

## Guest Editorial

# Miodrag Sekulović: A biographical note

(1939 - 2010)



Last year, in September, Dr Miodrag Sekulović passed away suddenly. He was a civil engineer, retired professor of the Civil Engineering Faculty of the University of Belgrade, as well as the President of Academy of Engineering Sciences of Serbia. Being a prominent creator, he gave a very valuable contribution to civil engineering realizations as well as to development of university teaching. This led to notable scientific and social recognitions, while he enjoyed the highest reputation with students, fellow scientists, as well as professionals.

He was born in 1939 in Seljani-Pluzine, Montenegro. He graduated in 1963 from Department of Structures, at the Civil Engineering Faculty in Belgrade as the best graduating student in his generation. At the same Faculty, he completed his Master degree studies in 1963, and earned his PhD degree in 1973. An indication of his high future scientific achievements was evident even at his undergraduate studies when his diploma thesis was recognized as the best student scientific paper. After graduating, he was first employed in “Energoprojekt” and then he moved to Civil Engineering

Faculty in Belgrade, where he held the following positions: Assistant since 1965, Assistant professor since 1973, Associate professor since 1977 and since 1982 tenured Professor.

Being one of founders of the Academy of Engineering Sciences of Serbia (AINS), he became the full member in 1998, its first Secretary General, Vice-president in 2004, and President in 2009. While performing all these duties, he gave a significant contribution to a defining goals, means and high scientific and professional criteria of AINS, which were established in its basic documents.

Serving as the Head of the Technical mechanics and structures theory chair, the Chief of the Computing centre, Vice-dean, Dean and President of the scientific council, he was demonstrating high organizing abilities. He was also the President of the Serbian Society of Mechanics, member of Presidency of the Society of Serbian Civil Engineering Designers, a member of the International Bridge and Building Society (IABSE), as well of the Institute of seismic engineering (EERI California). He was teaching numerous courses; Statics of structures and Theory of plates and shells at undergraduate studies, as well as Finite element method, Nonlinear elasticity theory and Shell theory at graduate studies. He was also teaching at universities in Novi Sad, in Podgorica in Montenegro, in Sarajevo in Bosnia and Herzegovina and in Skopje in Macedonia. An especially important was his contribution to founding, establishing and teaching at the Civil Engineering Faculty of University of Montenegro in Podgorica.

Supervising 20 MSc and 15 PhD dissertations, teaching at large number of seminars and workshops for civil engineers, taking part in editorial committees of three international journals, together with his studies in UK, USA and Russia, all testify about his devotion to work. This resulted in being awarded the prestigious October award of the city of Belgrade for mathematical, physical and engineering scientific achievements and Medal for merits to people and Medal of Serbia with golden wreath.

Scientific publications of Professor Sekulović belong to fields of Applied Mechanics and Theory of Structures. He published either alone or with co-workers 145 scientific papers and 15 books, mostly of monographic character. Over 60 of his papers were published in international journals and proceedings of important international conferences. The book “The Finite Element Method” has been translated into Russian, and two books

(with co-authors), were published abroad in English. The most important scientific contributions were made in the field of numerical mechanics and nonlinear analysis of structures. His original assumptions about deformation of cross section were used in formulating the mathematical model for thin-walled members of open and closed profile as well as in introducing a new finite element and developing a numerical procedure for nonlinear analysis of thin-walled members. His work in this field was published in leading international publications and was the basis for scientific research by other authors. It was cited and found practical application in the country and abroad.

In the field of nonlinear analysis of structures he produced a series of papers with the original scientific contributions. He developed a numerical model based on the rigorous second order theory, which has been used in the analysis of stability and post buckling behavior of linear support. This was used to form an efficient numerical model for systems with rigid constraints in which the composite material nonlinearity and geometric nonlinearity of structure were coupled, taking into account the eccentricity and viscosity relationship. The papers in this field are widely used in analyzing the behavior of structures during seismic activity, being published in the international journals like *Computer and Structures*, *Engineering Structures*, *Theoretical and Applied Mechanics*.

Among the scientific works of Professor Sekulović his monograph “Finite Elements Method” deserves a special attention. It comprises a synthesis of his scientific work over more than 25 years, with a series of original scientific contributions and applications in engineering structures. This book had a great impact on our contemporary research and practice in design. Professor Sekulović made a significant contribution in the field of engineering design. He participated in designing of a large number of big buildings both in Serbia and abroad. He was the author of design of the hotel “Cosmos” in Moscow - the structure, which, by its concept and size, represents an exceptional constructor’s achievement, which was quoted in many domestic and foreign publications. Through his theoretical and experimental research with Russian scientists in Moscow, he contributed to improvement of large-panel of prefabricated systems for earthquake-resistant buildings. Results of these studies, the simulation of earthquakes on the building itself, were reported at major scientific con-

ferences on Earthquake Engineering (European Conference, Moscow 1990, World Congress, Acapulco, 1996).

He also made a significant contribution to the study of structural behavior in dynamic interaction with the environment. These papers, published in leading international and national journals, have found broad application in dynamic analysis and control behavior of tall buildings, arch dams and power plant cooling tower exposed to seismic activities, as well as checking the safety of existing facilities. Those methods of his were applied successfully to analysis and control of the dynamic behavior of high arch dams “Trebinjica” and “Piva” and the power plant cooling towers “Kolubara B” and “Pljevlja”.

He achieved significant results in restoration of facilities damaged due to high mechanical, thermal, seismic or other impacts (traffic facilities in Iraq, the airport runway in Siberia, hotel facilities in Montenegro after the earthquake, and others), in which his original models of numerical analysis and technological solutions were applied for strengthening and rehabilitation of structures. He was a professional Consultant in Serbian companies and enterprises for designing and erecting many important objects: buildings, energetic plants and infrastructure. His professional and scientific work were closely inter-related, because he incorporated results of scientific work in professional achievements and vice versa, the current problems of the professional work served as encouragements and ideas for his scientific research.

Like the majority of great creators, he was diligent and dedicated to work, precise in his wording and expression, and in fulfilling commitments. In communications with people he exercised fairness, understanding, patience and willingness to help others. As a person, he was also characterized by firmness of character, principles and determination, vision and breadth of education, excellent knowledge and linking theory and practice, clarity of mind and serenity of spirit. His papers and books were written with a high degree of clarity of expression and scientific rigor, enviable style and precision and excellent knowledge of the matter discussed. To his family he was a devoted husband, father and grandfather.

Belgrade, March, 2011

Professor Djordje Vuksanović  
Dean of the Faculty of Civil Engineering  
University of Belgrade