

MOVERS

Scott Hubbard, Carl Sagan chair for the study of life in the Universe, SETI Institute, Mountain View, California



2002-06: Director, NASA Ames Research Center, Moffett Field, California

2001-02: Deputy director for Research, NASA Ames Research Center

2000-01: Mars programme director, NASA, Washington DC

1999-2000: Associate director for astrobiology and space programmes, NASA Ames Research Center

Scott Hubbard's interests in space exploration were triggered by Sputnik's launch in 1957, a predilection for Isaac Asimov's science fiction, and some backyard rocket experiments that went awry. Seeing this stream of man-made objects flying through the sky set off Hubbard's imagination and his career.

With a degree in physics-astronomy from Vanderbilt University in Tennessee, he found a job at the Lawrence Berkeley National Laboratory (LBNL) that let him pursue graduate studies at the University of California, Berkeley.

While at LBNL, Hubbard invented a novel radiation-detection technology that ultimately found application in space missions. It was also the basis for a small company Hubbard founded with his colleagues in 1980. Becoming a general manager of the start-up taught him not only management and leadership skills, which he would hone throughout his career, but also the art of doing science. "Making the judgement between when to be exquisitely careful and knowing when quick and dirty is good enough is the hallmark of good research," he says.

After selling the business, he eventually landed at NASA, where he became manager of the successful Lunar Prospector mission. It was Hubbard who answered the call for a simpler, cheaper way to get to the surface of Mars. His solution was to use airbags to cushion the landing of a probe, now a standard procedure in space-exploration missions. Hubbard also helped create NASA's new interdisciplinary Astrobiology Institute devoted to studying life in the Universe. "I always wanted to explore space — at least with my imagination," he says.

Although he cites imagination as his most valuable skill, his leadership abilities have consistently been in demand. Hubbard faced his two most challenging roles while at NASA: rebuilding the Mars programme after two failed missions, and then serving as the NASA representative on the Columbia Accident Investigation Board after the shuttle disaster in 2003. The Mars programme he put together for the Odyssey, Spirit and Opportunity missions is still in place today, and he directed the experimental analyses that determined why Columbia was lost.

Hubbard returns to research in his dream job at the Search for Extraterrestrial Intelligence (SETI) Institute. His goals are to strengthen SETI's research capabilities and to carry on Carl Sagan's legacy of communicating to the public why space exploration is so exciting. ■
Virginia Gewin

MENTORS & PROTÉGÉS

Emerging into the light

A troubling feature of South Africa's research landscape is the ageing profile of the top researchers, which highlights the need for the transfer of skills to a new generation. Meanwhile, inexperienced young scientists are struggling in an increasingly competitive environment.

To address this problem, the University of Cape Town implemented in 2003 an institution-wide mentoring programme, called the Emerging Researcher Programme (ERP). Junior faculty members are paired up, for a defined time, with retired colleagues chosen for their outstanding research record and proven mentoring skills.

Open to all permanent staff, the ERP began with 46 self-identified 'emerging researchers'. Within three years, that number has grown to 170, about one-third of whom are scientists.

The idea is that, with appropriate mentoring, inexperienced staff will develop the skills and self-confidence to become mature researchers, capable of doing sustained, high-quality work.

The participants get an appropriate mentor for assistance with specific tasks — preparing an article for publication, for example. Meetings take place approximately twice a month until the task is complete.

In addition to the individual sessions, our mentors offer a series of seminars

covering topics such as writing grant proposals, project management, writing for publication, and career planning.

The university also provides an annual budget of 1 million rand (US\$157,000) for enlisted emerging researchers, guaranteeing modest funding for up to three years. The award process is competitive, requiring well-crafted proposals and committee evaluation, with post-award monitoring.

Unlike many mentoring situations, the ERP is structured and needs-driven. Formalizing the programme ensures that all participants have access to the same quality of mentoring, and makes it easy to monitor progress. Details of the participation level of both mentor and protégé, along with ensuing research output, are recorded in a database from which regular reports are generated.

The success of the ERP is measured against a set of key performance indicators, including peer-review publication, successful external funding proposals and promotions of the participating young researchers. Early indications are that the programme is achieving its goal. For example, in 2005 there were 17 promotions and a significant increase in publications. ■

Lyn Holness is the manager of the Emerging Researcher Programme at the University of Cape Town, South Africa.

GRADUATE JOURNAL

Off the straight and narrow

On the final leg of a PhD, your career options can seem claustrophobically narrow, with only the research track ahead. So how do you explore your options?

My solution was to enrol in a mentoring programme, organized by my labour union. Students are assigned a senior colleague, who acts as a mentor as you map the employment terrain, analyse skills and interests, and build networks. Along with the gratification of helping a younger colleague, mentors may gain from catching up on what's happening in science, or reflecting on their own career choices in a new way.

Through my mentor, I've met biologists working in fields from publishing and industry to legislation and government. At first, it felt a little embarrassing to admit to these successful professionals that I have no clue about my future, but the response has been sympathetic. Indeed, many seemed surprised by where they themselves had ended up. One woman was offered her job because the employer remembered her from a previous application — for a different post. Similarly, a high-ranking administrative career began as summer field work.

Paradoxically, the stories have taught me to plan less, rather than more. For a graduate student with little work experience outside university, the best idea is not to restrict yourself to one path, but be open enough to grasp unexpected opportunities. With a little exploration, the possibilities are endless. ■

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