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AN INTERVIEW WITH

José Basto Gonçalves

by **Helena Reis***

José Agostinho Basto Gonçalves (born 28 January 1952) graduated in Mathematics at the University of Porto in 1975 and in 1981 he received his PhD degree in Mathematics from the University of Warwick. He returned to Porto and played a massive role in the creation of a scientific culture in the Math. Department, helping to instill a research-oriented mentality in several generations of students.

His main research work lies in the scope of control theory and of the geometric theory of differential equations. He became Full Professor of the University of Porto in 1991 and he retired in 2008. Over the course of his career, he has supervised two PhD theses and has mentored a number of Master and undergraduate students.

He was member of the first Scientific Committee of CIM (1996-2000) and member of the Statutory Audit Committee from 2000 to 2004. He has also been president of the northern regional direction of SPM.

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Can you tell us in which moment you realized that you wanted to be a Mathematician and also let us know how this happened?

I did not think about it, but had always assumed, even as a child, that my work would be computations or something similar, and without a fixed timetable. I was very fortunate to get all that!

I initially entered an Engineering course, thinking that the Maths course was only for high school teachers, and Engineering was the course with more Maths in it. But after two years I changed to Mathematics.

You have graduated from Warwick. What were your reasons to choose this university? Also, was Warwick your first choice or have you considered other universities as well?

I attended a course at ICTP (Trieste) organized by prof. Markus from Minnesota and Warwick and prof. Olec from the Academy of Sciences (I think) in Czechoslovakia, and met prof. Pritchard from Warwick. Also, my friends Luisa Magalhães and Eugenia Sá were doing their Ph.D. at Warwick so . . .

You were one of the first people in Porto to have gone to Warwick for graduate school and since then, many others have followed this path some of them under your recommendation. Do you somehow feel to have a *scouting job* for Warwick?

Perhaps I was enthusiastic about my time at Warwick, it had been extraordinary for me; also it was easier to recommend people, and I knew well the conditions there. I always thought that it would be better if people went to different universities, but the knowledge of previous students is very important for the decision to leave Porto and study abroad.

Did you return to Porto immediately after defending your Phd thesis in Warwick? Can you describe the situation of the research in Mathematics in Portugal — and more precisely in the north region — at that time?

I returned to Porto in 1981 after 4 years at Warwick. As far as I remember there were no scientific papers in Mathematics published in Porto before 74, but when I came back the level of teaching was very different from my experience before leaving (I was in engineering for two years and then did Applied Mathematics).

Before I left, the Applied Mathematics group was at best very old fashioned. At the end of the 70's, the presence of Ricardo Lima was very influential at the group, and later in

the University, through new people that studied for a Ph.D. thanks to him. He taught interesting courses, talked about research and helped former students to obtain contacts abroad and financial support.

In 81 the ambient in Applied Mathematics was very good: Manuel Rogério Silva, Teresa e Pedro Lago had already returned, there was no great interest in proper Mathematics but things were moving, research was being done and there was enthusiasm.

In Pure Mathematics there was no published research in the beginning of the 80's, but the teaching was up to date. I think that this was already a fact even before 1974.

Certainly, anyone studying now (or since the end of the 80's) in Porto for a degree should be able to finish a Ph.D. anywhere.

I was very fortunate in many aspects: I was in engineering to begin with, I learned a lot more physics than is now common (I did not like that at the time but it was useful!), I studied topics in Mathematics courses that were old fashioned then, but were very considered later, and my final year in the Mathematics degree was 74/75 when the list of courses had a great change.

By the time you returned to Portugal, other young Portuguese mathematicians were also returning home from graduate school. How did you get organized to foster the creation of *culture of research* with high standards around this time? For example, you used to have local collaborators in research or have you actually put direct effort into interacting with other colleagues from Portuguese universities?

There was no organization but certainly a mutual interest: discovering the others and discussing the new results and topics.

Our research budget in 1982 was something like 150 euros, the Fundação Calouste Gulbenkian and the director Alberto Amaral were an important help, later JNICT and then INIC had a complete change: we had a project with the money to invite very good mathematicians to give two-week courses, had a very generous budget to get equipment and to face the daily expenses and a number of young beginner mathematicians.

At the University of Porto, mathematicians are spread around several faculties, how does this affect research and teaching, and how have you dealt with this?

I have studied Applied Mathematics and always worked in the department of Applied Math; it was much improved with time due to the efforts of its members. But the University



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had and has more than a dozen departments (or similar structures) responsible for Mathematics classes, and the Science Faculty had a Pure Mathematics department as well.

