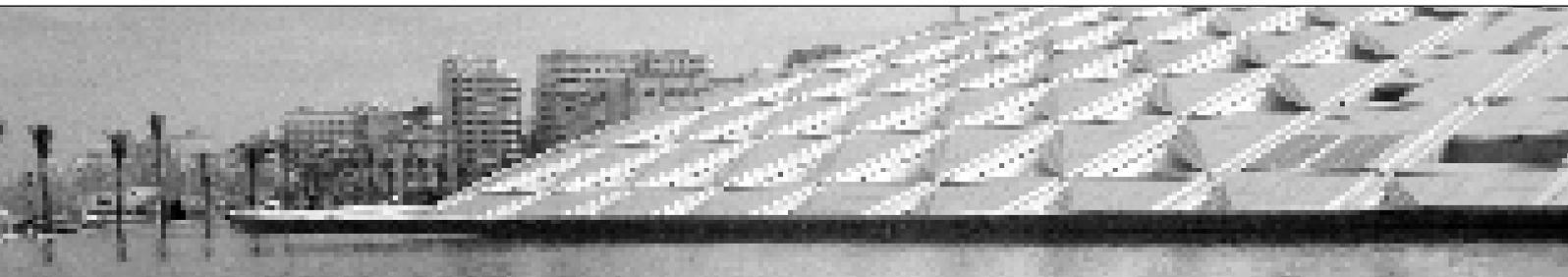


SCIENCE ACADEMIES FORWARD TOGETHER

FOLLOWING THE FIFTH GENERAL ASSEMBLY OF THE INTERACADEMY PANEL ON INTERNATIONAL ISSUES (IAP) HELD IN ALEXANDRIA, EGYPT, IN DECEMBER 2006, YVES QUÉRÉ STEPPED ASIDE AS ONE OF THE ORGANIZATION'S TWO CO-CHAIRS. HERE, HE RECOUNTS THE HISTORY AND IMPORTANCE OF IAP SINCE ITS INCEPTION IN 1993. HE ALSO OUTLINES HIS HOPES FOR THE FUTURE OF THE ORGANIZATION.



When discussing the origins of learned societies and academies, three cities come to mind: Athens, Alexandria and Rome, each on the shores of the Mediterranean sea.

Athens is where Plato gathered his disciples in the garden of Akademos to practice the art of reasoning. Alexandria is where much of the knowledge of the ancient world was recorded on 700,000 scrolls in the city's renowned library, a unique centre for science and philosophy that Ismail Serageldin (TWAS Fellow

2001) has revitalized so brilliantly in the new Alexandria Library. Rome is where the first modern academy of sciences was established in 1603 under the tutelage of an 18 year-old Roman, Federico Cesi, whose inspirational monograph, 'Il naturale desiderio di sapere' ('The natural desire to know'), spurred the creation of the Accademia dei Lincei.

Other regions and nations across Europe soon followed the Lincei's example, creating not just forums

for debate but privileged centres for discovery: the Royal Society, London (1660), the Académie des Sciences, Paris (1666), the Deutsche Akademie der Naturforscher Leopoldina (1687) and the Royal Swedish Academy of Sciences (1739).

During these early years, royal families would often seek to control or channel the debates that took place at science academies and, at times, even put a halt to such 'dangerous' ideas as 'the natural rights of man'.



Nevertheless, academies, from the time of their origins in the ancient world to their reincarnation in 17th century Europe, have always viewed themselves as centres of intellectual ferment and influence and as homes of innovation and progress. It is a sentiment that has persisted to this day and it is a sentiment that led to the creation of the InterAcademy Panel on International Issues (IAP) nearly 15 years ago.

Participants at what came to be the founding conference of IAP, in New Delhi in 1993, called for the creation of a 'global assembly of academies of sciences' that would draw on the long and fruitful history of science academies as repositories of scientific knowledge and forums of scientific debate and discussion: in short, that would help academies, the 'symphonies of science', play their enduring notes of science-led progress on an even larger stage.

