

**Nowe metody prezentacji rzeźby terenu: trójwymiarowe modele,
kreskowanie i poziomice – zarys od XVI wieku do 1799 roku**

**New methods of presenting the land relief: tree-dimensional terrain
models, the hatching system and the contour lines – summary
of the period from the 16th century till 1799**

SUMMARY

The drawing of the Earth surface, one of the basic elements of general geographic maps, proved to be the most difficult task for cartographers in the period of the intensive development of the modern cartography, i.e. in the 16th-18th centuries. Despite these difficulties – or maybe thanks to them – many methods and ways of presenting the physical features of the land have been invented and applied. This article presents methods that have been used since the second half of the 16th century, i.e. the three-dimensional terrain models, the hatching system and the isolines (contour lines). The three-dimensional terrain models (mockups) were made either for informative or exclusively artistic purposes. They usually presented battlefields, towns with their fortifications and foregrounds, landscape (especially when it was picturesque and when there were considerable elevation differences in it). The oldest preserved models dating back to the 16th century had both an informative and a military character. Their task was to help to develop a strategy and to carry out a battle on a previously defined terrain. Such models were developed i.a. in France at the times of Louis XIV. The three-dimensional models presenting mountainous landscapes were used for informative, educational or aesthetic purposes. They presented the most picturesque regions of the mountains. In the 18th and 19th centuries, most mockups that had been made up until then presented the most imposing parts of the Alps – mainly the Swiss Alps. More accurate models and maps presenting the land relief could be made thanks to the development of the practical geometry and perspective drawing. The ways of perfecting the drawing of large-scale cartographic presentations were explained i.a. by J. Dilich, S. Marolois, A. Freytag, J. Naronowicz-Naroński in their handbooks for architects, surveyors and war engineers constructing or expanding fortifications. The most imposing cartographic achievement, based on astronomic and geodetic measurements made at the end of the 17th century, was a topographic map of France in the scale of 1:86 400, in which the hatching system had been applied to present the physical features of the land. Until the end of the 18th century, this method had become widely used not only in Europe but also in the United States. The isolines joining points of equal elevation above the measured object were used for the first time in the Netherlands for making drawings on maps of sheets of water. On these maps, the isolines indicated the depth of the bottom of the river in relation to the sea level. The attempt to use the isolines – that is contour lines – to depict the mainland was rejected for a long time. Its inventor was Marcellin Du Carla-Boniface who he

did not live to see it being widely used. The French Academy of Sciences refused to accept it as “a method too difficult for to understand for readers”. The drawing of contour lines on general geographic maps in the scales of topographic maps found wide application only after World War I.

Analecta – Studia i Materiały z Dziejów Nauki
[Analecta – Studies and Materials on the History of Science]
XXI, 2011, 2, 9-50