I never liked this situation, even when personally very convenient. We have tried to encourage collaboration within the university and endeavoured to surpass the inconveniences this causes, first in CMAUP, then in CMUP, after the two centres merged, by having all mathematicians together at the same research centre; the two departments in the Science Faculty are now just one department, but the problem persists at the University and it should not.

How easy was it in the ,70s and ,80s to get a grant to study/travel abroad? When and how did this change?

In 1975 the number of grants was very small, INIC and Gulbenkian and NATO altogether had fewer than 100 for all sciences and humanities (or at least this was commonly said) at Ph.D. level. The situation with Mariano Gago as head of

JNICT was completely changed: now FCT has more than 1500 grants for Ph.D.

How did you obtain funding for research through your career? How important was it for your research?

I studied for a Ph.D. in England with a Gulbenkian grant. The first budget I had from INIC after returning was less than 200 euros a year, that when everything was missing in the department (books, journals etc.); at that time Gulbenkian was a great help, with money for books, journals, for attending conferences. The community of active Portuguese mathematicians was very small, travelling was expensive and to stay abroad was even more expensive, all communications were done by letter through standard post service, there was still no e-mail or internet . . .

Young people could get a job and work with us (now is a lot harder) but then everything was missing: there were very few books or journals, first we shared a personal computer bought with University research money, then two

computers . . . We were a small group, six or seven, but we also shared with other people in the University.

Again this was completely changed still in the 80's, first with INIC and afterwards with Luis Magalhães at FCT. We were able to invite scientists for giving courses lasting one or two weeks, everybody could go to a conference per year, our library was quite good, we had computers and printers, and there was very little bureaucracy. A paradise!

Funding was a constant worry in the beginning of the 80's, but that did not affect research much: with money the effort was less, there were more people involved, for me it just was easier but for younger people good funding was fundamental.

You were member of the first Scientific Committee of CIM (1996-2000) whose goal was to develop and promote the mathematical research in Portugal. What was the role of CIM in those years and how were the measures implemented?

I had not a clear idea of what should be the role of CIM, but I thought it was a good idea and could be developed without a lot of money (that of course did not exist).

What sort of progress have you detected/felt? Were they clear right from the beginning or they gradually become clear in the years to come?

I am not a big believer in the power of an institution. Having a permanent teaching/research staff is of course not indispensable but not having it does not help.

Going back to the question about sending students abroad, I am aware that you consider important — if not absolutely indispensable — for young mathematicians to acquire international experience (by the way, as your former student, I remember to have my “wrists slapped” for staying in Portugal for graduate school).

The mathematical community was very small, the number of research papers was almost zero in Porto, it was important for the students to have a different view and contact with much better research environment.

Do you think nonetheless that acquiring this international experience used to be more important years ago and/or consider that significant changes have occurred and that nowadays this type of experience is somehow less relevant?

Now the number of people involved, in Portugal, is completely changed, the international relations exist and

work, it is not as necessary to go abroad to change. However, doing everything, first degree to PhD in the same place is still not a good idea.

Besides the scientific connection with England, you also have many contacts in Brazil, where several Portuguese mathematicians, especially from Porto, have obtained their Phd degrees . . . Would you comment on the role the collaboration with Brazil played in your career as well as in the evolution of the research at CMUP?

I learned a lot in USP — S. Carlos, and (very) slowly moved from Control to more standard mathematics; this was only possible thanks to people from all the world I met there at the São Carlos Workshops on Singularities (every two years) and at the university. And I have made very good friends . . .

Today CMUP is a top center for Mathematics recognized both at international and national levels. What is the feeling that such an evolution brings to you and the colleagues from your generation given that you have been the initial promoters of the culture of research? Are you especially proud of the work accomplished?

I am very happy seeing that the new normal was almost unthinkable when I began. Like a coach, I expect the new ones to do better than I did!

Our research centre CMAUP went from *good* to *excellent*, many students finished their Ph.D. here or abroad, CMUP is now *excellent*, things are much better than they were.

Do you have hobbies or other regular interests outside the academic community?

I should have thought about that long ago . . .

I would like to close the interview with a comment rather than with a question. I would like to make clear that Professor José Basto played an important role in my Mathematical education. Namely, you were the instructor of 5 courses I have enrolled in over my undergraduate and Master courses. In addition, you have supervised my Master dissertation as well as my Phd thesis. I am very much indebted with you for everything I have learned and I also thank you for having persuaded me (finally after my thesis defenses) to go abroad for a post-doc in France . . . it certainly was very important in my life.