

## My Earth science educator story – Jorge Bonito

### What I did, why I did it and what happened



Lisboa, Portugal, September 2015.

#### Vocation?

How did I come to follow a geoscientific educator career? Well ... actually, life paths can be determined in two main ways: by the context/circumstances and by the decisions taken. I thought, as an eighteen year old, that I would become a medical doctor, but the Portuguese education system then, as now, determined that a student with only 16 points (on a scale of 0-20) could never become a good doctor.

Initially I opted for a course in biology, but I ended up taking a degree in biology and geology education, at the University of Évora. It was a course for teaching elementary and secondary biology and geology education.

#### A biology and geology teacher

My degree was organized into three major training areas: Life Sciences, Geosciences and Educational Sciences. The last year was dedicated to supervised teaching in a school. I liked almost all the subjects I learned, especially the geology fieldwork. Until then, I had never studied geology.

I particularly saw the enthusiasm of two teachers: Professor Francisco Gonçalves, a

Professor of Geology in Portugal; and Professor Pedro Terrinha, Professor of Geodynamics. They both loved what they were doing and transmitted their love to their students. In the classroom and outside it, their teaching was exemplary in what was said, how it was performed and in the humanistic values presented through student-teacher-learning relationships.



Portalegre, Portugal, 1992.

Within the Educational Sciences area, the highlight for me was the teaching of geology and other practical areas, that allowed us to plan teaching sessions, think about them and reflect on what we were doing. I was lucky to be a student of Professor Vítor Trindade, a teaching and geology expert. It was not by chance that I was one of the best students of my course so far, completing it in 1993 with the highest score among my colleagues. Shortly before completing the course, I decided to continue my studies, partly because of Professor Trindade's enthusiasm. Whenever I saw a geological outcrop, the holistic view of the past that enabled me to understand the present excited me. I decided, therefore, to continue my studies in geology but in another University.

#### Geology in the "City of Knowledge"

I joined the first Geoscience Master's course at the University of Coimbra. However, I was

looking for a job, specifically in university geology teaching. Shortly after starting my master's studies, I was admitted to the area of education and science education at the University of Évora. This admission, completely conditioned my future academic career.

The master's course was a dreamlike experience. Everything was different in comparison to the University of Évora, the city, the environment, the teachers and the practices. I had very competent teachers and completely new subjects, with much field work and much challenging learning. I opted for a Master's thesis on teachers' conceptions about practical work and developed activities for teaching about rock deformation.



Crato, Portugal, with my advisor, Professor Bernardo Reis, 1994.

### **Teaching and expert teaching of Geology**

In November 1995 I decided to take a week-long course on geological materials at the Complutense University of Madrid, organized by the Asociación Española para la Enseñanza de las Ciencias de la Tierra (AEPECT). It was another exciting experience. Everything was new. This was a great time, when I developed links with several teachers who wanted to transform geological knowledge into school knowledge by preparing curriculum materials for teaching.



Madrid, Spain, 1995.

I was never the same afterwards. The following year I participated in the Symposium organized by AEPECT every two years, giving access to an array of educational work on various Earth science topics and, above all, to direct contact with many different people who were also interested in these issues and with whom I still keep in touch. In particular, I would highlight Celso Dal Ré Carneiro and Mauricio Compiani from Brazil, Hector Lacreu, from Argentina and David Brusi from Spain.

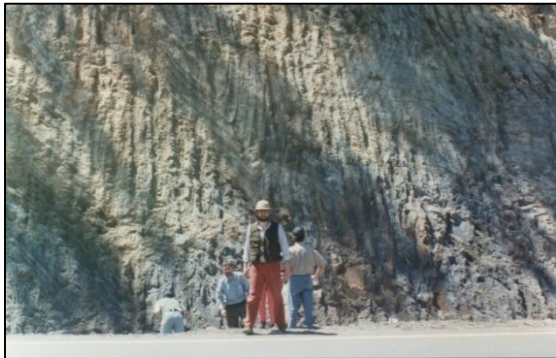
### **Learn more about learning**

After completing my Master's degree, I realized I needed to learn more about the learning process, because until then I had mostly thought about teaching. I decided to take a PhD in Educational Sciences in teacher education at the University of Coimbra, under the supervision of Professor Nicolau Raposo and Professor Regêncio Macedo: a psychologist and a geologist. I studied teachers' epistemological conceptions (image science, learning theories, teaching models and teaching methodology) and tested the results of semi-structured practical field activities conceived through teacher education.

### **Geology teaching**

In the meantime, at the University of Évora, I taught on the Geology teacher training course, together with the professor who had

taught me as part of initial training, Vítor Trindade. We taught the course for seven years and I was deeply excited and enthusiastic about preparing lessons and observing the students' achievement. I invested a lot of time in lesson preparation and tried to be innovative. I organized many lab and field activities, sometimes in unusual places, for instance in a graveyard where we focused on the problem of the best stone to choose for a tomb. I felt like a real teacher.



Me in Coimbra, Portugal in 1997, with Professor Vítor Trindade with his back to me and Professor Bernardo Reis facing me.

The Bologna process has brought great changes to University courses, and because of these changes, the course in Biology and Geology education at the University of Évora was closed. I couldn't teach that subject any longer.

Teacher training was integrated into a Master's degree and through this we lost the identity we had of a clearly defined professional career. In 2005 we restarted teacher training with only a few students in the new system, and then with fewer students every year, until these finally disappeared. It was a discouragement. We lost enthusiasm but not hope.

### **Geoscience education**

Were it not for the invitation of Professor Luis Marques, whom I had met in 1994, to become involved in a research project, I don't know what I would be doing now. I would certainly not have been able to write

these words. Professor Luis Marques created a Geology Group at the University of Aveiro. Since 2008, we have developed a project on geological time and written many papers, lectures, seminars together with textbooks and teacher support for East-Timor. We have developed many other works, contacts and learning opportunities.

Currently, I am not training teachers because I don't have any students, but I continue to research in geoscience education, as part of the group led by Professor Luis Marques. I am very happy with what I am doing and I know that my work is important to many students, and for an academic that is what matters: to think, to produce, and to intervene in the educational community.

I didn't become a doctor because of life circumstances, but geology made me look at the world in another way; a broader and deeper way. I am a historian, but instead of dealing with people and historical time I deal with rocks and their testimonies of geological time.

Being an educator of geoscience has this curious duality: we educate to understand our lives in the present, by looking at the past in the way that only the geologists can. I still love the feeling of learning geoscience.



Barcelos, Portugal, January 2015.

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