

Academies must engage with society

As the UK Royal Society prepares for a festival celebrating its 350th year, **Yves Quéré** urges all scientific academies to welcome women and young scientists and to take part in public and political discourse.

Recently I asked a group of French teenagers what they thought an academy was. After a long silence, one boy ventured: "I think... it is a club of old gentlemen." He put his finger on three of the most common failings of scientific academies. They have few female members, few young members and they act too much like private clubs instead of speaking up on crucial matters of science and technology.

Before looking at how to make academies more relevant and effective, it is worth reflecting on why they exist. Since the establishment in 1603 of the Lincean Academy in Rome (pictured) — the first national academy of sciences of modern times — the idea behind such organizations has been to promote the role of science in society and politics, and support scientists and science education. The best ones have come to embody three attributes. One is scientific expertise, because membership tends to be restricted to a nation's top scientists. Another is independence from external political, economic, religious or social pressures, enabling academies to speak openly on any matter. The last is stability in the face of constantly shifting social and political landscapes, because members are generally elected for life.

There are several crucial ways in which academies can champion science and technology in their countries. The first is to promote excellence in scientific research and stimulate the public understanding of science, for example by awarding grants, publishing high-level proceedings or organizing public debates. They can also release reports on issues of public interest, such as the US National Academies' *On Being a Scientist: A Guide to Responsible Conduct in Research*, published in 2009.

Second, academies can mediate between scientists and politicians. This role has been pioneered particularly successfully by the UK Royal Society, which celebrates its 350th anniversary this year. In 2001, the Royal Society established a scheme that pairs scientists with a Member of Parliament (MP) to help scientists understand the parliamentary process and the pressures that politicians work under and to help MPs to improve their knowledge of how science works. More than 170 of these pairings, which involve reciprocal visits to the Houses of Parliament and to research facilities, have been established. Inspired by this, the French Academy of Sciences launched a similar project in 2005 in which an academy member teams up with a member of

the French parliament and a promising young scientist. So far about 50 of these three-way partnerships are up and running.

Third, academies can bolster science education. For example, those of Australia, France and the United States have pioneered a worldwide effort to promote a hands-on approach to teaching science in schools, known as 'enquiry-based learning'. This has led to specially tailored education initiatives in many countries. Fourth,



Many national academies are seen as private clubs.

academies can help boost science in less developed countries by giving financial support to scientists, such as the many grants and fellowships offered each year by TWAS, the Academy of Sciences for the Developing World, in Trieste, Italy. Last, academies can help increase prestige for scientific disciplines by organizing prizes, such as the Nobel prizes awarded by the Royal Swedish Academy of Sciences.

International responsibility

Science academies can also have an international role in issues such as the technology divide between developed and developing countries and the international response to natural disasters. One example is the Independent Review of the IPCC Assessment Process being done by the InterAcademy Council (IAC) — a group of 15 national academies, hosted by the Royal Netherlands Academy of Arts and Sciences in Amsterdam — at the behest of UN secretary-general Ban Ki-moon. The IAC will deliver its report at the end of August.

Crucial to the coordination of such work is the IAP (formerly the InterAcademy Panel). This global network of more than 100 of the world's science academies is the parent body of the IAC. IAP activities include: helping

nascent academies to strengthen their roles as independent advisers to governments; exploring how science and technology can improve the forecasting and management of natural disasters such as the earthquake in Haiti in January; and expanding electronic access to scientific information, such as to online journals and in developing countries. The IAP also delivers short statements aimed at the United Nations, governments or the general public on behalf of its members on controversial global science-related issues, such as bioweapons and the teaching of evolution.

Despite all these positive actions, many academies of science are too passive and too reticent to speak out on important issues. Often, their members are content to accept the distinction of membership without meeting the obligations that come with it. The suggestion in March by Alhassan Zaku, the former Nigerian minister of science and technology, that African science and technology academies are not doing enough to accelerate the continent's development, could apply to academies in a number of countries globally. All academies have a responsibility to contribute to public debates on science and technology, particularly in cases where there is scientific misconduct, where scientists are the victims of human-rights abuses or where science or education is under- or misrepresented or poorly funded. A continued failure to meet these obligations calls an organization's credibility into question.

Encouragingly, many academies have started to change, for example by increasing their public profile and their networking, such as through the IAP and IAC and by increasing their numbers of young and female members — only in the academies of Latvia, Cuba, South Africa and Mexico do women make up more than 20% of the members. Above all, to remain relevant and useful, academies should keep sight of their fundamental responsibility: to promote the idea that science is both a magnificent adventure for mankind and a necessary force for development and therefore a source of hope for the most deprived people on the planet. ■

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