

MOVERS

Colin Lonsdale, director, Haystack Observatory, Massachusetts Institute of Technology, Westford, Massachusetts



2006–08: Assistant director, Haystack Observatory, Massachusetts Institute of Technology

1986–2008: Research scientist, Haystack Observatory, Massachusetts Institute of Technology

1983–86: Research associate, Pennsylvania State University, University Park, Pennsylvania

Colin Lonsdale says radio astronomy is experiencing a revolution. The new director of the Haystack Observatory in Westford, part of the Massachusetts Institute of Technology (MIT), believes that new instruments will probe unexplored parts of the distant Universe and allow scientists to answer crucial questions about how stars and galaxies first formed and continue to grow.

This is the second such revolution for Lonsdale. When working on his PhD in the early 1980s, he demonstrated how energy is transported in extragalactic radio sources by studying radio jets and hotspots, using the then-new MERLIN array run from Jodrell Bank Observatory at the University of Manchester, UK. He calls his decision to pursue a PhD there “career-defining”.

As a postdoc at Pennsylvania State University, Lonsdale used interferometry techniques to study all aspects of extragalactic radio sources. His expertise in data-reduction software led him to a research scientist position at the Haystack Observatory. “That’s when things took off for me,” says Lonsdale, who helped to detect an unusual radio signal from a complex, ultraluminous infrared galaxy created by the explosions of 50 supernovae.

That discovery, made together with his astronomer sister Carol, stunned colleagues. It not only yielded the first images of many simultaneously exploding stars inside a galaxy, but also altered the prevailing theory of how galaxies generate intense radio sources called masers, according to long-time colleague Phil Diamond, director of the Jodrell Bank Centre for Astrophysics. Diamond says it took Lonsdale’s imagination and tenacity to demonstrate that these galaxies are starbursts.

In 2000, Lonsdale turned away from pure research, instead devoting his time to developing the Murchison Widefield Array (MWA), an array of low-frequency radio telescopes in Western Australia. He says the MWA, scheduled to begin operation in 2010, will target questions such as how to measure solar storms accurately.

Lonsdale says advances in digital electronics have opened up a new frontier in radio science. Diamond fully expects that Lonsdale, who got funding for the MWA in difficult times, will use his expertise to help position MIT’s involvement in the next generation of radio-telescope technology — the Square Kilometre Array. Diamond is optimistic about the effect Lonsdale can have on this project, which he calls “the big daddy of radio astronomy”. ■
Virginia Gewin

NETWORKS & SUPPORT

Sustenance for sustainability

Scientists who seek intensely interdisciplinary study could be the beneficiaries of increasing interest in the emerging field of sustainability research, with new university programmes offering novel opportunities. Portland State University in Oregon and Cornell University in Ithaca, New York, are the most recent entrants to the field. They follow the example set by institutions such as the School of Sustainability at Arizona State University in Tempe.

Broadly defined, sustainability bridges disciplines to determine how to meet the resource needs of the present without adversely affecting future generations. In practice, that means assembling teams of ecologists, economists, biologists and social scientists to find solutions and strategies for big problems, such as meeting future energy needs.

Portland has received US\$25 million from the James F. and Marion L. Miller Foundation towards sustainability research and teaching, and Cornell’s \$10-million National Science Foundation (NSF) grant will be used to develop the field of ‘computational sustainability’ — using computer-science techniques to manage natural resources more effectively.

Portland’s provost, Roy Koch, says their approach is to connect

curiosity-driven research to short-term goals. Within the next 2 years, they plan to recruit at least 10 faculty members, 10–20 graduate students and up to 5 postdocs to tackle technical issues surrounding alternative energy sources, sustainable urban communities and developing the metrics of sustainability. He also hopes to set up a visiting faculty programme to forge national and international connections.

Cornell’s Institute for Computational Sustainability involves scientists from both Cornell and other US research institutions, whose work will involve merging disparate data sets related to areas such as environmental science and economics. One example is modelling the evolution of fish populations to assist with the designation of no-fishing zones.

The main focus of the NSF grant is to train some 12 graduate students each year. Cornell also wants to attract postdocs who are interested in computer science or applied maths. Carla Gomes, the institute’s director, says that “computer scientists aren’t aware that their expertise can impact issues of sustainability, and we hope to inject computational thinking into problem solving.” ■

Virginia Gewin

POSTDOC JOURNAL

Waiting with baboons

I have found it hard to return to my research in Ethiopia after my six-week hiatus. The fear of the unknown is gone, but so is some of the excitement. And this time, I have no one from the outside world with me. The scouts and our assistant are around, but there is nobody with whom to muse about science over a warmish beer. And, as any semi-sane person can tell you, having too much time for your own thoughts can be utterly destructive.

For the first few days here, I ranted and raved silently, even finding it difficult to go outdoors. It was too much ‘reality’ hitting me — I’m here and I’m more or less alone. I considered the gelada baboons my only distraction, and negativity threatened to devour me. I had to try to see the positive aspects of this experience. After all, I want to be here and I love my job. How can I deal with the circumstances surrounding it?

I came to see that I have been given something that I never had in the city: time. It is a precious thing, and not all that frightening. Now I am filling my time with the things I never get to do back home — reading articles, doing extra analyses, working overtime and writing letters. And I’m finding it a positive experience. I still love all social distractions, but I don’t constantly bemoan my solitude. Only my attitude has changed. Perhaps that’s enough to carry me through. ■

Aliza le Roux is a postdoctoral fellow in animal behaviour at the University of Michigan.