What, then, do these 'symphonies' have in common and how can academies work in concert to take advantage of their collective

expertise? Here are three principles that set academies apart from other institutions.

Scientific talent. Science academies are designed to include some of the most accomplished scientists in their countries. Members are elected solely on the basis of merit. "An academy," in the words of one learned academy member, "is good if, and only if, it is not possible to form a better one with scientists who do not belong to it."

Independence. Science academies must honour and protect freedom in speech, writing and action. At the same time, science academies, which are often sponsored directly by government, must recognize that their independence is not an absolute. There are always political and financial matters to consider. And it is also true that external cultural and even ideological factors sometimes shape an academy's agenda as well.

Perfection is impossible. Academies, after all, are part of the imperfect world in which we all

live. Academies, however, must not mortgage their soul. They must, in effect, act at all times in accordance with their principles. That means they must give forceful expression to the power of reason and unflinching support to human dignity. That was the case in the 1970s when the academy of sciences in the former Soviet Union refused to expel the dissident physicist Andrei Sakharov despite intense pressure from the government to do just that.

Stability. Academies must embrace – indeed take advantage of – the stability that infuses their institutions, largely because members are elected for life. Stability could prove an increasingly valuable attribute, especially in societies where leaders come and go and societal debates often spur more discord than harmony. But stability could lead to stagnation if, as is true in some cases, the institution becomes a home for the aged. To counteract this problem, several academies have reformed their voting procedures to encourage

the election of 'younger' scientists – for example, by requiring half of all newly elected members to be less than 50 years old.

These are some of the shared attributes that the founders of IAP hoped to build on when they came together in New Delhi in 1993 to begin the process that would lead to the creation of IAP.

The founders had two interrelated concepts – objectives, if you will – in mind: to help academies undertake more determined actions in their own countries and to encourage cooperation among academies, especially for the purposes of promoting scientific and technological capacity in the developing world.

Translating the concepts outlined in New Delhi into a functioning network of science academies would occur gradually over the next decade.

The heart of IAP would reside with its membership consisting of merit-based national science academies. Sherwood Rowland, a Nobel Laureate in chemistry (1995) and foreign secretary of the US National Academy of Sciences, and Prakash N. Tandon, president of the Indian National Science Academy (INSA), were appointed co-chairs of the fledgling organization. A steering committee was formed, consisting of 11 academies. The Royal Society in the UK graciously agreed to serve as a temporary secretariat.

IAP's first visible signs – at least to the public – took the form

of membership-authorized statements on critical science-based issues: a statement on 'Population Growth' in 1994 and another on 'Urban Development' in 1996 reflected the membership's collective concerns and outlined how the involvement of the global scientific community in general and national science academies in particular could play a critical role in addressing these issues.

