

# José Sebastião e Silva

# 1914-1972

University professor, distinguished inspired militant and research in mathematics, José Sebastião e Silva was born in Mértola on December 12, 1914 and died in Lisbon on May 25, 1972.

Son of António José Sebastião and maria Emília Silva Nobre, he was the third of four children, one girl and three boys. His father died on May 1942. The subsistence and education f the whole family was solely supported by his mother. Financial difficulties forced him, with only thirteen years old, to start giving explanations to some colleagues in high school.

He attended secondary school in Évora where his abilities in mathematics were very evident and he obtained outstanding high grades.

He graduated in mathematical sciences on 1937, with remarkable marks in all courses. On 1949 he got his Ph.D in mathematics, with distinction at the Faculty of sciences of Lisbon, with the thesis "As funções analíticas e a análise functional" (Analytic functions and functional analysis).

As holder of a scholarship of the "Instituto de Alta Cultura" in Portugal (1940-1942), he published several papers in Algebra and Topology on the journal "Portugaliae Mathematica", his first work was "A resolução numérica de equações algébricas" (Numerical resolution of algebraic equations) (1940). He also published "Sur une méthode d'approximation semblable à celle de Graffe" (1941), Prof. V. Gonçalves summarized as "Método de Silva" (Silva's Method), in the second volume of his book "Curso de Álgebra Superior" - "Problemas relativos a funções racionais das raízes de urna equação algébrica" (High algebra course – problems related to rational functions of routes of one algebraic equation) (1941), and "Sur l'axiomatique des espaces de Hausdorff" (1941), among others.

During his stay as a scholarship on Italy (1942 -1946) he specializes in Functional Analysis, worked with F. Henriques, Severi and Fantappié, publishing important works in several periodicals of the Accademia Nazionale dei Lincei. One of his most important works *"Sur certi spazi localment convessi importanti pur le applicazioni"* published in *Rendiconti di Matematica dell Universitá di Roma* (1955), introduces a category of locally convex spaces that became known as *"Spaces of Silva"*.

He was for about ten years Full Professor of the Instituto Superior de Agronomia and member of the Academia de Ciências. For twenty years was Director of the Center for Mathematical Studies in Lisbon.

Sebastião e Silva often said that he could never reed a book of mathematics from its beginning to its end. Once he started reading a book of speciality, his imagination and critical sense began to do a personal analysis, new perspectives began to rise in his never passive spirit and the reading was quickly abandoned because, meanwhile, it had been unleash a mechanism of personal work with a rhythm of its own. It was precisely this method of syncopated reading which allow him, in 1954, the discovery of his very personal Axiomatic Theory of Distributions (scalars), - it was the first complete in mathematics history and was very important in the development of numerous original works from other authors. His research work went to various branches of Functional Analysis: theory of functional analytic, theory of locally convex spaces, theory of distributions and symbolic calculations, resulting in lines of research pursued in foreign countries, namely, France, USA, Britain, Japan, Italy, Belgium, Brazil, Argentina, West Germany and the USSR.

Besides the important work of research, Sebastião e Silva was seriously concerned with the situation of the mathematics teaching at the secondary level in Portugal, where it was growing evidence of the need for the programs renewal and especially for the teaching methods renewal, was to him forming the belief that he should intervene in this area, being decisive and deeply refreshing to intervene in the teaching of mathematics, writing books that became well known, such as "Compêndio de Matemática", "Compêndio de Geometria Analítica", that put evidence at the mathematical rigor, the precise language, which constituted a factor of modernization for the mathematics teaching. In addition to a profound renewal in the curriculum, were introduced new teaching methods and didactics, with the primary aim to cultivate a taste for research, either in the development of scientific skills, either in the study of the history of mathematical thought. This is called the *Heuristic Method*, in which the start point is the particular that led us to the general, from the concrete to the abstract, to achieve an accurate result, with definitions and demonstrations of logic, these was first introduced in the programs of the 3rd cycle of secondary school (now middle school).

For his concerns and dedication in life, the "*Portuguese Mathematical Society*" held, in conjunction with the Ministry of Science and Technology, a prize to award the best School Education manuals.

Sebastião e Silva died of cancer at the age of 57, on 1972, May 25th, at Lisbon.

He is considered by many to be the greatest Portuguese mathematician

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