

Combination of Traditional Hill-Shading and Digital Cartography on Small Scale Maps

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Abstract

On the maps issued by GiziMap Publisher the depiction of the relief is of exceptional importance. Our maps usually show whole countries on one sheet. An important element of showing the country in question is the correct presentation of its relief.

The scale chosen usually depends on the dimension of the country and the standard size of the paper used for printing. The scale of the base maps employed is usually 1:200,000, 1:500,000, and 1:1,000,000.

The topographical maps were mostly published several years ago, so they should be updated even concerning the hydrography, especially when new water reservoirs. In their surroundings sometimes even the reinterpretation of the relief is needed. Further information should be collected to compile the other topographic elements.

However, the relief is a rather lasting information on topographical maps

Based on the above mentioned topographical maps we are compiling the elevation contour design with a proper density which is necessary to present the relief of the given country. This contour design is serving as a basis for the colouring of layers and hill-shading.

Most of our maps were published in two versions:

The so-called "Geographical Map" containing the relief with elevation tints, and the "Road Map" with hill-shading.

Other components of the maps are identical, with the exception that some of their colours are different on the two versions, since on the hypsometrically contoured background maybe the selection of differing colours is suitable (e.g. in the case of boundaries).

We also have prepared the background of some former maps with this method (Caucasus, Central Asia, Libya, e.t.c.). Even in the 1990's the maps were still prepared using traditional scribing techniques. The processing of the hill-shading originals was also made with traditional photographic methods.

The map of Central Asia was our first product in 1999, where we had to combine the traditionally prepared hill-shading with electronically designed elements. The hill-shaded original was scanned and matched by computer to the hydrography and to height points. After this, several proofs were made to find the appropriate grey grade and contrast of the shading.

Beside our own maps we have prepared hill-shading for other map-publishers, too. In these cases we have received the hydrography at the scale of the planned map. We have chosen the topographical base of the required area. The customers received the traditional hill-shading original or its scanned variation.

Our greatest job was the preparation of the hill-shading of the pages of Reader's Digest World Atlas. Several sample pages were prepared in order to choose the most appropriate shading style.

The finding of the proper elevation contoured base map and its adjustment to the hydrography concerning each page of the Atlas required much preparatory work before the traditional completion of the hill-shading. For some regions, the shading was prepared jointly, and it was cut into pieces during later processing, as in the case of Africa, Australia, etc. This method ensured that the shading is identical on the pages of the same scale. For some maps of different scale but of the same area, only one shading was made and it was reduced or magnified to the appropriate scale. The reason of this was first of all the reduction of the costs and production time.

The traditionally prepared hill-shading originals were scanned and adjusted to the hydrography. The customer received both the originals as well as the scanned variations which could have been altered by them in order to select the optimal grey grade.

During this job we had the opportunity for a detailed study of the relief of the whole Earth.

It was a considerable task to find a proper topographical basis for the pages of a definite scale. An appropriate base map (in scale and elevation contour density) ensured that

the shading was not too detailed or too sketchily. In several cases, the scale of the base map used to prepare the hill-shading differed from the scale of the relevant World Atlas page. In those cases, the base was either reduced or enlarged to fit the Atlas page. The differences originating from projections were also adjusted to the projection of the Atlas by means of reduction or enlargement.

The Reader's Digest World Atlas was already published in about twenty languages. Hopefully the hill-shading design prepared by our company was a considerable contribution to the success of this publication.

Currently, the majority of map publishers do not prepare the hill-shading of maps and atlases in the traditional way - they are seeking more rapid methods. In Hungary also the number of traditional hill-shading cartographers is gradually reducing. So we have to find a faster way to keep the quality of hill-shading compared with traditional hillshading.