EDITORIAL

This October we will commemorate one year since the creation of the Reference Center for Mathematical Modeling in Teaching CREMM, a daring idea that emerged from the mapping of Mathematical Modeling in Teaching that we began in 2003. Our expectation is to turn CREMM into a Research Center with international cooperation, integrated with several other Research Centers in the area; making use of the largest national and international collection in the area; making a summary of materials and their respective authors available on the CREMM electronic site for consultation and requests for supervision; orient students and teachers; with the support of teachers from Brazil and other countries, create didactic support materials for various levels of education and make them available to interested teachers; promote seminars and distance learning courses and publish informative bulletins, magazines and books that include the results of work developed by collaborating teachers. During this first year, we’ve spent most of our time gathering and acquiring Brazilian production: doctoral dissertations, masters’ theses, monographs, and articles published in the annals of Congresses and in Magazines. Just to give an idea, we’ve already identified 219 academic works (11 doctoral dissertations, 76 masters’ theses, 105 monographs, 15 works of scientific initiation and 12 end of course undergraduate works); 503 articles (87 in specialized magazines and 416 in annals issued from congresses); 35 Teaching License courses that have a discipline in Modeling and 47 disciplines in Post-Graduate courses. A part of this production can already be found in the CREMM library and is available on the electronic site. We hope to have the rest available shortly.

In order to consolidate CREMM, we have counted on the support of several research professors from Brazil and other countries and have already sent projects to agencies that support research in order to promote Modeling Courses in distance learning programs. The Regional University of Blumenau has given complete support to this project. CREMM inhabits a physical space of 90 m2, composed of 6 areas: a library with a Modeling collection; support, meeting and study rooms; a kitchen and a bathroom. Work is conducted by 8 undergraduate students, 2 masters’ students and us Nelson, Salett and Emilia.

In the informative bulletin Inform@CREMM, which will be virtual and printed, we will present news and items from various countries about precursors, production, projects and events. In this first bulletin, we focus more on activities in Brazil. A country with the continental dimensions of Brazil, and which has moved towards modeling in teaching significantly over the last three decades, without a doubt has a lot to show. We hope that this Inform@CREMM brings more and more contributions, allowing for the further consolidation of CREMM.
Precursors: Aristides Camargos Barreto

According to the registry, Aristides Camargos Barreto was the first Brazilian professor to use didactic activities involving mathematical modeling in teaching and, moreover, the first to represent Brazil at international congresses, presenting work related to the theme. Born in Belo Horizonte, Minas Gerais in 1935, he graduated from UFMG in 1959 with a degree in civil engineering and completed his doctorate in Mathematics from IMPA in 1964. He started as a professor at UFMG in 1960 and in 1969 began teaching at PUC in Rio de Janeiro, where he worked until the early 1990’s when he retired. For many years, he dedicated himself to research on "Dynamic Systems", in the area of Applied Mathematics, supervising 13 masters’ theses in the areas of Analysis, Differential Topology, Foliations, Dynamic Systems, Singularities, Mathematics in Ecology and Mathematical Models in non-exact sciences. In 1969, he published a collection of books for Secondary School teaching entitled "Functional Mathematics for Secondary School" and another entitled "Topics for Analysis", used in Higher Education and published in 1971.

Aristides became familiar with Mathematical Modeling during his Engineering course. The idea to used modeling in Mathematics Education began in the latter part of the 1970’s at PUC/Rio, arising from the “constant and disturbing question: what use is this? that students would make when confronted with mathematical theories”. In an attempt to get the students more motivated and interested, Aristides employed a strategy that combined models with institutional modules in the disciplines of Fundamentals of Elementary Mathematics and Teaching Practices for Licensing as a Mathematics Teacher, as well as in the Advanced Calculus course for engineers, in the Post-Graduate program. Together with the students, he designed various models in specific areas like Linguistics, Ecology, Biology and Music, among others. One of his principal pedagogical experiences was realized in 1976, in the Differential Calculus IV course with students from Engineering, Mathematics, Physics and Chemistry. A total of 215 students signed up for the course, divided into 4 classes. For each group, Aristides gave 2 classroom hours per week (90 minutes), elaborating the theoretical part with examples, while in the another two classroom hours, on another day, one of his assistants took care of solving exercises with the students. The remaining classroom hour was used for group discussion of proposed problems, under the guidance of two assistant teachers.

