

Sergio Idelsohn and the Development of Computational Mechanics in Argentina

by:

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Sergio is a world known specialist in numerical simulation of problems related to mechanical engineering, in particular in computational fluid dynamics, and is one of the developers of the Particle Finite Element Method (PFEM). His positions, prizes and grants include professorships at the National University of Rosario, the National University of the Littoral in Santa Fe, the Polytechnical University of Catalonia in Barcelona, the Institute of Advanced Study in Princeton, the University Paris VI Pierre et Marie Curie, the direction of the International Center for Numerical Methods in Engineering in Santa Fe, the Houssay Prize, the Konex Prize, the Scopus Prize, the SEMNI Prize, and a 2.5 million euro grant from the European Research Council.

Sergio graduated in 1970 at the National University of Rosario. That was a particularly complicated year in the ever complicated history of Argentina. The military dictatorship which ruled the country after having famously overthrown the legal President Illia in 1966 (and having replaced the legal authorities of the Universities with people more interested in detecting communists and guerrillas than in improving teaching and science) began to be immersed in a process of instability. The first dictator, General Onganía, was himself overthrown in 1970 by General Levingston, who was in turn overthrown by General Lanusse in 1971. Curiously, some decisions of the dictatorship were positive: the University of Rosario, formerly part of the National University of the Littoral, had just been created as part of a policy of creating Universities in the country which permitted many young people to enroll as undergraduate students.

After graduating, Sergio wanted a scientific career. It was very unusual for engineers in Argentina to obtain a Ph. D., as most engineers thought of themselves as professionals, not scientists. So Sergio applied for several scholarships and accepted one in Liege, Belgium. (His former professor, Orengo, had heard about a new method, something called "the finite element method" and had bought a book on this subject, the first Zienkiewicz.)

It was not easy to study under the distinguished scholar Veubeke. He suggested a problem which, after one year, Sergio realized had no solution. When Sergio dared to tell him, he said "Yes, I agree, better work in this other problem". Despite this, he succeeded in finishing his Ph. D. dissertation in three years, and in 1974 returned to Argentina.

Those were difficult years in Argentina, politically, economically and personally. He had a part-time position at the School of Engineering of the University of Rosario (thanks to Orengo). He taught at the Faculty of Economics and, by night, at the Technological University. After the 1973 election, the military had (provisionally) retired from government, the formerly ousted President General Perón was President again, and a paramilitary group, the "three A" (Argentine Anticomunist Alliance), began murdering political opponents and supposed friends of the guerrilla. Perón died in July 1974 and was replaced by his wife, Isabel Martínez de Perón. Living in Argentina and belonging to the University became very uncomfortable. People were afraid, and the situation worsened. In 1976 the military, with the desire of exterminating the guerrilla, overthrew the government, and the bloodiest dictatorship in contemporary Argentina (General Videla's) started. Sergio's economic situation worsened

Figure 1:
First ENIEF in
Bariloche, Argentina,
July 1983, with the
participation of
Professor Richard
Gallagher



and eventually, after five extremely difficult years, Sergio accepted a postdoctoral scholarship from the CONICET (National Council for Scientific and Technical Research), and in 1979 they returned to Liege where he knew people who could help him get an academic position.

In 1980, things began to improve. The worst period was over, although killings and disappearance of people continued until a civilian President, Raúl Alfonsín was elected. Alberto Cassano offered him a position in Santa Fe to organize a scientific group in mechanics in the Institute for Technological Development in Chemical Industries (INTEC), founded by Dr Cassano. So in 1981 Sergio and his family were re-installed in Santa Fe, working at INTEC. Here Sergio's scientific career in Argentina truly began. In 1983 the Bariloche group (whose director was Sergio Pissanetzky) organized a course on finite elements jointly with ENIEF'83, the first National Meeting of Researchers and Users of the Finite Element Method, and Sergio was invited to this meeting, as was the late professor Richard Gallagher. Both Sergios decided to organize ENIEF on a regular basis. New ENIEFs took place in Bariloche in 1984 and 1985.

Meanwhile, in 1981 prof. Gallagher, Oden and Zienkiewicz established the IACM. The idea naturally appeared to Idelsohn and other scientists to establish a similar society in Argentina, which would be a member of IACM. In 1985 the AMCA was created; Sergio was its first President and remained so for 20 years. Sergio was simultaneously becoming an outstanding and internationally prestigious scientist, thanks not only to his brilliant personal career but also to his successful efforts in creating an important center of research in Santa Fe, where many distinguished scientists and disciples of Sergio's worked.

In December 1983 the political difficulties ceased in Argentina, when the new democratic Alfonsín administration was inaugurated. But nothing was simple compared to research in other countries. On the one hand, during the first years of democracy, it was uncertain whether the government would be overthrown by a new coup d'état, and many scientists and intellectuals did not know whether they would need to go abroad again. On the other hand, the scientific budget was still scarce, and for many scientists going abroad, this time for economic, not political, reasons, was the only option. Sergio remained in Santa Fe, sometimes maintaining intermittent visiting positions abroad, and with his usual optimism managed to transform the small community of CM specialists into an important group, aiding not only Santa Fe but also other regions. (He was also a consultant for several national or provincial agencies and private firms.)

In 1986, the 4th ENIEF took place in Bariloche, organized by Luis Godoy from Córdoba. Luis invited the Spanish scientist Eugenio Oñate to Bariloche. Sergio and Eugenio met and began a productive scientific collaboration that continues hitherto; the "Barcelona-Santa Fe" axis has become a rich bi-national scientific joint venture of which both countries may be proud.

But Argentina is a very curious country. Just when, in the last decade, the government began to significantly back science, both financially and politically, some bureaucratic authority at the CONICET decided that Sergio should not be allowed to spend part of the year in Barcelona. Needless to say, many scientists in many countries spend part of the year abroad, with no objections but often encouragement. So in 2006 Sergio was fired from CONICET (but not from the University of the Littoral). However, Sergio continues collaborating with Santa Fe and Argentina.

Sergio Idelsohn's scientific merits are internationally known. What is perhaps less known, both in and out of Argentina, in circles of younger researchers who (fortunately) did not live through the dark years of military dictatorships and instability, and then through the years with minimum budgetary support, is that being successful in Argentina, both as a teacher, a scientist, a scientific manager and a specialist in preparing human resources, requires fighting against all odds, and a will and a strength that few people have, and which Sergio has. ●



Figure 2:
First meeting of Eugenio Oñate with Sergio Idelsohn in Bariloche, July 1986.



Figure 3:
Prof. Olek Zienkiewicz visiting Santa Fe (center) with Victorio Sonzogni and Sergio Idelsohn, Argentina, February 1987