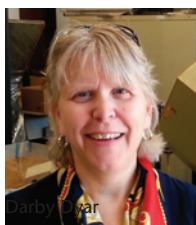


## CHANGING RESEARCH DIRECTION IN THE MIDDLE OF AN ACADEMIC CAREER

University academics commonly work in areas similar to that of their PhD for their entire career. Sometimes this is because they really love working in their area of expertise. In other cases, it may be that they were hired to do a specific job at their university, making it difficult to write a strong application for a research grant in a new field, change the use of a laboratory, or teach in a different area. However, we know that in today's research climate it is not a bad idea to have a few different options up one's sleeve—even in academia! For this instalment of *A Life in Science* (LiS), I interviewed two academics who successfully orchestrated a mid-career change in their research direction.

**Penny King**, Australia National University

### INTERVIEW WITH DR. M. DARBY DYAR, MT HOLYOKE COLLEGE, SOUTH HADLEY, MASSACHUSETTS, USA



**LiS:** *What area of research did your PhD focus on?* Geochemistry and geostatistics. I did some work on lunar samples as one of my thesis projects, but my first teaching job required me to focus on mineralogy and terrestrial geology, so I left the field of planetary science for good, or so I thought!

**LiS:** *What do you work on now? Do you still work in your PhD area of research?*

I'm the chair of the Astronomy Department, and most of my research is in the field of planetary science. My PhD advisor, Roger Burns, was prescient in encouraging me to work in several different areas for my thesis: geostatistics, different types of spectroscopy for lunar and terrestrial samples, mineralogy, and metamorphic petrology. I still work in all those areas, though from mostly a planetary perspective.

**LiS:** *How did you transition between the old and new areas of research?*

The transition was really very rapid. After my second child was born, I gave up commuting from 300 miles away and relocated to live in the same place as my then-husband. I had to resign the university position I loved, which was very sad but necessary. There were no geology jobs for me in the Amherst area, but there was a temporary visiting faculty position in astronomy teaching planetary science. So I relearned everything I had once known so I could teach it, and after seven years it became a tenure-track job. It made sense then to start doing research in planetary science again as well. I was fortunate that a few people remembered me from my graduate school days, and they helped give me some good advice at that point: Carle Pieters, Janice Bishop, and Hap McSween.

The hardest thing about the transition was that I didn't have the opportunity to teach with my own textbooks (*Mineralogy and Optical Mineralogy*, by Dyar and Gunter, and *Geostatistics Explained*, by McKillip and Dyar). I really miss teaching geology. But I am constantly learning new things from studying astronomy, so that's been great. I'd been teaching geology for 13 years when I started in the Astronomy Department, so it was good to get out of my rut of teaching the same old thing and learn something new.

**LiS:** *Are there others at your institution who work in your new area of research?*

Unfortunately, no.

**LiS:** *Was it challenging to attract students to work with you in the new area?* Because I teach at a small liberal arts college, I don't have the opportunity to supervise graduate students. However, I've been able to work closely with graduate students at nearby institutions, including the University of Massachusetts and Brown University.

**LiS:** *What words of wisdom do you have for others considering changing research areas?*

The key is to find the synergies between your old field and the new one, so you're not starting completely from scratch. What enables career transitions is placing value in the skills you have and being creative in thinking how they carry over to different disciplines. My undergraduate studies in art history taught me how to make careful analytical observations and to write clearly and critically—skills that have not gone to waste in my career as a scientist! My statistical work on the precision and accuracy of the Mössbauer technique as a graduate student turned out to have very important applications in planetary science. And I had worked extensively on the spectroscopy of minerals in terrestrial mantle xenoliths, so it was fairly easy to transition to working on those same phases in Martian meteorites. Perhaps most importantly, you should not overspecialize in your academic training in the first place—breadth will help ensure employment. Many future jobs for today's students don't even exist yet, so I think it's essential to emphasize writing, critical thinking, and the ability to teach yourself new skills in your educational program.

### INTERVIEW WITH DR. STEPHEN EGGINS, AUSTRALIAN NATIONAL UNIVERSITY, CANBERRA, AUSTRALIA



Stephen Eggins

**LiS:** *What area of research did your PhD focus on?*

The geochemistry and petrology of very primitive subduction zone basalts in the New Hebrides (Vanuatu) Arc.

**LiS:** *What do you work on now?*

I work on biomineralization and developing geochemical proxies in marine calcifiers (corals and foraminifers) and silicifiers (mainly sponges), and to a lesser extent applying these proxies to reconstruct past ocean conditions. I also develop cutting-edge methods and instrumentation for isotopic and elemental analysis using laser ablation and ICPMS.

**LiS:** *How did you transition between the old and new areas of research?*

I guess my transition was abrupt in the end, but only after an extended period where I morphed from an igneous petrologist/geochemist into an analytical geochemist involved in the development of microanalytical methods, specifically deep UV laser ablation ICPMS. This was driven by a desire to use in situ analysis of trace elements to solve problems in petrology; however after 10 years of postdoc appointments in that field, I applied for and obtained a senior postdoc position in environmental geochemistry.

**LiS:** *Are there others at your institution who work in your new area of research? If so, did that help you with your transition?*

Yes, I was lucky to have colleagues working in the fields of marine chemistry, paleoceanography, and paleoclimate research. They helped orient me as to outstanding questions and problems in the field, introduced me to their research networks, provided access to samples, and offered collaboration on projects. The latter was valuable for establishing a track record in the field, both in terms of grant funding success and coauthored publications.

**LiS:** *What words of wisdom do you have for others considering changing research areas?*

Working on a new set of questions and problems in a new research area is intellectually stimulating and invigorating, but you can also expect it to be taxing. A particular challenge can be one's lack of foundational knowledge in the new area of research. I found that teaching related undergraduate classes was invaluable for developing understanding and knowledge in the research field. As for achieving research success, being able to adapt and apply your existing skills to a new field can be a big advantage, particularly where you can bring new expertise and insights from your former research.