During the course, various mathematical models were proposed, formulated and analyzed, along with classical maxims and others adapted to classic models from Economics, Physics, Mechanics, Technology and Ecology. At the same time, Aristides supervised the first two Masters’ theses from the Post-Graduate program at PUC-RJ that dealt with Modeling in teaching. The first was Models in Mathematics Learning, by Celso Braga Wilmer, defended in 1976, and the second Combined Strategy of Instructional Modules and Interdisciplinary Mathematical Models for teaching the learning of mathematics at Secondary school level: an exploratory study, Jorge de Pardo Sánchez of Costa Rica, defended in 1979.

The experiences and studies with and/or by means of supervised students, led Aristides to defend his proposal to teach mathematics by means of models and to offer definitions about models and modeling in teaching at various Events and Courses on Mathematics Education in Brazil and abroad. Among the international congresses that he participated in, the following stand out: the UNESCO meeting that took place in Montevideo, Uruguay in 1974; the 3º and 4º International Congresses on Mathematics Education ICME-III and ICME IV, that took place in Karlsruhe, Germany in 1976 and in Berkeley, California in 1980; the 4º Congress on Latin Mathematics in Palma de Mallorca, Spain in 1977 and the 5a Inter-American Conference on Mathematics Education V CIAEM, that occurred in Campinas (SP), Brazil in 1979. Aristides' participation in V CIAEM led Professor Ubiratan D’Ambrosio, at that time director of IMECC at UNCAMP, to invite him to hold seminars on the use of mathematical models in the teaching of Differential and Integral Calculus and Linear Algebra. Thus, in October 1979. Aristides came to UNICAMP, the time when Rodney Carlos Bassanezi and Eduardo Sebastiani Ferreira, for example, heard him talk about mathematical modeling. Aristides Camargos Barreto has made an immense contribution not only to academic production, but mainly to the people that he has motivated who, as a result, continuing spreading the seed of Mathematical Modeling throughout the Brazilian Educational System.

A fragment extracted from a text about Aristides Camargos Barreto in the book The History of Modeling in Brazilian Teaching (work in progress) by Maria Salett Biembengut.
ICTMA - International Community of Teachers of Mathematical Modeling and Applications*

The beginning 'principles' of ICTMA took place in the 1970's, at the same time in Brazil and for the same reasons: discontent and criticism by teachers and businesspeople in relation to the education of undergraduates in areas that require mathematical knowledge for problem solving and decision making. For example, in a report published in 1973, R.R. Mclone stated that a recent graduate in mathematics was good at solving problems and had reasonable knowledge of mathematics literature and technique, but was not so good at formulating, planning and making a critical evaluation of the problem he was dealing with.

Criticism like this was what possibly led David Burghes of England to liven up the school mathematics curriculum, working with teachers to produce interesting modeling with secondary school students. Burghes is considered the 'father' of the ICTMA, since beside his activities with teachers at Cranfield University in 1978, he published various articles and three books on the subject in 1981, 1982 and 1983. He was part of the Spode Group, along with professors John Berry, from the Open University, and Ian Huntley from Paisley College in Scotland. Other people were involved in the movement towards mathematical modeling in schools and universities, among them John McDonald from Paisley College, Glynn James from Coventry Polytechnic, Hugh Burkhartd and George Hall from Nottingham University and Dick Clements from Bristol. In their various initiatives, emphasis was placed on the teaching of mathematical modeling.

In 1983, Burghes (who had transferred to Exeter University), John Berry, Huntley, Glynn and Alfredo Moscardini (Sunderland Polytechnic) organized the 1st and 2nd International Conferences on Mathematical Modeling in teaching at Exeter University, England. The first had 125 participants from 23 countries. There were two featured presentations and more than 39 parallel sessions. Most of these presentations dealt with modeling in Higher Education, while only 5 were related to Primary Education. This difference was justified by the fact it would be easier to change a curriculum in Polytechnic School that in Primary School, or even at a University.

Many of the presentations were about teaching modeling or describing models, although few described research or philosophical perspectives. Thus every two years there takes place a Conference with a significant number of participants and representatives from different countries: ICTMA (1987) under a coordination of Werner Blum at Kassel University, Germany; ICTMA 4 (1989) chaired by Mogens Niss, at Roskilde University, Denmark; ICTMA 5 (1991) by Jan de Lange at Freudenthal Institute, Utrecht University, Holland; ICTMA 6 (1993) by Cliff Sloyer at the University of Delaware, USA; ICTMA 7 (1995) by Ken Houston at the Jordanstown Campus of the University of Ulster, Northern Ireland; ICTMA 8 (1997) by Peter Galbraith at the University of Queensland, Australia; ICTMA 9 (1999) by João Felippe Matos at the Universidade de Lisboa, Portugal; ICTMA 10 (2001) by Qi-Yuan Jiang at Tsinghua University, Beijing, China; ICTMA 11 (2003) at the University of Milwaukee, USA; ICTMA 12 (2005) by Christopher Haines at the City University, London, England; ICTMA 13 (2007) took place by Satellite Meeting at Kathmandu University, Nepal, and in Indiana University, Bloomington, USA under the coordination of Richard Lesh. It should be noted that the best works presented at each ICTMA are published in book form.

