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UPDATING RESEARCH ON CHERNOFF FACES FOR SCHOOL CARTOGRAPHY

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Present work includes a short introduction about the Chernoff faces, emphazising the importance of works as the maps made by Eugene Turner (California State University, 1977), by Sara I. Fabrikant (University of Zurich, 2004), the research developed by Elisabeth S. Nelson from the San Diego State University or the use of Chernoff faces as component of a cartogram (research finished by Daniel Dorling, University of Newcastle upon Tyne in 1991).

An innovative theoretical research was followed to study the possibilities of this method of representation in thematic maps, more specifically in school cartography. One of the main conclusions of this research was the limitation of the number of variables that can be represented by using an easy Chernoff face to a max. of six (to facilitate the reading of represented data), applying also some principles used successfully in cartography and described by Jacques Bertin in his Graphic Semiology in 1969. Some of the practical experiences acquired during the theoretical and practical teaching of this method for MSc students on Cartography at Eotvos Lorand University (Budapest, Hungary) are also presented, being illustrated by some thematic maps made by the students using the original Chernoff faces and the adaptation of the Chernoff principle on pictograms, dividing a graphic symbol into its more relevant features or components and using each of these components to represent a different variable (Figure 1).

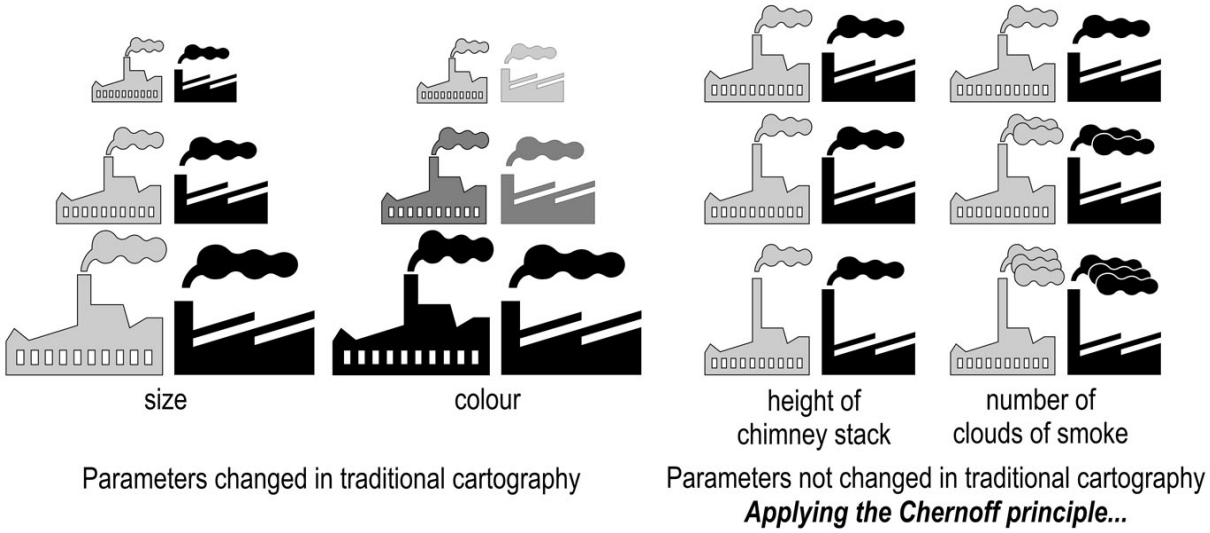

Figure 1: Example for the use of the Chernoff principle on a cartographic symbol

The theoretical research was also tested in an international bilateral project counting with the participation of Argentine and Hungarian specialists in 2009, asking pupils of grades 7 and 8 in Hungarian Elementary Schools, and pupils of 1st grade in Argentine Secondary Schools. Specialists made together a test formed by four questions to examine three aspects of the use of Chernoff faces: traditional use of this method, the use of the method combined with cartographic principles and the use of Chernoff faces on pictograms. The survey counted with the participation of 818 pupils in Argentina and 1038 pupils in Hungary. Some of the more characteristic results of this survey are presented briefly (Table 1).

MAIN RESULTS OF THE SURVEY						
QUESTIONNAIRE	ARGENTINA			HUNGARY		
Questions	Right answers	Answers with one or more errors	No answer	Right answers	Answers with one or more errors	No answer
"Traditional" Chernoff faces	493	313	12	828	207	3
Chernoff faces applying cartographic principles	285	527	6	665	367	6
Applying the Chernoff principle on pictograms	294	520	4	908	123	7
Drawing thematic data on an outline map with Chernoff faces	540	257	21	798	211	29

Table 1: General results of the survey

Its conclusions are a starting point to follow the research within a new international project with specialists of the Vienna University of Technology, trying to find answers to the questions that remained open or without a convincing answer.