

Maps are the fundamental transmitter of spatial information. They enable understanding, explaining, and concluding about geographical space and the phenomena that occur in it. More and more often, maps supplement the press, are used in weather forecasts, and can also be the basis of car navigation. More and more people use maps to find a restaurant, car mechanic, or the nearest kindergarten. For this reason, scientists are also more and more willing to use maps to present the results of their research, especially if they have spatial character. Showing data on maps has always been the subject of cartography. Also, nowadays, cartographers are looking for new mapping methods for new phenomena, as well as for the growing importance of time data. In addition to the presentation of data changing in space, maps can also present phenomena that also change over time. Methods of animated cartography can be successfully applied to present quantitative data. So far, several methods have been developed, such as rotation, flickering, and pulsation of point symbols.

Due to its nature, the main sense of map perception is vision. Psychology has developed several theories about vision. They indicate the phenomenon of preattentive vision, which lasts only a few hundred milliseconds. During this very short moment, the visual system is able to capture certain characteristics such as size, color, or in the case of animated maps, speed of movement. Apart from the fact that these features will be noticed, it is possible to precisely determine their location by humans. The speed of movement is precisely the feature that, firstly, differentiates the intensity of the phenomenon on the map between different points, but which can also be preattentively noticed.

The aim of this project is to record pre-attentive vision on animated maps using dynamic point symbols showing quantitative data. It is also crucial in the project that the speed of movement can not only be noticed within a few hundred milliseconds, but, according to the Guided Search Theory, can direct the serial search (attentive). Therefore, an important goal is also to define the correctness of directing attention by the speed of movement on the map.

To achieve both goals, a study will be conducted with a highly precise 2000 Hz eye tracker. Firstly, it will record preattentive vision, and secondly, vision guided by preattentive features. Thanks to this, it is possible with statistical models to determine the relationship between pre-attentive vision and the accuracy of detection of dynamic point symbols.

From the cartographic point of view, it will be significant to develop a methodology for classifying the speed of movement (speed of change) of point symbols, both geometric and pictorial. The research scheme assumes research on the classification of the change speed of symbols on an arithmetic, logarithmic and exponential scale. Additionally, the study will take into account three geometric symbols and more complex pictorial symbols, which are widely used in the GIS (Geographic Information System) environment.