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GUEST EDITORIAL

Science and the Missing Manifestos

As the country is voting for a new government and the parliament for the sixteenth time, most political parties have published their manifestos on key policy issues and their plans for the overall development of the nation. *The Hindu*, in its 8 April 2014 issue, has compared the manifestos of several parties and their plans on the economy, foreign policy, disadvantaged groups, governance, infrastructure, internal security, health, education and welfare. Sadly though, none of these manifestos has anything to say at all about science, technology, environment, agriculture and medicine (STEAM) in their agenda for the development of the nation or the states. That this neglect cuts across party or ideology lines is a cause for worry. Everyone realizes that investment and application of the tools and methods of sciences and the use of STEAM is a sure-fire way to generate opportunities for employment and the creation of a large number of jobs. In the absence of this plan, how does one party claim that it will generate ten crore jobs once it comes to power, and another party promises to develop its state along 'Singapore lines'? However, though, every party has promised reservations in recruitment and jobs for one community or another, one party has claimed that it will impose such a reservation policy even in the private non-government sector.

This is particularly saddening when we look back 6 decades or 15 parliamentary elections ago. When India became free of colonial bondage and launched on her course of self-governance, the founding fathers 'made friends with science'. It was the national policy to use the tools of science and technology to lead India to the path of development and growth. A country that was battered with the wounds of partition, and where over 300 million people had no more than 50 million tonnes of food grains to eat, started the grand sociological experiment on the use of STEAM. Within two generations, we rid ourselves of small pox through the large scale administration of vaccines, and a disease which many believed to be due to the wrath of an angry goddess was eradicated out of not just the country but the entire world. Using a similar method, we have since rid ourselves of polio. It was again the application of STEAM that brought in the green revolution – a grand experiment that had farmers on the field join hands with agricultural scientists to increase the yield from 50 million to 150 million tonnes within 20 years. Today we produce about 250 million tonnes of

food grains for a population of 1.2 billion, a fivefold increase in production for a population that has seen a fourfold increase. We have moved from a 'ship to mouth' economy into a 'silo-to-ship' economy, thanks to having made friends with science.

Yet today not a single party has a word to say about what plans it has on farming, agriculture, sustainable land use, nutrition. India is now regarded as an emerging economy, a knowledge power and is being 'promoted' from its 'developing nation' status. It is not realized that the seeds of this growth and accomplishment were sown in the 1950s through the policy that promoted and used the application of STEAM. We tend to forget how India (and India alone) has done this while 70 other nations which too gained freedom in the late 1940s and 1950s have not done so with equal success. It was again this deliberate policy that brought in the IITs, AIIMS and similar advanced academic institutions, atomic energy, space and information technology into India. It is thus a matter of disappointment that none of the political parties has made this an instrument of national development in its manifesto.

No manifesto, but mechanism exists

It is however to be realized that these manifestos are essentially grandstanding documents, meant to accommodate coalition compulsions, vote bank politics and other similar objectives. It is also to be realized that no government in India, regardless of what its ideology is, can any longer ignore science and technology as tools for development. One of the reasons for this is the apparatus that has been put together over the years, such as the Planning Commission, the Advisory Councils to the government in economics and finance, science and technology, and so forth. It is through such bodies and mechanisms that government policies and actions are undertaken. Over the last 60 years, these have advised the government on various measures that have been implemented. And thankfully, given the Newtonian inertia of governments, such instruments are seldom wound up, and there is no danger that they would be in the immediate future. Members may change but the machinery hardly does. True, not all of their advice and suggestions have been taken up but the fact that many of them have been is a source for satisfaction. And this has happened in a reasonably

continuous manner, regardless of which government has been in power in Delhi. Some examples are the space programme, the nuclear energy programme, Antarctic/Arctic expeditions, biotechnology, and the benign non-interference with the growth of IT, or of drug companies. Again, it is thanks to the advice of the scientific advisory groups that IISERs have been started, the National Knowledge Network established, to quote two examples.