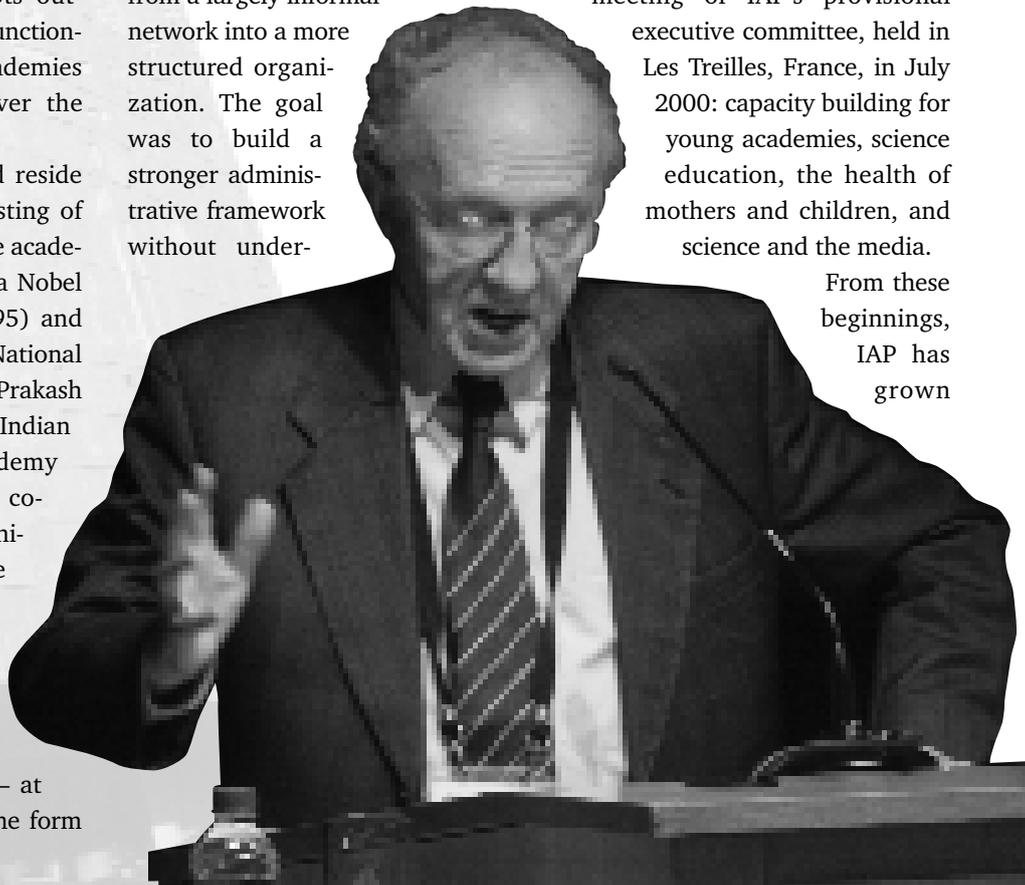
IAP concluded its first decade by organizing a general conference, 'Transition to Sustainable Development', which took place in Tokyo in May 2000.

In Tokyo, IAP members took several important steps designed to transform the organization from a largely informal network into a more structured organization. The goal was to build a stronger administrative framework without under-

mining the collegiality and goodwill that had helped to get IAP off to such an auspicious start. Participants in Tokyo adopted provisional statutes, elected two new co-chairs (Eduardo Krieger, president, Brazilian Academy of Sciences and Yves Quéré, foreign secretary, French Academy of sciences), chose TWAS to serve as the new host academy for the secretariat and created a provisional executive committee comprised of five science academies from the developed world and six from the developing world.

Realizing that action and not simply words were required to induce the academies to cooperate effectively, four programmatic themes were selected at the first meeting of IAP's provisional executive committee, held in Les Treilles, France, in July 2000: capacity building for young academies, science education, the health of mothers and children, and science and the media.

From these beginnings, IAP has grown



into a vigorous organization that is now recognized worldwide as a significant voice for the promotion of science-based development. The organization has retained its collegiality by ensuring that the members remain the primary force driving the programmes and initiatives.

One member organization is usually given lead responsibility for a major activity (for example, TWAS oversees IAP's capacity building programme for young academics). Other member academies serve on internal evaluation committees, host their own meetings and conferences based on IAP programmatic themes, partner with other scientific or development organizations, and seek to interact with their governments on science-related issues of critical concern to their nations.

IAP's executive committee helps coordinate the organization's efforts, moving things ahead in an orderly manner. The committee meets twice a year and, throughout its six years of existence, attendance at the meetings has never been below 95 percent. That is a tribute to the commitment and dedication of its members and a strong indication of their belief that IAP is a valuable, results-oriented organization.

Workshops, symposia, reports and documents have been staple features of each of IAP's major, long-term programmes. These include capacity building for young academics (led by TWAS); science education (Chilean Academy of Sciences); women's health education

(French Academy of Sciences); and water research and management (Brazilian Academy of Sciences).

