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A global vision

The International Council for Science needs to define its mission and show its members that it is worth their membership fees.

If you are a research scientist and a fee-paying member of your relevant national or international professional society, then some of your cash probably goes to fund the ICSU. What is the ICSU? The acronym stands for the International Council of Scientific Unions, but the organization now calls itself the International Council for Science.

If you are asking what it does with your money, that is a good question. The ICSU and others have been asking the same thing.

The council has its secretariat in Paris, but in the past decade has opened regional offices representing Africa (based in Pretoria, South Africa), Latin America and the Caribbean (in Mexico City), and Asia and Pacific (in Kuala Lumpur, Malaysia).

Dozens of national scientific organizations from around the world are members of the ICSU and pay dues for the privilege. But that number will soon shrink by one.

Members of the International Union of Biochemistry and Molecular Biology (IUBMB) have decided to go it alone. The organization has told the ICSU that it has cancelled its membership, effective from 1 January 2015. The IUBMB felt that it was not getting value for money: “The visibility of the ICSU on the international stage and its impact on science policy were considered insufficient to justify such expense,” it said in its resignation letter in September.

In an increasingly crowded marketplace for scientific bodies, the ICSU has to get its act together — and fast — if more of its members are not to follow suit.

Angelo Azzi, a vascular biologist at Tufts University in Boston, Massachusetts, and past president of the IUBMB, says that it is not about the money — the IUBMB paid just €3,395 (US\$4,240) in membership fees to the ICSU this year — but about the principle. Other grievances that the organization listed in its resignation letter include a lack of transparency over internal committee appointments, disproportionate expenditure on internal meetings compared with scientific activities, and lack of involvement of young scientists.

None of this would matter if the ICSU had not shown that it is capable of doing good things. It has — and they are worth paying for. Its flagship Future Earth programme, for instance, is a well-regarded global research platform for projects on sustainability.

It just needs more such efforts. An external expert-review panel that analysed the ICSU’s operations and submitted its report in July, ahead of the ICSU general assembly in Auckland, New Zealand, got that feeling too. As well as having low visibility, the ICSU lacks a clear vision, the panel said. The ICSU posted the report on its homepage last week.

In fact, the report criticizes most aspects of the ICSU’s operations. It offers a dire warning, saying that if the ICSU does not take its recommendations into account, “there is a serious risk that it will wither on the vine and become irrelevant over the next few years”.

The recommendations are that the ICSU should define a vision, adopt a strategy and put in place a plan to achieve both through a limited number of flagship projects. The vision, it says, should distinguish the

ICSU from other worldwide scientific players, such as the InterAcademy Council and the IAP, a global network of science academies, as well as the Global Research Council created in 2012. Furthermore, the ICSU’s governance needs to become more transparent, and more inclusive of gender and diversity agendas. The regional offices, which get most of their financing from local sources, need to have much more clearly defined relationships with the ICSU’s secretariat, governance and executive board.

“In an increasingly crowded marketplace, the ICSU has to get its act together.”

The report also criticizes the lack of balanced representation of all sciences in the ICSU’s activities, pointing out that biology does not get much of a showing. And it notes that the recommendations of the most recent previous review, back in 1996, have not been fully implemented.

The ICSU’s president, climatologist Gordon McBean of Western University in London, Canada, says that the organization is taking the report very seriously.

To be fair, the ICSU has a modest budget for a global organization: last year it brought in just €4.2 million. Much of that came from the subscriptions of its members, but €500,000 was provided by the French government. Still, as the report shows, getting the organization straight need not cost money. And scientists on the ground have the right to know what is being done in their name. ■

Save the museums

Italy’s curators must band together to preserve their valuable collections.

Fausto Barbagli’s first curation job was at the University of Pavia in northern Italy. It was the end of the 1990s, and the university was finally starting to pay attention to its valuable but long-neglected zoological collections.

Barbagli is passionate about birds, so he was distressed to find that the labels had fallen off 700 precious taxidermied specimens, devastating their scientific value. A well-intentioned but untrained staff member had decided to spruce up the collection, gifted to the university three decades earlier. He had painted the birds’ pedestals — onto which species names had been inscribed — and had fixed neatly typed labels to their feet with rubber bands. As any professional curator knows, rubber perishes.

This story is emblematic of what has happened in historic scientific collections in universities and museums around Italy — some of

the oldest and most valuable in the world. Now, there is a chance to improve the situation. It must be taken.

To preserve history, one must sometimes fight against it. Recent years have not been kind to such collections. When taxonomy went out of fashion in the 1970s, universities pushed aside physical specimens to make room for modern biology laboratories, and lost interest in paying for proper curatorship. Museologists in Italy estimate that at least one-third of all biological specimens — and items in other scientific collections such as geology or old physics instruments — have been lost to rotting or bad practice.

