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PREFACE

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Last year in 2014, Prof. Clovis Sperb de Barcellos celebrated his 70th birthday. In recognition of his remarkable academic legacy, two mini-symposia were dedicated in his honor at CILAMCE 2014—the official conference of the Brazilian Computational Mechanics Association (ABMEC). During these sessions, some of his former students had the opportunity to meet, present, and discuss their ongoing research. In the previous year, during MECSOL 2013 — the official Symposium of the Brazilian Society of Mechanical Sciences and Engineering (ABCM) — it was decided that Prof. Barcellos should be honored along with the launching of a special issue of LAJSS. The discussions held at CILAMCE only strengthened this intent and the issue was thus brought to fruition here.

Prof. Barcellos is an unquestionable reference for an entire generation of researchers in Brazil and abroad. He was born on December 13, 1943, graduated with a degree in mechanical engineering

in 1967 from the Federal University of Rio Grande do Sul (UFRGS) and acquired his Master's degree in mechanical engineering from the Pontifical Catholic University of Rio de Janeiro (PUC-RJ) in 1970. He completed his Ph.D. in engineering mechanics from the University of Minnesota in 1977 and was granted a sabbatical at the University of Minnesota in 1994–95. Throughout his professional career, Prof. Barcellos took on different responsibilities that were not restricted to academia alone. In his academic career, he held different positions at Kenforschungszentrum Karlsruhe, the Federal University of Santa Catarina (UFSC), the Pontifical Catholic University of Minas Gerais, the Mackenzie Presbyterian University and the Federal University of Minas Gerais.

In addition of being a scholar of great distinction, Prof. Barcellos is an educator and mentor to many who now occupy positions throughout academia and industry in Brazil and the world. Listing Prof. Barcellos' academic achievements is to cover only a small portion of who he is. His dedication to the consolidation of the top ranking mechanical engineering department at UFSC cannot be overlooked, as well as his efforts as department head to encourage fellow colleagues to pursue their Ph.D. at renowned foreign universities during the 70s, at a time when such a degree was not required for professorship in Brazil. Today, the department ranks as one of the top mechanical engineering graduate programs in Latin America. In the late 70s, Prof. Barcellos was one of the founding members of GRANTE — a Stress Analysis Group within the Mechanical Engineering Department at UFSC. The group was initially formed to provide consultation to structural analysis to the then nascent Brazilian nuclear program. Furthermore, during that period, Prof. Barcellos commenced the development of Diname, a modular finite element program that, we suspect, he still programs with from time to time today. Over the next few years, the group grew in size to become one of the most prolific groups in solid mechanics in Brazil during the 80s and 90s.

His earlier works on finite elements sparked his interest in computational methods, as he spent many nights studying functional analysis and approximation methods. This laid a solid foundation for him to begin developing strong research and novel ideas, as he supervised the first doctoral thesis of the graduate program in mechanical engineering at UFSC, which was successfully defended in 1986. This work was the first of many that he developed with his students in the years that followed, and led to one of his career highlights with the publication of his Modified Local Green's Function Method, a hybrid method that links boundary integral equation methods with finite elements. His adventurous spirit continued on in the 90s as he embarked on meshless-type methods, a topic on which many theses and dissertations have been written under his supervision, and continues today. Some former students remember him mentioning during his Finite Element Theory courses in 1989–90 that partition of unity is a hot subject, when meshless methods were virtually unknown. In recent years, Prof. Barcellos has made important contributions to Extended/Generalized Finite Element Methods as a voluntary scholar at UFSC, showing that, even in retirement, his passion for developing numerical methods has not diminished.

One would seldom find him in his office not reading a textbook, or preparing for a class, or even correcting exams of his graduate courses, as there were many. Prof. Barcellos carved out a reputation of being the supervisor providing the best dissertations in the department for a long time, thus attracting many exceptional candidates over the years. But not without its price! His courses were famous for having a weekly exam, and thus driving the less prepared pupils crazy. He would create new courses, even for one or two students, if they were required for the dissertation topic. Although

he was quite demanding on his students, he was always truly concerned about providing a comprehensive curriculum to each and every one of them. In the classroom, he was a minimalist — no fancy graphical interfaces or brute force methods — only suitable dual spaces, norms, and test functions. Recollections of his Dynamics course probably would make some of us light-headed today, as difficult as it was back then. But as one of his former students mentioned in a recent conference, "only now, thirty years after finishing my last course with Barcellos, I realize how well he succeeded in teaching us the bare minimum, the essential, things that don't change with time". Only an individual with such vision and bold scientific talent, like Clovis Barcellos, could dare to succeed in this endeavor. We are a legion of professors, engineers, and researchers profoundly indebted to the pioneering vision of Prof. Barcellos and are thankful to him for encouraging those young to pursue challenging problems and solve them under well-posed formulations. We are forever indebted to him for the knowledge he has provided us with, to his example, and for his friendship.

Thank you, Barça, and Happy Birthday.

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