Let me cite one example of how a single IAP activity spurs multiple events, much like a good interest rate in a savings account has a salutary compounding effect on the capital that has been invested. IAP's science education programme helped to generate 'An Evaluation of Inquiry Based Science Education' (IBSE). This, in turn, gave rise to four lively and intensive meetings: two symposia in Stockholm in 2005 and Santiago in 2006, and two workshops in Washington, DC, and Paris in 2006. All told, 15 science academies and numerous outside organizations have been involved in this effort, offering reports and recommendations that have helped to influence discussions on science education around the world.

IAP's short-term initiatives often lead to the publication of a report or statement. Examples include a project exploring the current state of access to scientific information (led by the US National Academy of Sciences); biosecurity (the Royal Netherlands Academy of Arts and Sciences); genetically modified organisms (Union of German Academies of Sciences and Humanities); and natural disaster mitigation (Chinese Academy of Sciences).

IAP has issued a total of 12 statements, each ratified by a large number of member academies. The consensus opinion offered by IAP in these statements is designed to add authoritative insight into debates that are often fuelled by passion

and suspicion. In 2003, IAP published a statement on human reproductive cloning (coordinated by the Royal Society in the UK); in 2005, it issued a statement on biosecurity (coordinated by the Royal Netherlands Academy of Arts and Sciences); and in 2006, it published a statement on the teaching of evolution (coordinated by the French



Academy of Sciences and US National Academy of Sciences).

Some of these statements have carried significant weight. For example, the statement on human cloning received a great deal of attention at a debate held by the UN General Assembly in November 2003. And the statement on biosecurity was widely distributed at the UN meeting of experts of the biological weapons convention in Geneva late last year.



One measure of IAP's growing strength is the expanding range of contacts that it is forging with other organizations.

On the international level, contacts include the United Nations Educational Scientific and Cultural Organization (UNESCO), the International Council for Science (ICSU), the InterAcademy Medical Panel (IAMP) and the InterAcademy Council (IAC), where IAP members have served as advisors in the preparation of reports on critical science-related issues. On the regional level, this has led to close cooperation with regional science academy networks in the Americas, Europe, Asia, Africa and the Islamic region, each of which is now an official observer of IAP. At the national level, it has led to increasing interaction with, for example, ministries of science and technology and education, as part of a cooperative effort to improve national science and technology policies and reform scientific education.

From its uncertain beginnings in New Delhi to its first efforts in Tokyo to transform itself from a

fraternity of good will into an organization of action and results, to its most recent efforts to become a major force in the world of science and development, IAP has evolved into a mature institution with great promise. What does the future hold for IAP and, more importantly, what are the prospects that the organization will make even more significant progress in achieving its goals in the future?

At IAP's 5th General Assembly in Alexandria, the membership officially endorsed a strategic plan for 2007-2009, skillfully drafted by Albert Koers, who until recently served as the executive director of IAC. More than 40 members offered comments and suggestions on the plan, which greatly improved both its purpose and clarity.

While the plan contains many details for action, it is largely driven by the notion that IAP need not radically change course. The plan does not propose a revolution. Instead it focuses on the mundane but critically important task of achieving greater efficiency.

