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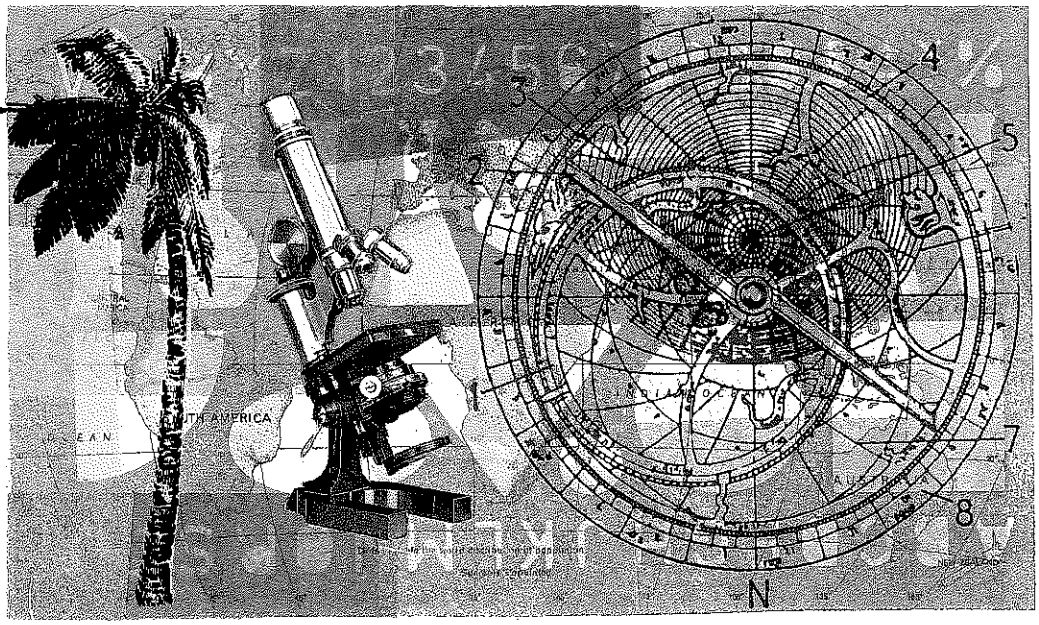
Developing countries need to popularise science, say Leo Tan Wee Hin and Ramanathan Subramaniam

IN THE industrialised West, science and technology are the tools that nations have used to improve their social and economic conditions. Numerous developing nations have attempted to follow suit by establishing policies that foster science and technology with the aim of bringing about similar improvements in their societies.

While these efforts have led to some spectacular successes, particularly in East Asia, many developing countries have found the route a difficult one. They have initiated policies aimed at industrialisation, encouraged foreign investment, promoted technological education, emphasised research and development, and instituted economic reforms. Yet it has not led to the success they seek. Shortages of funds, expertise and know-how can all take some of the blame. But a chief obstacle is that a scientific culture has not taken deep root in the societies of these countries. Their people have a limited understanding of how science and technology can help them and their nations.



In Singapore we have found that science centres can play a vital part in providing this all-important scientific grounding. They have a significant role in hybridising scientific knowledge with the innate cultures of a developing nation, and catalysing strong socioeconomic development.

The idea of science centres is a comparatively new one. Their aim is primarily to familiarise people with science and technology and teach the basic concepts involved by imaginative and enjoyable means—through creative exhibitions, exciting educational programmes, films and more recently through lively websites. They are popular with those who use them, and attract favourable comment from media and educationalists alike. Such science centres have become part of the scientific and educational infrastructure of numerous nations.

Singapore began to recognise the need for such an organisation as long ago as 1968. By 1975 the Ministry of Science and Technology was outlining the spirit of the idea in a report, *Science & Technology for 2 Million People*. "There is no easy way out for Singapore's economic survival, and we must continue an educational policy which will put our human resources to useful work," the report said. "As part of such a policy, the Singapore Science Centre (SSC) will, through its exhibits and science education programmes, popularise science and encourage talented people in the schools to study engineering and the skills necessary to maintain a modern industrialising society." The key idea was that the SSC would help to explain science to the general public in such a way that the "Man on Orchard Road" would be able to understand how a skilful and judicious use of technology has raised his standard of living and improved the environment in which he and his family lived.

The SSC opened in 1977, and in its first year it had more than 200 000 visitors. Over the past decade it has attracted close to a million visitors each year. Other science centres have sprouted in Hong Kong, Taiwan, Australia and in India. Yet the idea has not been taken up everywhere. There are surprisingly few science centres in the developing countries of Africa, for example. It seems to us that those countries would have much to gain by setting up science centres for their people.

The basic requirements for a science centre are a plot of land on which to build it, workshop facilities, and a range of scientists, teachers and administrators to manage the operations. Numerous useful "cookbooks" are now available for setting up exhibits and websites, and for jump-starting science promotional programmes. Local expertise and resources have much to contribute to such an exercise.

In many countries with science centres, the state has been the prime mover. The foundation grant and funds to keep a centre running are but a tiny fraction of the state's annual spending. But the potential dividends it can confer are huge. Perhaps funding could be sought from international agencies such as UNESCO, or from the richer countries as part of their overseas development aid programmes. A goal for the coming millennium would be to set up a global network of science centres. Such a network should be free of geopolitical and other nonscientific influences. Its aim would be to promote the universality of science among all humanity. □

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Further information about the Singapore Science Centre is available at **http://www.sci-ctr.edu.sg**

Illustration: Martin O'Neill