

The case, once more, for a united academy of sciences of India

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The recent *Bt* brinjal report brouhaha following the joint recommendation of six national academies and the rejection of this report by the Government of India has prompted me to ponder over our three science academies. What are they doing and not doing, what are they supposed to do, is their present condition satisfactory and why did they get it so wrong this time around?

Amongst the questions being asked, especially after the 'eggplant on the face' fiasco^{1,2}, is whether there is a case for a united science academy in the country. This question has been asked before. The flag was first raised in 1947. The arguments put forth then were delineated in some detail by S. Ramaseshan in this very journal in 1994 (ref. 3). A brief report by K. S. Jayaraman⁴ on Ramaseshan's article appeared in *Nature* shortly thereafter.

Throughout this commentary, I will refer to the Indian National Science Academy, the National Academy of Sciences India and the Indian Academy of Sciences as the Delhi, Allahabad and Bangalore academies respectively, and this purely for convenience as the names of the three academies are similar enough to confuse.

The Allahabad academy, founded in 1930, is the hoariest of our science academies⁵. A clash of wills between C. V. Raman and M. N. Saha led to the subsequent founding of the Bangalore and Delhi academies in 1934 and 1935 respectively. All three academies retained strong individual identities until the 1970s, especially as to their regional character, acquiring latterly a more holistic composition. Today, at least half of the fellows of any one of the three academies are also fellows of the two other bodies.

In 1947, a few months before independence, a committee under the chairmanship of C. Rajagopalachari was constituted to find ways and means of uniting the three academies. All the three academies were in favour of unification in principle, but the proposal collapsed over the fine print. The Delhi academy insisted that the three academies transfer their properties legally to the new united academy. Raman, representing the Ban-

galore academy and Saha, who represented the Allahabad academy demurred. Saha also desired that nominees of the Allahabad academy be allotted a certain proportion of seats in the executive and the fellowship of the united academy, a quota system as it were. Raman and Saha's refusal to transfer land was unacceptable to S. S. Bhatnagar, who represented the Delhi academy in Rajaji's committee. Saha's demand for quotas was acceptable to neither Raman nor Bhatnagar. Rajaji expressed helplessness: the matter fell through.

These events have since become history. What are the academies doing now?

There is no doubt that the three academies are trying their best to promote science and scientific temper in the country. Each academy seems to have isolated niche activities within which to function. The Bangalore academy is noteworthy for its journals and scholarly publications. The Delhi academy, with a natural importance as to its location in the nation's capital, is recognized for its cautious policies in electing its fellows. It acts as the formal affiliating body to international scientific organizations of the International Council of Scientific Unions (ICSU). It also coordinates many international scientific programmes between Indian and foreign scientists. The Allahabad academy has liaised effectively with industry and along with the Delhi academy, has instituted many commemorative lectures, endowments and prizes.

Most of the activities currently being undertaken by our academies, whether in publishing journals or books, instituting lectures, endowing prizes or publicizing science, can be done by other bodies. But there is one role that only an academy can and should play. This is the dispensation of dispassionate, unbiased advice to the government on scientific matters, as a credible nodal agency for scientific authority. The authority of any scientific academy should be moral rather than executive or legal. It is this moral endeavour that would compel the government to pay heed to any advice and opinion tendered by an academy. Yet unfortunately, this is the only activity

that our science academies seem to have balked at, as evidenced in the recent aubergine episode.

One must distinguish here between the giving of advice, the decision as to whether this advice is worth taking and finally the implementation of decisions on scientific matters. It is only the first of these three activities that is the preserve of scientists and academies. The second activity is properly the concern of the politicians while the last activity is the responsibility of bureaucrats. At the present time, there seems to be a great blurring and mingling of all these domains. In the first place, our academies are rarely approached by the Government of India for advice on scientific matters. The recent *Bt* brinjal case was practically the first time in recent years when a minister approached the science academies for their opinion on an important and controversial scientific matter. Usually, advice is sought from scientist-bureaucrats who head government departments and more lately from scientific advisory committees (SAC) of which we have two, one affiliated to the Prime Minister and one to the Cabinet. The distinction between these two SACs and why we have two of them is mystifying. One assumes that the Prime Minister is synonymous with the Cabinet in the Westminster system of government that we have adopted.

