V. Resumé

In: Martina Bečvářová (author): České kořeny bulharské matematiky. (Czech). Praha: Matfyzpress, 2009. pp. 439–444.

Persistent URL: http://dml.cz/dmlcz/400968

RESUMÉ

This monograph is dedicated to the life and work of four Czech mathematicians – Teodor Monin (1858–1893), František Vítěslav Splítek (1855–1943), Vladislav Šak (1860–1941) and Antonín Václav Šourek (1857–1926). They could not find an employment as professors at secondary schools in the Czech community and that is why they decided to go to Bulgaria at the beginning of 1880s.

After their arrival, they learned Bulgarian language and started from scratch in creating curricula for teaching mathematics and descriptive geometry at secondary schools. They participated actively not only in the development of regional educational systems but produced also the scientific work in mathematics and initiated the formation of local scientific communities. For their colleague teachers, they wrote the first methodological manuals about the teaching of mathematical subjects in their mother tongue. They also created the first brief teaching texts and collections of mathematical exercises for their pupils. During a few first years, they also translated selected Czech textbooks of mathematics and descriptive geometry. They served as suitable examples for the first generation educated in his mother tongue. In the second phase of their „mission", they wrote completely new textbooks for secondary schools and the university. These textbooks became widespread and were used until the end of the World War I. Thanks to their good education, high professional standard and all around activities, they contributed to the creation of mathematical terminology that – except few modifications – is used even now. On the basis of their good experience from Bohemia, they led local mathematical community to the unification of professional associations and initiated the publication of professional, educational and popularizing periodicals.

All their activities were based on their experience acquired in the Czech countries during 1860s and 1870s. Even when the Czech society lost some qualified experts, the Czech teachers at secondary schools and university contributed to the birth of national mathematics in Bulgaria.

During their active lives they kept in touch with Czech mathematicians. They were correspondents or founders of *Jednota českých mathematiků* [The Union of Czech Mathematicians] and followed every step in the development of mathematics in Bohemia. In professional periodicals of their new homeland then regularly informed about the activities of the Union, Czech textbooks, monographs and journals. In addition, they wrote reviews and contributed to the *Časopis pro pěstování mathematiky a fysiky* [Journal for Cultivation of Mathematics and Physics], *Zprávy Královské české společnosti nauk* [The Reports of the Royal Czech Scientific Society] or *Rozpravy České akademie věd* [Transactions of the Czech Academy of Sciences].

It should be noted that at the end of 1870s and the beginning of 1880s, also a lot of Czech engineers, doctors, teachers, natural scientists, lawyers and even artists went to Bulgaria. They participated there in the building of new Bulgaria, which did its best to free itself from Turkish hegemony and draw near to European traditions.

From 2007 up to now I searched for the materials describing the lives and activities of the above mentioned professors in their native country as well as in Bulgaria. I studied the personal archives, lists of members, lists of lectures, personal and official letters and documents, publications on the history of university in Sofia as well as the archival materials etc. As a result of these efforts, I am at least partly able to describe the influence of Czech personalities on the development of mathematics at secondary schools and at the university in Sofia as well as on the foundation and further development of Bulgarian mathematical community.

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The publication is divided into five parts. The first part consists of two short chapters whose main purpose is to present a short overview of Bulgarian history and history of Czech-Bulgarian political and cultural contacts and collaborations. This part is based on the study of classical books and journals. The second part has four bigger paragraphs. Each of them is devoted to one of the above-mentioned Czech mathematicians. Firstly, their biographies are presented, then their scientific and pedagogical activities are summarized and analysed. These parts are based on the archival research, study of books and journals, news reports and special journalistic works. The third part contains lists of publications of these four mathematicians and two memoirs. The fifth part is an appendix containing selected pictures and the last one is a short English resumé.

In 1880s Bulgaria got rid of Turkish hegemony and began to build its own educational system. Czech mathematician **Teodor Monin** (1858–1893) spent there a few years of his life; in 1881–1886 he taught at the grammar school in Sliven. He came back to the Czech Technical University in 1886 and became the assistant of professor František Tilšer (1825–1913) in the department of descriptive geometry. However, in the next year the Bulgarian government called him to the new university in Sofia and he became the first Bulgarian university professor of mathematics. He started to develop mathematics at the Bulgarian university with a great fervour, but unfortunately he fell seriously ill in 1891 and had to return to Bohemia. That is why he was not allowed to accomplish his plans, namely to write several Bulgarian mathematical textbooks.

His six short mathematical articles on special problems on synthetic and descriptive geometry and his monograph on special coordinates and Apollonius's

problems named *O některých druzích souřadnic projektivických. Příspěvky k theorii křivky kruhové* [About Some Kinds of Projective Coordinates. Contributions to the Theory of Circular Curve] (Prague, 1889) are analysed and compared with other similar Czech works.

