but there were other useful instruments as well such as sun pointers, country guides or comparative time dial. Unfortunately the most of these old instruments went wrong in frequent and long term usage and nowadays we can find them only libraries.

This presentation shows the web-based adaptation of such special tools that belong to the collection of the Department of Cartography and Geoinformatics, ELTE. Our goal was to turn these antique pieces apt to interactive education and to ensure their wide accessibility.

The homepage shows the scanned image of the tools, a short description, and their modern visualization.

An example is a sun pointer. The original instrument ("Sonnenzeiger") was made by W. Schmidt and printed by Freytag & Berndt, in Vienna, around 1909. However its language is German, it is easy to understand its function: it shows the sun's position during the year. It can be used everywhere on Earth similarly because it works independently of geographic longitudes. The students only have to set the latitude of their location.

At visualization, the sun pointer was a little modified and extended considering time zones. When users want to see the recent position of the Sun at a certain location, they have to click on the button, and the application reads their coordinates with Geolocation API and the system datum, and finally calculates the Sun's recent position on the sky. Besides, the elevation, the sun's azimuth and the time of sunrise and sunset was added. The application was written is JavaScript, and the graphic visualization is based on SVG.

Another common and popular instrument was the "Wheel of Europe" (mid 1930's, Europa-Rad, Kosmos Verlag, Stuttgart), an instrument that facilitates memorizing current basic information of the time of European countries, e. g. area, population, government type, capital, the longest river, the highest mountain, flag, etc. Today, data of the Wheel are naturally outdated therefore the modern version gives the latest data available. The base of the web-version is a simple database that provides country information and that is easy to update at any time when it is needed.

The comparative time dial ("Vergleichende Zeittafel") was made by J. Redtenbacher, and helped to calculate the local time. The interactive visualization was extended with more cities around the world and the recent time zones.

As edutainment (education with entertainment) is the modern way of education, web-based reconstruction of these objects brings pupils and students closer to geographic topics. On the other hand, with digitalization, we are able to protect them from falling into oblivion and to present them to the new generations.