DIGITIZED WORSK OF EMILIJAN JOSIMOVIĆ

Digitalizovana dela Emilijana Josimovića

Emilijan Josimovic digital legacy

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This paper belongs to the series of articles related to the digitization of distinguished former **Serbian scientists** and their **digital legacies**:

http://legati.matf.bg.ac.rs
http://elibrary.matf.bg.ac.rs

A group of participants of the **Digitization project** of the Faculty of Mathematics in Belgrade and the Mathematical Institute of the Serbian Academy of Sciences and Arts started in the first decade of this century to build a virtual library and a Digital Legacy, Internet sites of the Faculty of Mathematics.

The general idea of these **sites** was to present biographies and works of the prominent Serbian scientists from the past whose opus was related in some way to mathematical sciences.

We also wanted to have all their scientific and technical works and personal data in one place. These items include photos, letters and other related documents. We believe that these collections will help to better understand their work and life.

We designed this Internet site bearing in mind the general audience, but the scientific community, too.

Up to now, biographies of three scientists, academicians and the former professors of the Faculty of mathematics are offered there: **Anton Bilimovič** (1879-1970), **Bogdan Gavrilović** (1864-1947) and **Milutin Milanković** (1879-1958). Recently, a preparation of digital legacy dedicated to **Slaviša Prešić** (1933-2008) was started (Mirjana Maljković and Biljana Stojanović).

In this paper we present digitized works of **Emilijan Josimović** (1820? – 1897), who was a respectable 19th century Serbian architect, engineer and professor of mathematics. He is considered as a first Serbian urbanist and in the mid of the sixties of the XIX century he gave a plan pursuant to which the center of Belgrade was reconstructed.

He also was a university professor of mathematics and the rector of the **Grand School**, the high school that proceeded of the Belgrade University.

It is not known for certain the year when he was born, but there are some evidences that he was born most probably in 1820 in Old Moldava. This settlement of now modern Romania lies on the left bank of the river Danube and it is known for a large Serbian minority in the past.

He got his elementary and secondary education in Caransebeș and Lugoj (Romania). Afterwards he finished the Polytechnic school in Vienna. In the 1845 he came in Belgrade for a professor of architecture and mathematics at the Belgrade Liceum and other highest educational institutions in Serbia.

Not a known painted portrait or a photograph was left after him, even if he was a celebrity and photographing was widespread in his time. Most probably the reason for that is as follows. After his coming to Serbia, he lived in Poreč near the town of Donji Milanovac. But his house was destroyed in 1942 during the great flood. He did not have his own house in Belgrade.

He had very important role in the urban planning and the reconstruction of Belgrade. In fact, he is most known for his contribution to the reconstruction of Belgrade in the mid of XIX century. He managed surveying Belgrade (1864-1867) and in 1967 published a proposal for the urban plan of Belgrade:

Objasnenje predloga za regulisanje onog dela varoši Beograda što leži u Šancu

Explanation of the proposal for a regulation that part of the City of Belgrade which lies in Trench

This regulation plan of Belgrade was the most important Josimović work and a significant architectural and urban deed which laid in the foundation of urban planning in Serbia. For example, the famous and the most known Knez Mihailova street in the center of Belgrade got it's today look in accordance to his plan. At the beginning of this street, there is a **memorial** devoted to him.

Since his coming to Serbia in 1845 until his retirement in 1978 he was the professor at the highest educational institutions in Serbia which were in this time concentrated in Belgrade. Firstly, he was appointed to the professor of mathematics at the Belgrade Liceum.

After that, in 1850, he became a professor of mathematics, mechanics and geodesy at the Army artillery school (but he remained the honorary professor of Liceum). Finally, he was appointed to the professor of mathematics in Belgrade Grand School (1869) where he also was a rector (1876-1877).

He was also a member of the highest Serbian academic societies ("Društvo srbske slovesnosti" – Society of Serbian sciences, "Srpsko učeno društvo" – Serbian scientific society, etc) and the honorary member of the Serbian Academy of Science since its foundation (1886).

During his professorship he wrote first Serbian university books in mathematics and "applied geometry" how he used to call geodesy. It interesting that the books he wrote in the fifties of the XIX century were written in the old-Serbian language and script. His later books were written in modern Serbian in accordance of Vuk Karadžić linguistic reform.