Bulgaria was a place of work also for Czech mathematician **František Vítězslav Splítek** (1855–1943). After the graduation at the Czech Technical University in Prague in 1880 he accepted an offer of the Bulgarian Ministry of Education to help in the development of Bulgarian secondary schools. First he taught in Svistov, then he became a teacher in Salonica (today's Thessaloniki in Greece) in 1883, but he had to leave it for political reasons in 1888. He wrote two mathematical textbooks named *Аритметика* [Arithmetics] (Plovdiv, 1885) and *Геометрия с чертание в четире степени. I. степен геометрически образци в равнина и техното орнаментално чертание* [Geometry with Drawing at Four Levels. The First Level. Geometric Figures in the Plane and Their Ornamental Drawing] (Plovdiv, 1886) for Salonica students. In 1888 he returned to Bulgaria and became a professor at the grammar school in Sofia. He also taught at the grammar school in Gabrovo in 1889–1891 and as a professor at the state secondary school in Plovdiv in 1891–1915. He wrote very successful and popular textbooks on technical drawing for the students of the lower classes of Bulgarian secondary schools (*Рѣководство по геометрическо чертание* [Instruction for Geometric Drawing] (Plovdiv, 1895), *Геометрия с геометрическо чертание за основните училища* [Geometry with Drawing for Primary Schools.] (Plovdiv, 1895), *Учебник по геометрия и геометрическо чертание I. степен* [Textbook on Geometry and Drawing. The First Level] (Plovdiv, 1896) and *Учебник по геометрия и геометрическо чертание. Втора степен* [Textbook on Geometry and Geometric Drawing. The Second Level] (Plovdiv, 1897). He rejected the proposed professorship at the Sofia University because he thought that he was not sufficiently qualified for it.

His pedagogical and cultural activities outside the school in Svistov and Plovdiv were known and popular. He founded two special associations, which joined teachers from primary and secondary schools as well as people from cultural and political spheres. Thanks to his activities, a new Bulgarian journal for pedagogy, education and school problems and laws was founded.

His surviving textbook on technical drawing as well as his articles concerning the methodology and didactics of teaching geometry are also shortly described.

The educational system at Bulgarian secondary schools was influenced significantly also by Czech mathematician and geometer **Vladislav Šak** (1860–1941). He obtained an ordinary professorship at the grammar school in Sliven in 1882. Then he moved to the grammar school in Sofia in 1886 and taught there until 1907. He was also a private docent at the Sofia University between 1891 and 1894. He lectured on spherical and analytic geometry, analysis and algebra. Finally, he was the professor of mathematics at the Sofia University in the school year 1907/8. Then he came back to Prague and started to teach

mathematics and Bulgarian language at the Czechoslovak School of Commerce. During the first Balkan War, he was a war reporter in Bulgaria and the Austrian police held him in prison in 1916–1917 because of his cooperation with Tomáš Garrigue Masaryk (1850–1937) and Edvard Beneš (1884–1948).

After the war he performed important functions in Bulgarian diplomacy. In 1920–1922 he was an honorary consul and in 1922–1932 a general consul of Bulgarian Kingdom. He translated two Czech textbooks *Algebra pro I., II. a III. třídu reálných gymnázií a trojtřídní měšťanské školy* [Algebra Textbook for 1st, 2nd and 3rd Classes of Grammar Schools] (Plovdiv, 1886) written by Václav Starý and *Deskriptivní geometrie pro vyšší třídy reálných gymnázií* [Descriptive Geometry for Upper Classes of Secondary Schools] (Plovdiv, 1896) written by Čeněk Jarolímek to the Bulgarian language and they have been used at Bulgarian secondary schools until the World War I. In addition, he wrote one of the first articles named *Няколко думи върху изучаването по дескриптивната геометрия* [Some Thoughts of Teaching Descriptive Geometry] (1897/98) about the methodology of teaching descriptive geometry. He had a wide range of interests – he wrote poems, libretti, short stories, feuilletons and critical articles about the state of Bulgarian politics and economy. He also issued Bulgarian-Czech and Czech-Bulgarian Dictionaries and Bulgarian Grammar in Czech language for Czech students. In addition, he translated the works of Bulgarian writers and poets for Czech readers.

Šak's wide pedagogical and nonmathematical activities (his poetry, literary output and translations, journalistic activities, extensive works in Bulgarian diplomacy and politics) as well as his posts in various societies and organizations are described in detail.

