

Not quite shipshape

Japan is building a superb vessel for ocean drilling but seems reluctant to provide the necessary resources for using it. It is missing an opportunity to take a scientific lead.

The biggest and best scientific drilling ship ever is being built in Japan. It won't be ready for research until late 2006 at the earliest, but researchers around the world are already planning how to use it. The country had to dig deep to find the ¥60 billion (US\$550 million) for the ship, *Chikyu*, and the annual maintenance and operation costs are estimated at a further ¥6 billion.

The prospect of drilling holes down to the Earth's mantle is exciting scientists, but Japan is neglecting the more mundane preparatory seismic surveys of the sea floor. These surveys are essential for the scientific and operations committees of the Integrated Ocean Drilling Program (IODP), which allocate time on research drilling cruises, including those on the *Chikyu*. The survey data are used to judge the scientific merit, environmental impact and safety of proposals. Last week the IODP's science committee met in Japan to prioritize projects for 2005–6 (see page 795). These people are no pushovers; scrimping on survey data will not go unnoticed.

Even more troublesome is the neglect of human resources. When Japan became a full partner in the IODP in October 2003, the number of slots for Japanese researchers on each cruise rose from about 12 to 100 per year. But there have been no new faculty positions or student fellowships to exploit this opportunity. Japan is already having difficulty filling its slots on the committees that form the core of the IODP's decision-making. And Japan's only academic oceanographic research centre, the University of Tokyo's Ocean Research Institute, recently implemented a budget cut that cost five faculty positions.

Japanese researchers did well at last week's meeting. Two IODP projects to study the Nankai Trough were ranked second and third in

priority. These projects had been developed over several years with seismic studies included. They were finely honed. But researchers fear that similar groundwork is not being laid for future missions.

In industry, roughly 15% of the total drilling costs goes on site surveying. On that basis, Japan should spend at least US\$10 million per year. The United States, an equal partner in the IODP, spends at least this much, and some estimates put its annual support for various IODP activities at more than \$30 million per year.

Yet Japan currently has no funds allocated for seismic surveys, although the Japan Marine Science and Technology Center has funding for its own operations. Some researchers have proposed the creation of a funding framework like that in United States, but in the meantime, those hopeful of getting money for seismic surveys have to apply for competitive grants in an open field. The \$5 million or so needed for each survey is beyond the scope of such grants.

Japan has a history of buying expensive equipment, such as atomic force microscopes, but not of budgeting for the technicians needed to use it effectively. Frustrated researchers will tell you that the heads of their institutes and bureaucrats simply want to spend big budgets on devices they can show off, without following through to make sure that the science gets done. Too often, machines just sit idle.

This won't happen with *Chikyu*. Researchers from the United States, the European Union and China, among others, are competing for time on the ship. As last week's meeting showed, the slots will go to those who do their homework before coming to class. One way or another, Japan needs fully to support the science, so its scientists can take the leadership role they deserve. ■

PhD — club or history?

The decision by the University of Konstanz to retract the PhD of Jan Hendrik Schön is misguided.

There are good reasons why scientific misconduct tends not to be punishable in law. The distinctions between bad science, sloppiness, data manipulation and purposeful fraud are subtle and often difficult to establish. Fabricated results tend to be discovered, thanks to the self-regulating mechanism of research replication. Scientists will find their own means of punishment.

The case of Jan Hendrik Schön shows how effective this mechanism can be. The rise of the young German physicist at Bell Laboratories in New Jersey ended abruptly two years ago when the inability of competing groups to reproduce his results led to him being found to have fabricated data in at least 16 high-profile publications. Almost overnight, the former *wunderkind* became a *persona non grata*.

The University of Konstanz has now decided that this is not the end of the story. In a bid to repair the damage done to the reputation of science, it has withdrawn Schön's PhD, which he obtained there in 1997 (see *Nature* 429, 692; 2004). An internal investigation last year concluded that his thesis was free of false data. But the university says that Schön has abused his entrance ticket to the academic world in such a malicious and irresponsible way that he forfeited his academic consecration. The "dignity" of the doctorate is at stake, it says.

Some will applaud this move. It is a clear warning to all scientists that honesty and good practice are life-long duties. The University of Konstanz, after all, has a right to dissociate itself from fraudsters taking advantage of its name. And when it comes to scientific misconduct, surely we need a policy of zero tolerance.

Well, yes, up to a point. But there is a sense that scientists are taking revenge for a particularly high-profile piece of misconduct that cast a wide shadow. Is Schön being made a scapegoat for the community's broader imperfections? And is it more reprehensible to cheat in physics than in biomedicine? After all, no one ever questioned the PhDs of Germany's most notorious science fraudsters, cancer researchers Friedhelm Hermann and Marion Brach, who fabricated data in about 100 papers.

At the heart of the issue is a question about the status of a PhD. The dignity of the degree is more threatened by the tens of thousands of fake PhDs available for sale than by one researcher going astray. No one doubts that Schön obtained his doctorate for a scientific achievement. The decision to revoke it implies that the PhD is a club membership that can be withdrawn. *Nature*, on the other hand, sees the PhD as a piece of history that cannot, and should not, be rewritten. ■