When the government does not have confidence in the science academies, it increasingly tends to approach ad hoc bodies and even individual scientists. There is an intrinsic conflict of interest when the government approaches its department secretaries or its two SACs for scientific advice. In the first case, the scientist-bureaucrat is directly responsible for implementing broad government decisions. How then can such a person be expected to give completely unbiased and technically superior advice to the government on topics as contentious, diverse and technical as climate change, water, genetically-modified crops and solid drug polymorphism? In any event, the department secretary is (or should be) a generalist, not a working scientist. In the second case, the SACs are appointed

by the government only to give advice back to the same government! Who is to say, whether or not a SAC member would ingratiate himself by pontificating on what he feels the government wants to hear or is politically expedient at the given time?

Ramaseshan³ put it succinctly when he said 'Advice to Government must be given through an Academy not by individuals chosen by Government as was done in the case of the Scientific Advisory Committee to the Cabinet and later the Scientific Advisory Committee to the Prime Minister. For such a choice would be tantamount to showering patronage on a few favoured scientists and this would encourage sycophancy'. How true! I would hazard a guess and say that if exactly the same members of SAC who were nominated by the government were nominated by a science academy, their opinions would have far greater impact with the same government simply due to the formal, democratic procedure by which the science academies choose their fellows. The same or similar procedures would, in all likelihood, be used to nominate members to SACs.

The group that parts with scientific advice should have no concern or interest on whether or not this advice is accepted by the government, thus ensuring that the advice given is scientifically accurate and trustworthy. Politicians and bureaucrats are not scientists. But they have to take decisions on scientific subjects. Is it not fair for them to demand from us that the advice we give them is the best possible? If we are to maintain our credibility, the advice we tender has to be of the maximum moral and scientific stature. This can only happen if the body in whose name the advice is given is a science academy of powerful academic credentials.

Let us come now to the question as to whether or not a unification of the three science academies will render a united science academy more powerful and influential in scientific terms.

First, let us take up the obvious feature of size. The fellowship of a united academy will necessarily be larger than that of any of the three presently existing science academies. Any plan to unify the academies must begin with the premise that all fellows of any of the three academies will be fellows of the united academy. This would mean that the united academy would have a total fellowship

of around 1500. This is a respectable total for a major country that is aspiring for a higher profile in the world of science and compares well with the 1400 fellows of the Royal Society and 2100 fellows of the US National Academy. A larger fellowship means a greater range of scientific opinion and dissension and this is of utmost importance in the formulation of dispassionate advice to be given to the government. A larger fellowship such as what we would have for a united academy would also necessarily mean a more diverse fellowship in terms of age, regional origin and subject affiliation. Decisions taken by such a larger and more diverse fellowship (including the all-important question of new fellow elections) will necessarily be less susceptible to charges of parochialism or to charges of domination by an individual, a clique or an institution. Democracy always works better in a larger group, there are no two ways about this.

Let us face it – the academic standings of our three academies do not compare too well with many foreign academies, notably the two academies mentioned above. For a start, and with no attempt or desire to discuss the pros and cons of quantitative indicators, the *h*-index of most of the newly elected fellows of the US National Academy is around 40 or more. For the three Indian science academies, similar indices range between 10 and 25. Still, all academies anywhere in the world, in a philosophical sense, are the same in that they are like clubs. Yet, they are all different. These differences arise in the perception held by the government, by the lay public, by the fellows and also by aspiring non-fellows. As detailed above, there needs to be a clear idea that an academy is a scientifically credible body. The recent *Bt* brinjal episode has created a serious dent in this perception. The scientific standing of our academies has come under a cloud. Considering that each of our science academies has its own distinctive strong points, their coming together will enable the united academy to draw on all these strengths synergistically so as to improve its image.

If a country has only a single science academy, there is a much greater chance that it will be taken more seriously by the international community. I have been asked innumerable times by foreign scientists as to why we have three science academies. All I can mumble in response

is that it was something personal between Raman and Saha. This does not cast any of us, including Raman and Saha, in a particularly good light. I will illustrate with a relevant example from my own subject. The Department of Chemistry in the University of Cambridge was split in two in the 1950s because of personality conflicts between the two giants of chemistry in the department, R. G. W. Norrish and A. R. Todd. This division into departments of organic, inorganic and theoretical chemistry (originally headed by Todd) and physical chemistry (originally headed by Norrish) continued till the 1980s. By then, the artificiality of such a division in a unitary subject like chemistry had become all too apparent and the departments merged. Today, chemistry in Cambridge has entered vistas that have far outgrown outdated classifications like 'organic', 'inorganic', 'theoretical' and 'physical'. Such synergy can well occur if we merge our academies. For a start, the Bangalore academy will finally be able to outgrow the long shadow of Raman.

