

# A Short Summary of my Scientific Life

**Djairo Guedes de Figueiredo**

Born in 1934 in the small town of Limoeiro do Norte in the interior of the state of Ceará, Brazil, I completed all my primary schooling and middle school studies in the Ginásio Diocesano Padre Anchieta. In those days, a small town did not have schools offering higher education. So, in 1949, I went to Fortaleza, the state capital of Ceará, to conclude the last 3 years of High School at the Colégio Castelo Branco. There I had the fortune of having not only an excellent Professor of Mathematics, Francisco Mena Barreto, but also a mentor whose motivation and ingenuity in teaching ignited my initial delight in Mathematics. It was natural to consider, after graduating from High School, a career in Engineering. However, the difficulties were insurmountable if I remained in Ceará, so my father, Miguel Angelo Figueiredo, under a considerable financial sacrifice made it possible that I move to Rio de Janeiro, the capital of Brazil at the time, to work towards fulfilling my dream. Upon my arrival, in February 1952, I enrolled in a competitive examination in order to gain entrance to the National School of Engineering at the University of Brazil. Owing to the solid education I received in Ceará, I was classified in seventh place in a group of over 1,000 candidates.

At this school, once again, I had the fortuitous opportunity to have as a Professor of Rational Mechanics, the famous Brazilian mathematician Maurício Peixoto who wholeheartedly was devoted to Mathematics. As an extra curricular activity, he organized a Saturday Seminar where students were stimulated to further their mathematical studies in addition to the regular program of study of the School of Engineering and of course there could be no better suited person for this endeavor. I think it is fair to say that these seminars turned out to be pivotal in my decision to embrace a mathematical career. The thought-provoking environment in these seminars led me to consider the possibility of graduate studies abroad. Once again under Peixoto's guidance, I was able to choose a distinguished university in the United States and received a full scholarship from the recently created program of the Brazilian National Research Council (CNPq).

I arrived in September 1957 to the Institute of Mathematical Sciences of New York University, (today known as the Courant Institute of Mathematical Sciences, CIMS) where I was soon immersed in an invigorating mathematical atmosphere. Although my initial plans were to study Probability and Statistics, I did not resist the charm of the “Wizards of Waverly Place” (the CIMS functioned at a building on a street with that name). Of course, the keenness and fervor of mathematicians such as K.O. Friedrichs, Fritz John, P.D. Lax, Lipman Bers, J. Keller, and Louis Nirenberg had a major impact on my decision to work in the field of Partial Differential Equations. I was extremely fortunate to have my doctoral work supervised by Louis Nirenberg and whose influence marked my research in the forthcoming years.

During those years in New York I discovered many things, but by far the most important was that my happiness would not be complete without Maruja, my beloved wife, who has been my lifelong companion and whose enthusiastic support has been a source of inspiration.

Upon the completion of my doctoral work, I returned to Brazil in 1961 at the invitation of the enthusiastic and idealist Darcy Ribeiro, President of the University of Brasília, to establish together with other mathematicians a Department of Mathematics in this nascent university located at the newly founded capital of Brazil. In the midst of the expansion of the university, erupted the 1964 Revolution, which brought about an exodus of intellectuals from Brazil.

In 1965, I was awarded a Guggenheim Fellowship and I returned to the United States to spend a year at the Mathematics Research Center of the University of Wisconsin in Madison. Subsequently, I spent a semester at the University of Chicago and the following year at the University of Maryland at College Park. In the ensuing year, I obtained a position at the University of Illinois in Chicago. I remained there until 1971, when once again I was invited to return to the University of Brasília to help, together with other colleagues, revitalize the Mathematics Department.

Calling to mind those years from 1965 to 1973, it is clear that the close research collaboration with Felix E. Browder and C.P. Gupta on the newly developed theory of Monotone Operators was very advantageous for my career. Also, worthy of note was my collaboration during this period with Les Karlowitz on the Geometry of Banach Spaces. Once relocated to Brazil, my research shifted toward the theory of Nonlinear Elliptic Equations and Systems focusing on studying existence, uniqueness, multiplicity and symmetric properties of solutions, and also their behavior at the boundary and infinity. In this branch of study, I had over 30 collaborators from Brazil, Argentina, Chile, the United States, China, India, Belgium, France, Germany, Holland, Italy, Portugal, and Spain.

I must end by paying tribute to all my collaborators and friends with whom throughout the years I have had the privilege to work and to share the excitement of pushing the frontiers of knowledge a little further.

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