The past decade of financial crisis has only made the situation worse. Many of the remaining specialized staff retired and were not replaced. Some important collections have no curators at all, including the Regional Natural History Museum of Terrasini in Sicily, home to 10,000 stuffed birds and 1,500 entomological cases. The country has no professional courses that could train the next generation of curators. Special funding for small museums is close to zero.

Last month, Barbagli helped to organize a meeting of museum and scientific-collection experts in Rome, to work out how to turn the situation around. He did not have to look too far. Collections in Germany have also suffered neglect, but researchers there seem to have a solution.

German museologists organized themselves into a united front. They catalogued their collections and began a protracted lobbying campaign — until the Wissenschaftsrat, Germany's national science-policy advisory body, understood what would be at stake if collections continued to be lost. In 2011, it issued a report that described collections as an

“indispensable basis” for research from anthropology and archaeology to geoscience and the history of art. This report — essentially declaring collections to be a valid research infrastructure — smoothed the way for change. A national coordination centre has now been established that offers resources and advice to any researcher, directing them to materials kept around the country.

“Museologists estimate that at least one-third of all biological specimens have been lost.”

Italian museologists have now started to organize themselves in the same way, cataloguing collections. They have wisely decided not lose time asking their cash-strapped government for financing, but to call instead for a better organization to protection their scientific heritage at a national level.

In 2004, Italy legally recognized the value of its scientific heritage and placed it under the control of the ministry of culture, alongside objects of art. But that ministry lacked the scientific experts who might have established a meaningful protective organization.

Responsibility for scientific heritage would be better embedded in the ministry for science. Ideally, small museums would organize into a network, grouped according to scientific field rather than location. This network would be headed by a few ministry officials who would make sure that resources and academic expertise are shared appropriately.

Italian museologists should unite to push for such a structure, which would cost next to nothing but be highly effective. They need to move quickly, and to argue with a single voice. As their colleagues in Germany have shown, the rot can be stopped. ■

ANNOUNCEMENT

Data-access practices strengthened

In our continued drive for reproducibility, *Nature* and the Nature Research journals are strengthening our editorial links with the journal *Scientific Data* and enhancing our data-availability practices. We believe that this initiative will improve support for authors looking for appropriate public repositories for their research data, and will increase the availability of information needed for the reuse and validation of those data.

In 2013, Nature journals introduced new editorial measures to promote reproducibility, and we continue to evaluate their impact and refine our policies. Our newly strengthened data-availability practices (go.nature.com/o5ykhe) reflect our preference that data be deposited in public repositories, and encourage researchers to expand on work published in the Nature journals by publishing further information in *Scientific Data*.

Community-supported, specialized data repositories are usually the best way to share large data sets. General, unstructured repositories, such as figshare and Dryad, provide options where no community repository exists, and are preferable to publishing data as Supplementary Information. Supplementary materials have size limitations and do not always provide optimal file and viewing formats, particularly for large and complex data sets. But where no repository — or publication focused on detailed descriptions of data sets — exists, supplementary materials have often been the best option.

Scientific Data (go.nature.com/iyu9qh), which launched this year, offers authors another way to maximize the value of their data sets for further research — for themselves and for the scientific community.

Its primary article type, the Data Descriptor, provides more detail to improve the data's discoverability, interpretability and

reusability — as well as allowing the highest credit to be given to the authors who created the data set.

We are now rolling out a new process under which, when they accept a manuscript containing appropriate data sets, editors of *Nature* and Nature research journals will encourage authors to submit the data sets to *Scientific Data* as a Data Descriptor (go.nature.com/utfvfo).

Authors may also submit a Data Descriptor manuscript alongside a manuscript for a Nature journal. If appropriate, they could publish the descriptor first, without compromising the novelty of future primary-research articles based on the data. In these cases, authors are encouraged to consult with the editor of their target journal to ensure that prior publication of a Data Descriptor is acceptable. (Note that other publishers may have different policies.)

Scientific Data's peer-review and in-house curation processes focus on ease of reuse. A data-curation editor reviews data files, checks their format, archiving and annotations, and works with authors to produce a standardized, machine-readable summary of the study in the ISA-Tab format (S. Sansone *et al. Nature Genet.* **44**, 121–126; 2012).

Data Descriptors can accommodate all data types, including raw data and updated data sets generated after initial publication. They can also show the controls required for validation of the data set, which may have been excluded from the primary paper because of space limitations. *Scientific Data's* editorial process assesses repositories and helps to ensure that data are placed in the correct one. *Nature's* enhanced data-availability policy now directs authors to a list of approved repositories (go.nature.com/jpm768).

Several articles published in Nature research journals already have complementary articles in *Scientific Data* (such as A. Baud *et al. Sci. Data* **1**, 140011 (2014) and F. Roquet *et al. Sci. Data* **1**, 140028; 2014). As science evolves and produces ever-increasing amounts of data, those data must be collected, organized, curated, quality-checked and made available on the right platform so that they can be easily discovered and reused. Stronger links with *Scientific Data* and our data-availability practices aim to achieve this. ■