The other point of note is that the Prime Minister has largely held charge of the Ministry of Science and Technology, with a colleague Minister of State to help him. And the convention of appointing professional scientists/technologists as secretaries to various STEAM departments and chairs of the departments of space and of atomic energy commissions has continued. (Occasionally we have even had scientists as ministers of S&T.) There appears no danger that this tradition or practice will be stopped or reversed, regardless of which government comes to power in the centre. In sum then, regardless of what the manifestos manifest, this tradition appears to hold. This is a point to be realized and made use of, if we wish to push STEAM further towards national development.

We realize that STEAM has lost some steam over the years. Despite every Prime Minister's annual promises, the budget for STEAM has not increased to even the pitifully small level of 2% GDP. The momentum and commitment of early years is yet to be maintained. How does one gather and increase the momentum? Regardless of which government comes to power, we as scientists need to engage with it. We need to paraphrase and modify Galileo's statement and declare '*encore si deua muovere*' or 'and yet it should move', and argue for the increased use of STEAM and the government's commitment and funding for programmes using these for national developments.

Academies should engage and lobby policymakers

And who are the 'we'; the science academies, professional scientific societies, individual scientists and scholars. We need to come out of our individual dens, engage with one another, speak in one voice and express our views – particularly when something negative happens. This could have been done when the finance ministry cut 30% of the operating budgets across all S&T departments during the year 2013–14. Money was not released for approved grants, many research scholars have not been paid their stipend for months and yet we have not raised our collective voice against this. This is in contrast to what India Inc. does when the government thinks in terms of adopting a move that might affect industries. We need to start doing similar 'lobbying' on matters of scientific and educational issues of national consequences.

It is not that academies have not joined hands earlier on other common issues. Two examples are (i) the tri-science academy summer research internship programmes, which have been a huge success and (ii) the

joint statements on higher education. But we need to go beyond these 'in house' efforts and initiate dialogues with the policy planners. We now need to go further and project a coherent view on other matters as well. For example, are we happy about the current regulatory regimen on GM crops? Should the STEAM academies not discuss this among themselves and offer professional advice? Also, is all GM only BT-based? Given that BT has become a dirty word, is there not more to genetic modification than pest-killing, patenting and profits? Should we not advocate GM that involves the introduction of genes that offer drought resistance or better nitrogen absorption? These are plant-to-plant gene transfers and thus 'green', while adding pest-resistant and herbicide genes are 'non-green'. Issues of this kind are worth discussing among academies and the consensus views discussed with civil society on one hand and the policy makers on the other.

Indeed, we STEAM people need to engage much more with communities as well. In his editorial titled 'Science in the service of a symbiotic society', in the 25 March 2014 issue of *Current Science*, Madhav Gadgil has said: 'Indian science can and must contribute to sustainable management and enhancement of the productivity of India's diverse ecosystems by working on the ground with the people; such contributions are vital to our endeavours to create a symbiotic society. This is a challenge we must rise up to.' It is high time that there is more dialogue between the 'town and the gown'.

Talking of manifestos, Vinod Paul and K. Srinath Reddy have published an opinion piece in the 18 March 2014 issue of *The Hindu*, entitled 'For an all party manifesto on health', wherein they make five specific points as agenda for national action. These are: (i) to ask all political parties to commit the goal of achieving universal health coverage in the country by 2025, (ii) public spending health be raised from the present 1.04% to 3% of the GDP by 2025, (iii) all essential drugs including anti-cancer agents be made available free to all citizens in 3–4-years, (iv) standards of care including clinical guidelines should be developed and enforced in the next 5 years, and (v) equity must be ensured in the provision of health services across districts, communities and gender.

I believe each of these points in agendas is achievable and I also believe that the STEAM community should be able to lend its talents and expertise to make each one of these possible. Recall that our community worked hard to bring about the green revolution, the generic drugs and vaccines programmes and the IT revolution. And come to think of it, it is the manifestos we write for ourselves and strive to achieve as academicians and professional groups are the ones that the governments borrow as their promises to the voters.

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