



Mirko R. Dejić¹

University of Belgrade, Teacher Education Faculty, Belgrade, Serbia

Scientific
review paper

Paper received: May 12 2019
Paper accepted: Jan 18 2020
Article Published: Mar 30 2020

Mihailo Petrović Alas' contribution to development of interest for mathematics

Extended summary

Mihailo Petrović Alas (1868-1943), one of the greatest Serbian mathematicians, was born in Belgrade, where he completed high school and the studies of natural and mathematical sciences at the Higher School in Belgrade. After he had passed the entrance examination, he was admitted to the Ecole Normale Supérieure in Paris in 1890. He defended his doctoral thesis in 1894 in front of the commission consisting of great mathematicians Hermite (Hermite Charles, 1822-1901), Picard (Charles Emile Picard, 1856-1941) and Painlevé (Painlevé Paul, 1863-1933). He acquired a worldwide fame for his work in the field of mathematics and he also promoted the Serbian School of Mathematics. He was prolific in many different areas: in *mathematics* he deals with differential equations, the theory of special functions, algebra, theory of probability, arithmetic, differential and integral calculus, geometry, numerical mathematics etc.; he is an *inventor* of a depth gauge, automatic gear, range finder, calculating machines (chemical calculators, kinematic calculators, hydraulic calculating machines); like Descartes and Leibniz, he looked for *common elements* in *disparate phenomena* and created mathematical and general phenomenology. He *creates* in the field of mechanics, astronomy, physics and chemistry; he *writes* novels, travelogues and essays, as well as books on fishing, economy, history and law. Apart from such a huge and rich creative opus, Mihailo Petrović Alas also found time, although he did not work at elementary and secondary schools, to work on issues related to *teaching* mathematics and he published some fifty papers on this topic. When writing all the works described in this paper, Mihailo Petrović had only one wish – to awaken and keep stu-

¹ mirko.dejic@gmail.com

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dents' interest in mathematics and to popularize it by means of simple presentations. The works were used as an example of how creativity is present in the field of elementary mathematics as well. Starting from quite elementary problematic topics, Mihailo Petrović gives original contributions. We will illustrate this with two examples from his article *Interesting points in the application of Pythagorean rule* (Petrović, 1949). In one example Petrović shows how *through the given circular opening, a circle of greater diameter could be pulled through, and at the same time the diameter of the circular opening is not enlarged*. In the second example Petrović shows how *through a non-squeezable hard cube a canal should be cut, through which another and bigger, non-squeezable and hard cube may be pulled through*.

What is problematic in these examples is that the task seems impossible, sometimes even meaningless, but the application of the Pythagorean theorem shows that it is possible and meaningful. This kind of situation boosts students' interest in the problem and inspires them to solve the problem. The pedagogical implications of these examples are numerous. The most important thing is developing an interest in mathematics. Together with their teachers, pupils can analyze examples, come up with solutions to those of other students before them, make models, etc. The pupils will gladly make models and pull a greater circle through a smaller opening, or pull a bigger cube through the opening in the smaller cube. They would like to impress the others, but also to show them the mathematical apparatus which led them to the construction of these models. If the examples provided by our mathematicians are available to students, they will develop a stronger sense of patriotism.

Keywords: Mihailo Petrović Alas, Pythagorean theorem, pedagogical work, mathematics, popularization of mathematics.

References

- Dejić, M. (2019). Mathematics, its history and teaching. In: S. Lawrence, A. Mihajlović, & O. Đokić (Eds.). *Proceedings of the Training Conference History of Mathematics in Mathematics Education* (5–11). October 26–30, 2018, Jagodina, Serbia. Jagodina: Fakultet pedagoških nauka.
- Đokić, O., Jelić, M. & Ilić, S. (2019). The Relationship between Images and Concepts in the Initial Geometry Teaching. In: Lawrence, S., Mihajlović, A. & Đokić, O. (Eds.). *Proceedings of the Training Conference History of Mathematics in Mathematics Education* (29–40). October 26–30, 2018, Jagodina, Serbia. Jagodina: Fakultet pedagoških nauka.
- Đokić, O., Jelić, M. & Ilić, S. (2020). The Correlation between Figural and Conceptual Properties of Angle and Cube in Pre-Service Teachers Geometric Reasoning. *Teaching Innovations*, 33 (1), 1-20, DOI: 10.5937/inovacije2001001D.
- Milanković, M., Mihailović, J. (1946). *Mika Alas*. Beograd: Kosmos. [Mika Alas] [in Serbian]
- Petrović, M. (1949). *Članci*. Priredio Vojin Dajović. Beograd: Naučna knjiga. [Articles] [in Serbian]
- Trifunović, D. (1982). *Mihailo Petrović Alas*. Gornji Milanovac: Dečje novine. [Mihailo Petrović Alas] [in Serbian].

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- Vujisić-Živković, N., Dejić, M. i Zeljić, M. (2011). Razvoj metodike osnovnoškolske nastave računice u Kneževini (Kraljevini) Srbiji u XIX veku. U: Antović, N. (ur.). *Iz istorije nastave matematike u osnovnim i srednjim školama u Srbiji* (41–88). Beograd: Pedagoški muzej. [Development of the methodology of elementary school calculus in the principality (kingdom) of Serbia in the 19th century] [in Serbian].