

## Fellows at ESO

### Myriam Rodrigues

Like many astronomers, I've had the amazing chance to realise a child's dream: "When I grow up, I want to be an astronomer!"

Everything started 20 years ago, when a family friend working in a condensed matter lab took me into the lab for a couple of days. At the time, condensed matter physicists were excited by a new toy, invented a few years earlier: the scanning tunnelling microscope. I was just seven years old, but I still remember perfectly the huge instrument filling the room and a little TV with some kind of purple spheres on the screen. "These are atoms," they said, "and these are molecules," pointing to another screen close to another huge piece of machinery. I came back to school, totally convinced that I wanted to be a particle physicist and feeling like a new Messiah preaching new-found truth to my schoolmates: "Matter is made of molecules and molecules are made of atoms, how cool is that?!"

I would have probably become a particle physicist if the star-studded night sky at my grandmother's village in Spain had not brought the poetry of astronomy to me. On summer nights, the children used to go to the "movie theatre": a field with a clear horizon. Lying on the warm ground, with a pack of sunflower seeds (the Spanish version of popcorn) in hand, we used to gaze at the sky for hours: the Milky Way, shooting stars, the constellations. The link between these two passions fused a few years later, when I discovered in a kid's science book an incredible invention: spectroscopy! It is possible to make the atoms of stars and nebulae speak! I was definitely decided: I wanted to study galaxies using spectroscopy. Some years ago, I read a quote from Annie Jump Cannon that remains carved in my mind. She expressed beautifully what had been on my mind all those years: "They are not only lines for me; each new spectrum opens the door to a new wonderland. It is as if the distant stars have acquired the gift of speech and started to tell us their physical conditions and constitution."

I studied physics at the Instituto Superior Técnico at Lisbon. Unfortunately there



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was no research on distant galaxies at the astronomy department and I started to look for a place to do my undergraduate research project on galaxy evolution. I finally decided to send an email directly to François Hammer of the Paris Observatory to ask for an undergraduate project. A few months later, I left the sunny skies of Lisbon to start a Masters in astrophysics at the Paris Observatory and one year later began a PhD on galaxy evolution in the team of François Hammer.

My main research topic is the study of the interstellar medium and stellar populations of intermediate-mass galaxies at intermediate redshift. This galaxy population appears to be the likeliest progenitor of the present-day spiral galaxies and their properties therefore provide strong constraints on galaxy evolution models. During my PhD I started working on the characterisation of the interstellar medium — metallicity, star formation rate (SFR), gas fraction and presence of star-formation-driven outflows — of distant galaxies from integrated spectroscopy from FORS2 on the Very Large Telescope. I also worked on the estimation of their stellar populations using broadband spectral energy distributions from the ultraviolet to the infrared combined with Lick indices and SFR.

I applied for the ESO-Chile Fellowship moved by the same child's dream. The small child in me was categorical: there is only one place in the world where you can be an astronomer. This place is the Very Large Telescope at the Paranal Observatory, surrounded by the driest desert and the darkest sky in the world.

And here I am, writing this article from my room at the Paranal Residencia. I started my ESO-Chile Fellowship two years ago and I am a support astronomer at Unit Telescopes 1 and 2. I have learnt a lot in these past two years about observation strategies, operations and instrumentation. Being a support astronomer has allowed me to be a more complete astrophysicist by seeing the complete chain of the science. I always find that moment when a new frame appears gradually on the screen fascinating. At this exact moment, the incomprehensible light arising from the sky above our heads is caught in the pixels of the detector and becomes science.

That's it! This is the story of a stubborn daydreamer.

### Rubén Sánchez-Janssen

When I was a child, I was all about dinosaurs and outer space. But I guess that, having grown up in the Canary Islands and with an engineer dad who works on infrared astronomical instrumentation, the odds were uneven. I think I made *The Decision* to become an astronomer during a cold February night in the late 80s, after a visit to the IAC80 telescope in Tenerife with my father. Of course I had no clue what the job was really about, but became absolutely fascinated by the quietness of the telescope control room at those after midnight hours. What really touched me, though, was the image of a galaxy that the astronomers had just obtained. That whole big collection of stars existed somewhere out there, and they got to observe it in much greater detail than I could have ever imagined!

