

*Report by Prof. Bruno D'Amore (University of Bologna) about the Thesis of Research Doctorate presented by Aldo Scimone, and entitled "Mental Representations of Pupils about an Open Historical Problem: Goldbach's Conjecture. The Improvement of Mathematical Education from a Historical Viewpoint."*

**PhD Supervisor: Prof. Filippo Spagnolo (University of Palermo)**

**To COMENIUS UNIVERSITY BRATISLAVA, FACULTY OF MATHEMATICS AND PHYSICS, DEPARTMENT OF DIDACTIC MATHEMATICS.**

### **1. Topicality of the subject and its importance**

I must make some remarks. The Thesis presents two aspects: a historical aspect and an educational one. The whole Chapter one is dedicated to the first aspect, and it is very clear and complete, with an impressive Bibliography. I read this chapter carefully, because it influences very much some following aspects of the work. But I cannot couch my opinion on this part, because I am not a historian. The whole Chapter two is dedicate to the educational aspect and I have directed my attention on it as supervisor and examiner.

The generale subject: "the influence and use of history of mathematics in the educational practice" has nowadays a great scientific interest in the educational research field of mathematics: so the candidate discusses a subject of great interest and remarkable importance.

### **2. Innovations of the results expounded in the thesis**

The idea of establishing a connection between the argumentative behaviour of each pupil and the analogous one used in the history of mathematics is not new, but such an example like this has a great interest because it is very complete and specific. According to me, the argumentative behaviour of single pupils is a result which, more than a new one, contributes in clarifying models and convinctions of mature pupils.

### **3. Evaluation of the research**

The research is based on an experimentation made in the field by a pupils' number large enough, if one considers it wants to be qualitative; the technique used for the evaluation utilizes the software CHIC and SSPSS analysis, very well applied. The examples are significant. This research also contributes – like a second order result- to give an interesting example of application of SSPSS, in view of its diffusion is very recent.

### **4. Scientific rigor and deepness of argumentations**

In view of considerations and comments made on pupils' answers, a little space has been dedicated to the attempts of critical rationalization of pupils' answers to interviews. Even if the scientific rigor and the deepness of the argumentations are more than sufficient, however one might discuss more, in terms of time and attention, to add some more general and theoretic observations.

#### **5. Highlighted scientific aspects and conclusions of the research**

The scientific aspects are relevant and interesting for researchers, while the conclusions offered by this study can constitute an interesting starting point for further considerations.

#### **6. Topicality and variety of the consulted bibliography**

The bibliographic quotations are wide and various, often new. But the aspect pertinent to pupils' convictions could have been more analyzed.

#### **7. Some elements which are in need of further analysis**

Even though the few and almost irrelevant negative above-stated elements, the text has its own inner remarkable consistency and such an interest as to suggest that the Author must not necessarily put in work. Yet, like a trivial remark, I suggest to put an index to be able to consult the text with more ease. If the Author thinks it is worth, he can consider the smallest previous negative remarks.

#### **8. Suggestions to the Committee**

Apart from the fact that the Candidate agrees to the preceding suggestions, I recommend to the Committee to receive the Thesis in hand positively, giving the Candidate the qualification of Research Doctor.