The crucial role for any science academy is to tender advice to the government. Owing to its location in Delhi and its role as an affiliating body, it is the Delhi academy that primarily exists in the consciousness of the government. The recent *Bt* brinjal exercise was almost the first time in recent years that the government has approached the Bangalore and Allahabad academies on a scientific matter of gravity and importance. When an academy is not in the consciousness of the government, it rapidly acquires the character of a scientific society. This is what has happened to the Bangalore and Allahabad academies. Mergers take place in industry because they benefit all the parties. A unified science academy will become the unambiguous nodal point for the government for its scientific enquiries and information. Huge corporations have merged, with all sorts of important financial consequences. East and West Germany unified into one nation. The European countries merged their currencies and even abolished border controls. If three small science academies with modest budgets and even more modest agendas are unable to merge, it will only be because of immodest egos and the Indian tendency to hide behind rules, twisting them illogically to justify why something cannot be done.

It only remains for me to suggest the modalities of the merger. The very first step would be for each academy to consult with its fellowship as to whether unconditional merger with the two other academies to give a united academy of science of India is acceptable. This was done in 1947 when all three academies concurred with the suggestion for unification. The only assumption at this stage should be that fellows of any of the three academies will be fellows of the united academy.

I believe that the government erred in 1947 in the next step, in the open-ended way it defined the brief of the Rajaji committee. This was bound to bring out the differences between the academies and it was these differences that stymied the merger. Today, the differences will, in all likelihood, be more numerous and more petty. I believe that if the three academies do agree to merge, the government should first declare the academies as merged and then set up a committee to work out the modalities of the merger. As the Queen of Hearts says with such finality in *Alice in Wonderland*: 'Sentence first, verdict afterwards'. Once the fellowships have agreed to the merger in principle, there should be no question of the representatives of any of the three academies holding the decision to ransom on matters of detail.

In the end, the three science academies are not that different and they have actually worked together on two important issues in recent years. These are the panel report on undergraduate curricula and the summer fellowship programme for young students. This gives me the confidence to say that once the academies are informed by the government that they have been merged into a single academy, they will quickly find ways and means of making the merger a practical reality. This could be as simple as declaring the Bangalore and Allahabad premises as branches of the unified academy. Having seen all three academies at close quarters, I can say that it is the Delhi academy that is the closest, in its functioning, to influential foreign academies. Its procedures are more formal, more transparent and more democratic. There is less scope for personal intervention by individuals and the election to the fellowship is more conservative. A working template for the united academy would be to simply use the procedures of the Delhi academy unless there are good reasons to overlay them with some really worthwhile innovations being practiced in Bangalore and Allahabad. I don't believe for a moment that these are serious problems. Many of us have served on the committees and bodies of all three academies, sometimes even concurrently.

When the pool of scientists involved in the three academies is largely the same, having three of them seems to me to be artificial anachronism.

I write this as an open invitation to fellows of the three science academies – to discuss and debate this matter, and to the Presidents of the three academies – to meet, perhaps under the aegis of the Department of Science and Technology (DST), who should charge them with the task of ascertaining quickly from their respective fellowships as to whether they believe or not that the three academies should be merged unconditionally into a united academy of sciences of India.

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1. This blog from Rahul Basu will introduce the reader to the *Bt brinjal* report fallout. <http://rahul-basu.blogspot.com/2010/09/bt-brinjal-and-egg-in-face.html>
 2. Menon, G. I. and Siddharthan, R., *Curr. Sci.*, 2010, **99**, 1011–1012.
 3. Ramaseshan, S., *Curr. Sci.*, 1994, **67**, 633–640.
 4. Jayaraman, K. S., *Nature*, 1995, **373**, 4.
 5. Balaram, P., *Curr. Sci.*, 1999, **77**, 5–6.
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