So that was it. I pursued that winter night's dream and years later obtained a degree in Astrophysics at the Universidad de La Laguna. This was followed by a PhD at the Instituto de Astrofísica de Canarias on the effects of the environment on the evolution of galaxies in nearby clusters. My enchantment with telescopes not only persisted, but increased with the years of experience. I was therefore excited when I got the opportunity to join ESO as a Fellow in Chile and work at the VLT. I landed in Santiago on a cold and rainy day in mid-



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August 2009, a mere month after my PhD defence. I had spent my entire life on a small Atlantic island, and was expecting some rough times ahead and a period of adjustment. It took me less than a week to realise that this new place 9000 kilometres away was easily to become my second home.

At ESO I've continued my research on galaxy evolution as a function of mass and environment, and established new collaborations with colleagues at Vitacura, at other Chilean institutions and from abroad. During my functional duties as a Fellow I have supported observations at the Paranal Observatory, with a particular commitment to VLT/UT3 and its suite of instruments. More specifically, I've been the VIMOS Fellow during the recent instrument upgrade project, which has allowed me to become involved in the re-commissioning activities together with a great team of engineers and astronomers.

Paranal is a place that everyone should visit at least once. You reach the mining city of Antofagasta and start travelling deeper into the heart of the Atacama Desert. One rock, five rocks, 377 rocks, 6765 rocks ... and nothing else but rocks. And then, out of the blue, the telescopes' silhouettes out in the distance, like giants in a modern Quixote's wildest delirium. Sunsets from the telescope platform are one of the greatest privileges of observatory life, when the desert is painted in red and shadows play with hills and mountains. Afterwards, from dusk to dawn, it's the time of the astronomer.

I look in my rear view mirror and realise my time at ESO has gone by fast. I have just started the fourth and last year of my Fellowship, and the future awaits. I still like dinosaurs. But above all, I love my job.

### Loredana Spezzi

Thinking back, I was around the age of six when I first thought about "knowing more about stars" (the word "astronomy" was not yet part of my vocabulary).

I grew up in Sicily and during my childhood I spent innumerable summer nights sitting with my father on our terrace, trying to fight the heat (typically 40 degrees) and enjoying the view of the Milky Way on a clear night in the south of Italy. During those nights I exhausted him with the never-ending questions that children of that age ask about all the inexplicable details of this world. One of the more recursive ones was: "Dad ... tell me about the Universe!" and "Dad...tell me more about the Universe!" I repeated it over and over again and, after a few summers, my father (who studied medicine) had no more news for me and redirected me to illustrated astronomy books. The interest stayed with me and the illustrated books became university textbooks, when at the age of 19 I decided to study physics, foreseeing a future career in astrophysics (and not knowing exactly what was the deal!).

And so the amazing "trip" started: I graduated in Physics and I obtained a PhD in Astrophysics at the University of Catania. After that, I had the privilege to be a post-doctoral fellow in two of the top European institutes for astronomy and space science: first the European Space Agency (ESA-ESTEC at Noordwijk in the Netherlands) and now at ESO-Garching.

The "trip" turned out to be long, not always easy and it is not yet over! I am still looking for the "final destination", but in the meanwhile the little six-year old "me" is quite satisfied. Not only does she "know a lot about stars", but she is even trying to understand how and why they are up there! Translated into the language of an adult astronomer, this means that my current research is de-

voted to the investigation of the properties of young low-mass stars and brown dwarfs and their circumstellar discs, both in our Milky Way and in the Magellanic Clouds. These studies aim at clarifying the star formation mechanism, its dependency on specific star-forming conditions (such as metallicity, the presence of strong radiation fields, etc.) and, in particular, to identify the specific conditions leading to the formation of planets in circumstellar discs and to assess how frequently they occur. My approach is mainly observational. I make extensive use of both imaging and spectroscopic data from ESO ground-based telescopes and satellite observatories (HST, Spitzer and Herschel).

Of course, the ten years I have spent so far in the astronomy world have given me much more than the pleasure of satisfying the whim of a six-year old girl. I have lost count of the many breathtaking places that I have visited during the several observing trips, conferences, meetings and, even more importantly, I have lost count of the many outstanding people I have met. Some of them have been my mentors, supervisors and advisors, and they have transmitted to me a fund of human and professional experiences that will stay with me until the end of my career. Many others are colleagues, sharing with me the good and the bad of this job. Finally, many of them are people with no connection with astronomy whatsoever. I crossed their paths just because I was following mine, but they have become immeasurable lifetime friends.



Loredana Spezzi