Currently, the Executive Committee is made up of a president, the two organizers from the last two Conferences and by three elected members - another four indicate members who represent countries. The Committee attempts to publish the annals in book form and puts out a periodical (that began this year, in 2007). It also makes use of space within the ICME - International Congress on Mathematical Education; recognized as "The International Study Group for Mathematical Modeling and Applications ICTMA" in the International Commission on Mathematical Instruction ICMI. The current Executive Committee, elected on July 26th of this year during ICTMA 13 in Bloomington, Indiana, USA, is made up of: President: Gabriele Kaiser (Germany); Secretary and Richard Lesh (USA); members: Toshikazu Ikeda (Japan), Thomas Lingefjärd (Sweden) Glory Stillman (Australia) Editor of the Newsletter and co-opted Members: the Brazilian Jonei Barbosa, Katja Maas (Germany), Bhadra Tuladhar (Nepal) and Jinxing Xie (China).

More information: www.ictma.net.

Part of this synthesis was taken from the article: "ICTMA: the first twenty years" Written by Ken Houston from the University of Ulster, Northern Ireland.
On the progress of CNMEM

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This year, the National Conference on Modeling in Mathematics Education (CNMEM) will have its 5th edition, in Ouro Preto (MG). The appearance of this event in 1999 can be seen as one of the signs of maturity in the Modeling movement in this country, creating in this way a specific space in which teachers, researchers and students can come together to discuss the subject.

In mid-1999, Prof. Rodney Bassanezi spoke about putting on an event with this purpose. At that time, Jussara Araújo and I were students in Piracicaba - Universidade de São Francisco (USF) and coordinated by Prof. Alexandrina Monteiro. Once again we enjoyed the coming together of researchers, teachers and students from the area.

The success of the event left participants certain of the need to guarantee a permanent place for CNMEM on the calendar of Brazilian Mathematics Education. The III CNMEM took place in 2001 on the Itatiba (SP) campus of the Universidade São Francisco (USF), and was coordinated by Prof. Alexandrina Monteiro. Once again we enjoyed the coming together of researchers, teachers and students from the area.

In the organization for IV CNMEM, the new challenge was to move towards a strong relationship with GTMM/SBEM (Grupo de Trabalho em Modelagem Matemática/Sociedade Brasileira de Educação Matemática). For the V CNMEM this year, I think that we have arrived at a very well-structured event, a result of the support of the agencies that have culminated in this rich space for debate on Mathematical Modeling. Its continued support and reinforcement must be a shared commitment for all of us!

In summarizing the trajectory and progress of this event, I can say that CNMEM is well established on the national calendar of Mathematics Education. I had the privilege of participating in every event and can testify to the gradual advances made in previous events. Beyond maintaining those advances, one more important step has been taken extending an invitation to Prof. Gabriele Kaiser, President of the International Study Group for Mathematical Modeling and Applications (ICTMA), to realize the opening of the conference, as this inaugurates the international scope of the event.

The financial support of these research fostering agencies symbolized the consolidation and recognition of the event.

The IV CNMEM brought the opportunity of coordinating its organization at the Universidade Estadual de Feira de Santana (UEFS). Here it is worth pointing out the fact that it was the first time that the event occurred outside of São Paulo State, in fact taking on a national dimension. With about 400 participants from 9 different States, we maintained the progress we had already made in previous events (publication of the Annals and financing from the agencies, for example).

http://www.furb.br/cremm

SENDING COLLABORATIONS
If you have any academic work (Undergraduate monograph, Thesis, Dissertation, Monograph, Research Report) article, report on experience or some news or information that you think is pertinent, please send it to CREMM and we’ll put it on the electronic site; send it to us at any time.

If you have used some activity or have had an experience using Modeling with your students, or if some of them have done interesting work that you’d like to be known, send us a report, the text or the work. We can put in the virtual Journal summary and the work in PDF will be in the Pedagogical Practices section of CREMM’s electronic site. Together with the work, we ask that you send along an abstract of a maximum of 100 words. If possible, translate the abstract to English and Spanish.

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