

Science in Mother Tongue

From Einstein to the Common Man

By J.V. NARLIKAR

THERE is a story about Nana Phadnavis, the Machiavellian officer of the Peshwas in Pune. Once a stranger walked into the darbar and challenged those present to guess his mother tongue. He spoke several languages in such a fluent and natural manner that none could tell the answer. None, except the crafty Nana. He requested the stranger to be his guest for the night and promised to take up his challenge the next day. At night while the guest was fast asleep, Nana poured cold water on him. The guest woke up shouting in distress. Nana apologised for his clumsiness, provided a dry bed to the guest and let him be. The next morning Nana correctly identified his mother tongue as the language in which he had screamed at night.

The story might not be historically authentic, others may claim it for Birbal or Tenali Rama; but it has a message. There is a natural language in which a human being thinks and communicates. For the present purpose we shall refer to it as the mother tongue.

Sharing Excitement

It used to be said of Einstein that if he got excited while talking to a fellow scientist in English, he would switch over to German quite unconsciously. The urge to communicate at a deeper level or the desire to share his excitement thus brought out the mother tongue.

In this respect one of the greatest brains in this century was no different from the celebrated man in the street. I have witnessed this myself at some of my public lectures on science. I would be invited to talk on some scientific topic. The organisers after consulting me would announce a topic in English. At the time of the lecture, however, they would come with a hesitant request: could I possibly speak in Marathi (or Hindi, if the location were in the Hindi heartland)? Sure, I would agree. The last-minute switch of language is a surprise for the audience and I have observed the unmistakable wave of exhilaration sweep through the listeners. I still recall the spontaneous applause that burst out in Gorakhpur when I began speaking in Hindi.

The spontaneity arises from the unexpectedness of it all. For, the expectation is that a lecture on science has to be in English; rather it cannot be in the local language. That a speaker can give a public lecture on a scientific topic without using English and that one can fully grasp what is being talked about is indeed an unusual experience.

The roots of this attitude lie in the way science is introduced at school. The genesis of science itself lies in human curiosity. If man had not

wondered about nature in the first place there would have been no science at all. Even today, the enlightened nations (which include India) recognise the merit of doing research in pure science despite the emphasis on applied research in a market-driven economy. But this enlightenment has not percolated down to school level in this country.

Common sense dictates that the curiosity element is the key to comprehension and enjoyment of science. And, curiosity is most easily and naturally expressed and satisfied in the child's mother tongue. Ergo, it follows that the mother tongue is the best medium of instruction for science in schools. Here I also club mathematics with science. The argument could be extended to other subjects also though not with the same force.

Unfortunately, comprehension takes a back seat in the scheme of things where science or maths teaching in schools is concerned. The emphasis instead is on rote learning. The student is not encouraged to ask "why?" or "how?" The reasons given usually are that the classes are large and the teacher cannot cope with so many questions; or the syllabus contains so many items that there is simply no time to pause for satisfying curiosity; or the old-fashioned attitude that questions would encourage indiscipline.

In the formative years, that is, in the primary and secondary schools where science and maths are being introduced and consolidated in the mind of the student as intellectual disciplines of the highest order, emphasis on comprehension, excitement of quest and the enjoyment of discovery are vital and these can be communicated best in the mother tongue.

Doubly Difficult

To impose English at this stage makes the child's task doubly difficult. Before he or she can get to the comprehension stage there is the barrier of an alien language to surmount. Take a look at these words which a five-year-old has to learn to spell for the science class: "necessary," "measuring," "breathing," "muscles," "vegetables," "resistance," etc. The child naturally tends to copy out sentences letter for letter without comprehending what they mean, let alone what science they contain.

Unfortunately, social pressures are such as to induce parents to opt for the English medium right at the primary level. English does have a rightful place in our society as I will shortly stress, but it is not here. Not in the primary school when the child is being introduced to science. Eng-

lish may be introduced as a second language in school and the student made familiar with it as a literary medium. But as a medium for teaching science it is the mother tongue that must take precedence.

In higher education, however, the situation is different. At the undergraduate, postgraduate and research levels the student is expected to be informed about new developments in science. From popular science journals, TV programmes to research journals and seminar proceedings, the flow of information is mostly in English. No Indian language can compete with English on this count. To keep English out at this level will be suicidal.

Artificial Vocabulary

Attempts to match the quality and quantity of advanced scientific texts in Indian languages, aided by an artificially created vocabulary which often is more alien than the original English, are hardly likely to succeed. These attempts are made unnecessarily complicated by a lack of co-ordination among experts of different Indian languages. Thus, if the words "atom" and "molecule" are translated in Hindi as "paramanu" and "anu" respectively, in Marathi the translations are "anu" and "renu". Can't the experts creating new scientific vocabulary at least agree to have one technical word of Sanskrit origin for all Indian languages descending from Sanskrit?

Simpler it is to teach the student sufficient English during the school days. Thus a student who has been taught English as a second language at school can easily pick up scientific information in English by the college-going stage.

English should no longer be looked upon as an imposed language of our colonial ex-masters. Rather, it is the international language which is essential for communication if we want to keep our stake in an increasingly competitive world. The Russians, the Japanese and even the French are feeling its need increasingly. For us to phase English out from science education in the universities and colleges, as some do advocate strongly today, would therefore be a retrograde step.

So I am making a case for the mother tongue as the medium for teaching science at the school level and English at the higher level. English learnt as a second language at school will provide a base for assimilating modern scientific information at the college level and it also will help widen the student's intellectual horizon. But at the school level it is the mother tongue which will open out the wondrous vista of science.