The last personality followed in the book is **Antonín Václav Šourek** (1858–1926). After completing his studies at the secondary technical school in Písek and at the Technical Universities in Vienna and Prague, he became a professor of mathematics at the grammar school in Sliven in 1880. However, he spent there only one school year and then he went over to the grammar school in Plovdiv, where he remained for 9 years. In 1890 he was promoted to the professorship of mathematics at the grammar school in Sofia and at the same time to the external professorship of mathematics at the Sofia University. In 1893, after the death of professor Teodor Monin, he was relieved from his duties at the above-mentioned secondary school and devoted all his time to the university, where he was appointed to the ordinary professorship in 1898 and he where stayed until 1914. That time, namely in 1893, he also became a professor of descriptive geometry at the Military Academy in Sofia (he professed there for 9 years) and he started to give lectures on the same subject also in the courses for the headquarters in 1895. In the years between 1895 and 1912 he lectured on perspective at the Academy of Painting in Sofia. His bad health forced him to leave Sophia and to move to Rome in 1914. There he became an unsalaried secretary of the military attaché and at the beginning of 1916 he went to Bern where he took care of Bulgarian war prisoners. He returned to the Sofia University in 1921 and continued to teach there till his death. He

remained in the close contact with Czech mathematicians and their Union and during his whole life tried to apply the Czech experience and connections to the development of Bulgarian mathematics and to the educational process at secondary schools as well as at universities.

Šourek's literary activity was very extensive. He published his first Bulgarian textbooks in 1880s and covered several branches of mathematics, namely plane trigonometry and solid geometry (1883), analytic geometry (1885), spherical trigonometry (1889) and descriptive geometry (1888, 1889). The textbooks were complemented by methodological annuals, collections of algebra exercises (1885, 1886) and some smaller works. In the course of their writing, he was inspired by Czech textbooks written by F. J. Studnička, J. Smolík, E. Taftl, A. Strnad, F. Hromádko etc. His teaching texts for his university students were written and published in 1890s; they covered the field of analysis (1890–1891), analytic geometry (1891, 1892, 1894), algebra (1891–1892), synthetic geometry (1891–1892) and descriptive geometry (1893–1894). Czech textbooks by F. J. Studnička, Eduard and Emil Weyr certainly served as an inspiration. The Military Academy in Sofia published in 1895 his work about projection methods in geometry named *Учебник по начъртателна геометрия. Част* I. *Ортогонална и котирана проекция* [Textbook on Descriptive Geometry. The First Part. Orthogonal and Orthogonal One-Plane Projection].

At the beginning of the 20th century, A. V. Šourek decided to revise and extend his Bulgarian lectures and they were subsequently published in the lithographic form (projective geometry (1909), differential geometry (1911) and analytical geometry (1912, 1914)). He also published the monograph *Учебник по дескриптивна геометрия* [Textbook on Descriptive Geometry] (1914), that was an extended and complemented version of his university lectures. Unfortunately, he did not live sufficiently long to see also his last monograph *Основи на проективната геометрия. Част първа*: *Проективност, колинеарност и реципроцитет на геометр. форми от трите разреда* [Elements of Projective Geometry. First Part. Projection, Colinearity and Reciprocity of Geometrical Figures of the Third Orders] published in 1926 and summarising and extending his university lectures.

A. V. Šourek also translated Studnička's logarithmic tables from Czech to Bulgarian language and furnished them with a detailed explanation of the rudiments of algebra; they were published in 1882. Finally, he also translated to Bulgarian language Strnad's textbook *Geometrie pro vyšší třídy reálných gymnázií* [Geometry for Upper Classes of Grammar Schools] and Taftl's textbook *Algebra pro vyšší třídy středních škol* [Algebra for Upper Classes of Secondary Schools] at the end of 1890s.

A. V. Šourek was one of the most renowned „Bulgarian" mathematicians in the second half of the 19th century and the first third of the 20th century. He contributed significantly to the establishment of the *Физико-Математическото Дружество в София* [Physical and Mathematical Society in Sofia, founded 1898] and together with few colleagues played a very important role in its birth and in the development of its activities. He also

helped to the foundation of the *Списание на Физико-Математическото Дружество в София* [The Journal of Physical and Mathematical Society in Sofia] in 1904. This journal played an important role in the development of Bulgarian mathematics and physics because it stimulated the scientific activity of young generation and allowed its members to present their professional works. A. V. Šourek is also considered to be the founder of the Bulgarian terminology in descriptive geometry. Thanks to his good knowledge of Bulgarian and other languages (Czech, German, French, Italian), his deep sense of syntax, close cooperation with philologists and above all to his perfect knowledge of descriptive geometry itself, he developed a very successful system of the essential terms with wide possibilities of a more detailed evolution. Thanks to his method and prestige among the members of the Bulgarian mathematical community, most of his terms are still used without any change or at most with only small modifications.

His works on descriptive geometry, technical drawing and calligraphy, his articles on methodology, didactics and history of mathematics, his translations of textbooks for secondary schools and his own textbooks and monographs on descriptive and projective geometry are analysed and compared with other similar Czech and foreign works. Two interesting Šourek's memoires are included to reveal the atmosphere of his studies in Písek in 1870s and to recall his first years in Sliven and Plovdiv in 1880s.