IAP is not a cosy club where the

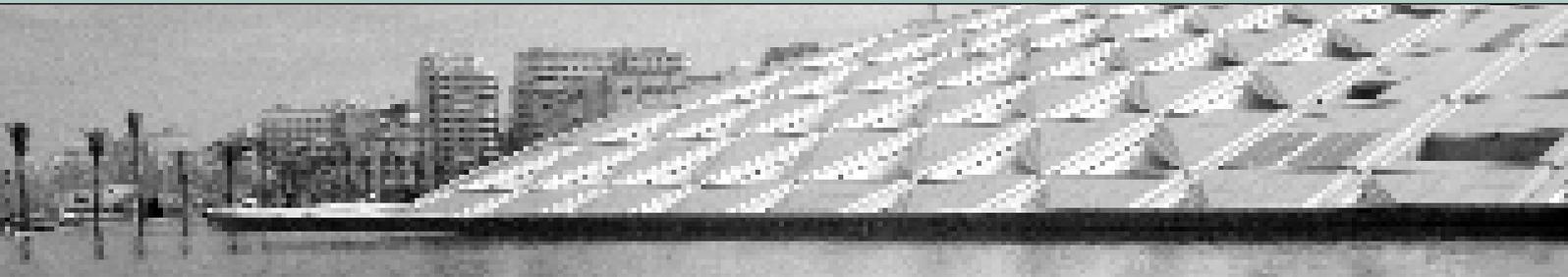
world's most critical problems are discussed leisurely among friends lounging in leather arm-chairs. But neither is it a hotbed of radical debate and ferment.

Instead IAP is an institutional network where reflection and action come together as part of a larger effort to elevate the presence of science within society. IAP, in brief, seeks to serve as a forum where the most critical issues of the day can be discussed in an atmosphere infused with reason, openness and intelligence.

When I recently asked a group of French teenagers what they thought an academy of science was, one boy, after a long silence, ventured: "I think it is a club of old gentlemen."

A *club*? Certainly an accurate description of its past. *Old*? That's often been true in body and sometimes in mind. Of *gentlemen*? Here, the teenager touched a nerve. After all, women constitute less than 5 percent of the membership in most academies.

These perceptions, which at least partially reflect reality, must



be overcome if IAP and its members are to advance their goals.

Imbued with scientific talent, driven by intelligence and independence, enjoying great stability in a time of unprecedented and often unexpected change, science academies have an obligation to speak out and to become more actively involved in society.

Academies must have their say and do so with the vigour and authority equal to their knowledge and expertise. But they must approach the discussions with a sense of humility based on the notion that they have acquired their wisdom through long periods of study and reflection and that others must also have their say for society to chart a better course of action for addressing the complex issues that we all face.

We live at a time of great risk and great opportunity. We have witnessed a period in which the importance of science to society has been reaffirmed and embraced. IAP has been a part of this welcome trend.

I am honoured to have served as co-chair of the organization during these challenging years of growth and development. I would like to thank everyone who has made my participation in IAP so enjoyable and productive: our many partners

and supporters, most notably the Italian government for their generous contributions; the dedicated and hardworking members of the secretariat in Trieste; my energetic, committed and talented co-chairs serving on the executive committee, initially Eduardo Krieger and subsequently Chen Zhu; and, of course, the representatives of IAP's member academies, the backbone of our organization and the reason for its success. It has indeed been an honour to work with all of you.

Let me conclude by outlining the principles that I believe have guided IAP's development to this point and that will continue to guide IAP in the future.

First, that science is a necessary force for development, and therefore a source of hope for the most deprived people on our planet; and that, in the decades and centuries to come, it may be recognized as the only effective tool for defending this planet against the stresses we place upon it.

Second, that science, in its unity of purpose, its commitment to excellence and as a symbol of human culture at its best, sheds light not only on what we know but on what we don't know, guiding our curiosity towards new questions in an endless quest for

human understanding and betterment.

When examined carefully, the methods by which science works and accomplishes its goals provide a useful warning against the pitfalls of arrogance, for which scientists are not always innocent. The purpose of science is not to dictate the truth about the world, but to discover scattered elements of truth, among other equally valuable scattered elements of truth in art, philosophy, religion and all other human endeavours.

IAP will undoubtedly enlarge its scope of action, not only spurring change among its member institutions but also emerging as a unique institution in its own right, dedicated to advancing the growing conviction across the globe that science must play a key role in promoting sustainable and equitable development both as a moral right and a pathway to a more peaceful and harmonious world. ■

...✦ Yves Quéré

IAP co-chair (2000-2006)