

Leaders wanted

There's room at the top for more old-fashioned charisma, says **Colin Macilwain**.

Burt Richter, the Nobel laureate and physicist who used to run the Stanford Linear Accelerator Center in California, once had to entertain Dana Rohrabacher, a prickly Republican congressman inexplicably charged with overseeing his lab. Richter took Rohrabacher home to show off his extensive pistol collection. "I wanted him to know that not all physicists were wimps," Richter later told me.

Richter was of the generation that learned directly from the unfettered clique that built the atomic bomb. The veterans of the Manhattan Project had taken physics out of the university lab and into the big world of politics and quid pro quos. They bequeathed the culture that scientists could do it all for themselves.

An axiom of this culture is that major projects should be led by top scientists, with little input from engineers or, heaven-forbid, managers from business or industry. This is perhaps unsurprising, given the low esteem in which most scientists hold non-scientific training. It is nonetheless an aberration from what happens in other spheres of human activity, from construction to health care.

It would be daft to suggest that there was a 'golden age' of scientific leadership in which characters such as Richter sprang forth to occupy every major job. And science is still producing exceptional leaders who work their way into powerful positions: Steven Chu, the US energy secretary, and Leszek Borysiewicz, who moves on next month from the UK Medical Research Council to run the University of Cambridge, spring to mind.

But today laboratory and facility heads are often selected less for their intellectual brilliance than for being 'good committee men or women' who can cope with the bureaucracy now inherent to the task. The result is often mediocre management by individuals who can get by, but can't inspire.

The problem is most acute at major scientific facilities and at the agencies that run them, such as NASA and the US Department of Energy. Grant-giving agencies — even great ones, such as the US National Science Foundation — can roll along with leadership that is merely competent. But major facilities and laboratories — especially new ones, most especially in a recession — need truly inspirational leaders to enthuse staff, charm civil servants and politicians, and provide a face to



the outside world. That's on top of their routine tasks of setting budgets, choosing senior staff and setting out strategy.

There is a shortage of men or women who can combine the charisma of 'old-school' scientific leaders with the bureaucratic skills demanded today. Developing such individuals is a tall order; but efforts to do so must be encouraged. Unless these efforts succeed, it is hard to see how science will build future facilities that are truly remarkable in scope and ambition.

Bureaucratic behemoths

The leadership question has been highlighted this year by the shambles at ITER, the international fusion project. ITER last month replaced its director, former diplomat and nuclear engineer Kaname Ikeda, just halfway through his five-year term in office (see *Nature* 465, 143; 2010).

ITER represents a particularly daunting leadership challenge. Partly as a result of its longevity (ITER was conceived in 1984, and a brick hasn't been laid yet), the visionaries who might have got it built — such as Marshall Rosenbluth, a plasma physicist and protégé of hydrogen-bomb developer Edward Teller — are no longer with us. Placating its multiple international partners presents special difficulties, as does operating within the straightjacket lovingly provided by the CEA, the French atomic energy commission, which owns the ITER site at Cadarache.

But these are merely acute manifestations of the political, technical and administrative challenges that face the leader of any major scientific infrastructure project. These days, almost every discipline of science includes at least one such behemoth — commonly, a data management project to enable researchers to share the mountains of digital information that they now generate.

In Europe, plans for such projects have been

reviewed by the European Strategy Forum on Research Infrastructures (ESFRI). It has endorsed 44 such projects, ranging from a €13-million (US\$17-million) project called IAGOS, which would use commercial jets to gather atmospheric data, to the €1.3-billion European Spallation Source. Some of the projects involve large, single-site facilities; others would be distributed across several countries. All involve big sums of money, and will require considerable management acumen to bring to fruition.

Conscious of the need to identify and train future leaders, the European Commission is backing the Realizing and Managing International Research Infrastructures (RAMIRI) programme. RAMIRI organizes intensive workshops at which veteran managers, senior civil servants and aspirant leaders exchange knowledge on project management.

The first set of RAMIRI meetings took place in London, Hamburg and Grenoble last summer, under the tutelage of John Wood, an engineer at Imperial College London and an experienced research administrator. Another set of workshops is planned for next year, led by Carlo Rizzuto, president of the ELETTRA synchrotron at Trieste, Italy, and chair of ESFRI.

The University of Ljubljana is also starting a master's course next year in research administration. "We used to select scientists as leaders, on their ability to do science, and then leave them to make their own mistakes," says William Barletta, director of the US Particle Accelerator School, at Fermilab in Batavia, Illinois, who will help to teach the Ljubljana course. "People realize that projects are more complicated now, and that they need real training."

A key challenge for such efforts is to train talented scientists in the mundane aspects of project management — such as employment law — without scaring them off or ironing out the personality traits that make great leaders.

It is perhaps no longer possible to drive a great scientific project chiefly by force of personality. There is too much political accountability, too many rules, regulations, committees and milestones. Old bears such as Richter and Carlo Rubbia, the formidable but temperamental director of CERN from 1989 to 1993, might have struggled to cope with the constraints of today's management environment.

So it is good to see steps being taken to encourage individuals with the right stuff to rise up into management positions, rather than just sticking to their science, and recoiling from the hassle that leadership entails. ■

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