

János TANÁCS

***The Argumentative and Heuristic Role of Diagrams
in the Formation of Non-Euclidean Results***

In the presentation I am going to investigate both the argumentative and the heuristic roles of the diagrams used by János and Farkas Bolyai in their attacking of the famous Parallel Postulate of Euclid. According to my hypothesis the diagrams functioned in two different ways.

The heuristic function of the diagrams and the figures was that it managed to explore the implicit Euclidean presuppositions and the logical consequences of it. The anti-Euclidean results which became later the non-Euclidean ones of János Bolyai were not discovered by mere verbal reasoning; it seems that the visual reasoning played essential role in the creation of non-Euclidean geometry.

In the argumentative role the diagrams and the figures either supplemented the verbal reasoning or in some cases overwrote it. This latter function will appear the most interesting since it ensured the priority of the visual reasoning over the verbal ones.

János TANÁCS is Associate Professor, Department of Philosophy and History of Science, Budapest University of Technology and Economics (BME). Main areas of expertise: argumentation and negotiation theory; history and philosophy of mathematics. Research interests include history of non-Euclidean geometry, especially the semantic, methodological and social epistemological questions related to the rise of Bolyai-Lobachevsky geometry. E-mail: janos.tanacs@gmail.com.