We digitized six his works, four textbooks in mathematics, one textbook in physics and the proposal of the regulation plan of the city of Belgrade. The printed copies of these books belong to the Serbian academy of sciences and arts. Their digital copies are deposited in the Virtual Library of the Faculty of mathematics, elibrary.matf.bg.ac.rs.

Trigonometrija (1854)
(Trigonometry)

Josimović wrote this book in old Serbian and published it in 1854. The book consists of three chapters and about 170 pages. At the end there are bibliography (German and French authors), a two page list of corrections and large table of figures.

The first part, ***Goniometry***, explains the basic properties of trigonometric functions.

The second one, ***Plain trigonometry***, is devoted to the solving problems on triangles. There are also some applications in measuring in geodesy.

The third chapter, ***Spherical trigonometry***, is the largest, most advanced and the most interesting part of the book. Besides deriving and explaining notions and formulas from spherical trigonometry, he solves there a lot of problems related mainly to spherical triangles. There are also some applications to advanced problems of geodesy and astronomy.

This Josimović's book was not the first Serbian book on trigonometry. Atanasije Nikolić (1803-1882), a professor of mathematics who preceded Josimović at Liceum wrote ***Geometry*** (published in 1841). A part of this book is devoted to trigonometry. However, Josimović ***Trigonometry*** is much more advanced and complete work on trigonometry.

In fact, Josimović was very proud about his book. There, he wrote (in old – Serbian) in somewhat challenging way:

U ostalom eda li i u koliko ovo moe delce odgovara izjavljenoj nameris njim i potrebi naši biši škola, za koje je napisano, - kao i je li raspoređenje i izlaganje njegovi predmeta pedagogično i praktično shodno: neka presude oni, koi sve to, pa dakle i istu nauku poznaju bolje nego ja. Kritika u tom obziru i od takovi lica bit'će mi tim milija, što bi se njom osim mana, koje na svaki način ispraviti valja, odkrilo ujedno i sve ono, što je originalno, i koje mi se dakle u pravu auktorsku zaslugu brojati ima.

(Let's other, who know better this science than me, decide if this work is suitable, pedagogically written and practical for use in our high schools. Any appropriate critiques which find not only shortcomings, but also my original contributions will be very valuable for me.)

He also had to solve a lot of terminological problems. He studied mathematics in German, so he had to introduce many new words for mathematical notions not appearing until then in Serbian, e.g.:

triugao, pruga (duž), osnovak (element), dirka (tangenta), prečnica (hipotenuza), upravnica (kateta)

Praktična geometrija (1862)
(Practical Geometry)

Josimović wrote this book for the students of Liceum, also in old Serbian. As we can anticipate from the title and his occupation in this time, the content of the book is manly on solving some practical problems in geodesy.

The book itself consists of two chapters. The first part is devoted to the „elementary geodesy", while the second refer to measuring, use of various instruments (barometers, etc) in geodesy and leveling.

Račun s delovima (1864)
(Fractional calculus)

This small booklet (it has about 100 small format pages) is probably his least interesting book on mathematics. It is devoted to the fractional calculus (rational numbers and basic arithmetical operation with these numbers) and it is written mainly for the elementary school teachers. In a sense this book belongs to some books written in the past: first Serbian mathematical book *Aritmetika* (printed in 1767) by Vasilije Damjanović (1734 – 1792) and *Čislenica* (printed in 1809) by Jovan Došenović (1781- 1813).

Fizika (1866)
(Physics)

The proper name of this book is ***Fizika za ženskinje*** (Physics for ladies). As the title suggests this book is written for students of high lady school. It is very elementary but relatively large book, it has 270 pages.

There is no mathematical formula or expression which would represent any physical low. It could be said that he explained natural phenomena following the ancient Greek idea of four classical elements: air, water, earth and fire. Of course, he explained these entities from the modern point of view.

The book also clarifies some other physical phenomena such as sound, light, magnetism and electricity. The construction and uses of some instruments (barometer, microscope and telescope) is explained. Finally, some applications of introduced notions are given such as steam machine, telegraphy and galvanization for gilding and silver-plating - "galvansko zlatenje i srebrenje".

The book is written in modern Serbian in accordance to Vuk Karadžić linguistic reform which was officially adopted in 1868, even if its fundaments were laid down two decades before that.

The book contains a lot of nice illustrations and vignettes. The book is worth reading because of nice writing style and use of old words.