# Any Progress Is Progress

With a portfolio of titles that read Professor of Geophysics, Dean of Science at Royal Holloway, University of London, and Master-Elect of Darwin College Cambridge, Prof Mary Fowler speaks about her illustrious journey in academia. Producing a world recognised award winning publication to her name, amongst her accomplishments she reflects on a career of choices in balancing her role as an academic and her family life.

By Kamalika Jayathilaka

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**Could you talk about what influenced you to venture into the field of science?**
Both my parents were Physicists. My father was a Physics professor who worked on cosmic rays, flew balloons and conducted experiments on satellites. It was always very exciting for me as a child, to go with him on a Saturday morning into his laboratory and see what he was doing, it was always a great treat. As a result I simply wanted to do the sort of work that he did.

**How did you proceed into Geophysics?**
Although I wanted very much to study Physics in the university, I had not taken the right subjects at school. I had studied Mathematics and Physics and I needed to have taken Chemistry as well. In the end when I entered university I studied Mathematics, and when I graduated I was able to move on to Geophysics. Initially, I wanted to take up Particle Physics, however I realised that was going to require more years of theoretical study and I was rather keen to do some practical work.

**What would you say are the highlights of your career?**
What I am known for is the book that I wrote which is called ‘The Solid Earth’ and it is used around the world. Aside from that I have worked on a number of different areas, but what I enjoyed the most is discovering something entirely new. Consequently the first phase of my work was on the mid ocean ridge system where the boundaries of the plates are moving apart. That is in the Atlantic where Europe and North America are moving apart a couple of centimetres every year. This new movement is creating a line down the middle of the Atlantic – a line of volcanoes – and we wanted to see what that volcanic system was like. There is about 3.5km of

water above it, you cannot simply go and have a look. In order to do that we have to send instruments down on to the sea bed to record earthquakes and seismic waves. From a ship say about 2.5 km above, energy has to be released into the water to reach the ground so the vibrations can travel through the rocks and then we can pick up those vibrations by the instruments.

That is what we are trying to do, to work out where the most change might have occurred – where is the molten. If it is a volcano there must be molten rock. But there wasn't any. So we got a volcanic system that was working in the Atlantic at least without any permanent magma change. That was something very negative to start with, but that meant that we had to start thinking. Science is all about hypothesis testing. In this instance the whole system was working in a slightly different way. Actually what was happening was that, in the Atlantic the plates are spreading apart very slowly, there is molten rock but its not present all the time to detect. There are micro changes but they are not long lasting, they are not permanent features, whereas, if we go to the mid-ridge range system in the Pacific where the plates are moving apart much faster, there are permanent volcanic systems. That was the first lesson and when you are testing the hypothesis you don't find what you think you are going to find but, things you little expect.

**What academic or research work are you involved in at present?**
Right now I am doing almost no academic or research work as I am leading the Science Faculty at the Royal Holloway. There are three faculties together with the Arts and Social Sciences, Management and Economics. The three are pretty equal in size. That is about 3,000 students and I handle seven academic departments. It is a challenge as it is time consuming and it is a lot of hard work.

**Could you talk about your experience or challenges as a woman in this field?**
In the stage that I am at now it is no more difficult for me than it is for my male colleagues. Certainly for younger women with a family it can be very difficult to juggle the requirements of an academic career with being a mother and a wife and running a home. Those same factors changed the research that I was personally engaged in, as my initial research was working on research ships at sea, which required being away from home months at a time. At that time I had a family with small children so I had to change my research area to work on land and do more theoretical work.

**How would you describe your journey till the present?**

My story is that I always wanted to do science – to do Physics. I went to university, got my PhD. Thereafter, I did a post doctoral fellowship and went to the Swiss Federal Institute of Technology. There came a point when I began to look at a potential academic career. My husband was also an academic; not only is an academic career difficult, we were trying to find two academic jobs in one place. My husband was offered a post back in Cambridge and we thought well this is fine. We should take the job and this would also be the time to start a family. I thought at that point that I was possibly leaving an academic career behind me but I didn't mind that.

That was my choice. I hoped that I would be able to do something further in Science but at that moment leaving again from one country to another it was important for one of us to be settled and to have a good position. We had two small children at the time we were in Cambridge and then we moved to Canada. The one thing that academics do earlier in their careers is travel, because jobs tend to be time limited. You spend short periods in a place and then move again. We moved to Canada and my third child was born there.

In Canadian universities academics are quite well paid, certainly the city we were living in – Saskatoon – the price of housing was such that we could buy a house and pay for the mortgage for the house with one salary. I found a way back into science where my husband could work and I took on an honorary position at the university. I was able to gain a research grant. I was granted an office and full use of the facilities and on occasion I did replacement teaching for people when they were on sabbatical. I was pretty much involved in the life of the department. However, I didn't have – on the down side – the total responsibilities that went with that. I could just concentrate on doing the research work, writing the papers that I was interested in and ultimately I wrote a book about time.

**Could you share your thoughts about Gender 2012?**
It is very timely that this is the first conference that the Association of Commonwealth Universities have had on women in higher education. I am struck by mainly how similar the problems are across many countries in the Commonwealth. I am mostly struck by the patterns, particularly for women in some countries; the social pressures are such that it is very much more difficult for them to succeed in higher education. Although we have many problems in western countries, where there tends to be structural problems in the universities they are actually solvable; we can deal with them. What is much more difficult to solve is the general social setbacks rather and the cultural norms that are present in some countries that

make it very difficult for women to combine their expectations of their home and family life with working in a university as an academic.

**How can these issues be addressed in your opinion?**
There are ways forward but they won’t proceed at the same rate in every country. People shouldn’t be discouraged, any progress is progress. If we were to meet again in ten years time there should be progress everywhere. In some countries progress would have been much faster than others. Every country is not coming from exactly the same position. We progress at different rates.