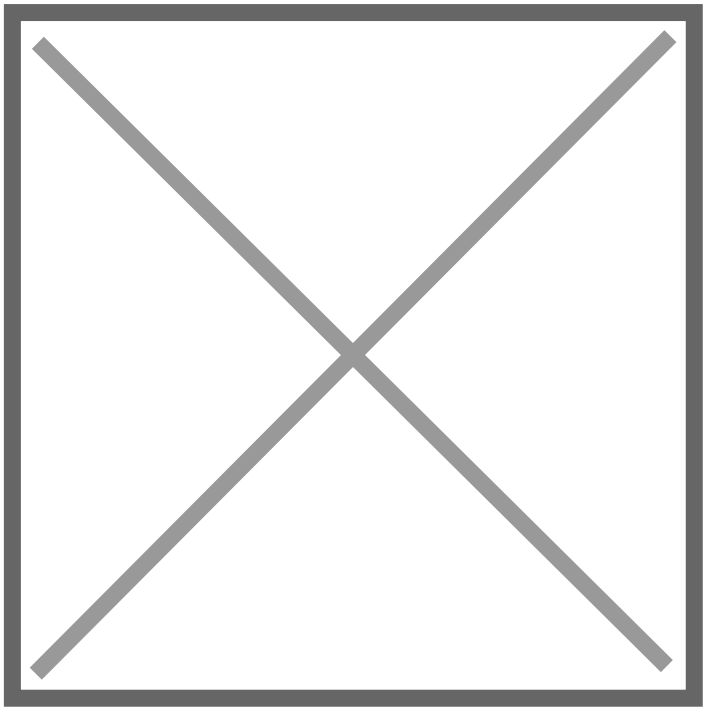
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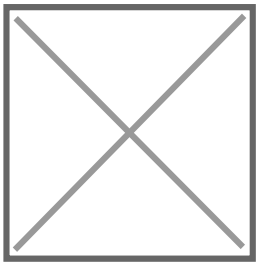
Link the traditional and modern knowledge systems

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While building the Indian knowledge society, we will have to worry about three different domains of knowledge. As scientists, we focus rather narrowly only on Science and technology based knowledge, which is established through the rigorous methodology of science.

But there are two other domains of knowledge, which we have kept away from. One is the so-called 'parallel', indigenous', 'traditional' or 'civilizational' knowledge system. These systems belong to societies in the developing world, that have nurtured and refined systems of knowledge of their own, relating to such diverse domains as geology, ecology, agriculture, and health etc., our Ayurvedic medicinal systems being one such domain.



They were, as yet, neglected by modern science but not any more. New bridges between the modern and the traditional are being built. CSIR's pioneering partnership with Arya Vaidya Sala of Kottakkal is an example of the benefits of blending the modern science and the traditional knowledge. But this is only a small step, we have miles to go.

Indigenous knowledge systems must be sustained through active support to the societies that are keepers of this knowledge, be they villagers or tribes, their ways of life, their languages, their social organization and the environments in which they live. We need innovative ways of preventing the erosion of such knowledge, which usually vanishes with people. Equally important, we need an in-depth analysis of the parallelism of insights between the indigenous knowledge systems, on the one hand, and certain areas of modern science concerned with fundamental aspects, on the other. Our university e ducation and research needs to shift the search light on this important issue, which it has neglected so far.

Innovation is the key for the production as well as processing of knowledge. Indeed a nation's ability to convert knowledge into wealth and social good through the process of innovation determines its future. I wish to focus on the challenge of the resurgence of an innovative India, since there has been a fear that for some time now, the 'I' in India has stood for imitation and inhibition and not for innovation.

In its rigorous form, such a scientific methodology includes observation, verification, repeatability, hypothesis-making, theorization and a formal and universally valid structure based on a minimum set of universal laws or principles.

But there is another domain of knowledge, which has remained unacknowledged. Many societies in the developing world have nurtured and refined systems of knowledge of their own, relating to such diverse domains as geology, ecology, botany, agriculture, physiology and health. We are now seeing the emergence of terms such as 'parallel', indigenous' and civilizational' knowledge systems. Such knowledge systems are also expressions of other approaches to the acquisition and production of knowledge. They were, as yet, neglected by modern science, as the pharmaceutical industry has realized.

Distinctive Systems

It must be recognized that indigenous and civilization knowledge systems, which evolved in different civilizations, led to distinctive systems worldwide and effected the emergence of diverse systems of social structure and governance.

The growing dominance of a single view of the natural world as expounded by modern science will undermine these knowledge systems. Further, the process of globalization is threatening the appropriation of elements of this collective knowledge of societies into proprietary knowledge for the commercial profit of a few. Hence, an urgent action is needed to protect these fragile knowledge systems through national policies and international legislation, while providing its development & proper use for the benefit of its holders.

There is a clear need for systematic and in-depth analysis of the parallelism of insights between indigenous and civilizational knowledge systems, on the one hand, and certain areas of modern science concerned with fundamental aspects, on the other. In particular, a strong linkage between the indigenous knowledge holders and scientists is needed to explore the relationship between different knowledge systems. For instance, there is a tremendous scope to
develop eco-technologies based upon appropriate blends of traditional wisdom and modern science. Some of the greatest opportunities are provided, especially in the Indian context, in the area of traditional medicine.

Shining Examples

Examples of this new partnership between these two domains of knowledge are gradually emerging in India. Let me cite a couple of examples. The first is a medicine that is based on the active ingredient in a plant, Trichopus zeylanicus, found in the tropical forests of southwestern India and collected by the 'Kani' tribal people. Scientists at the Tropical Botanic Garden and Research Institute (TBGRI) in Kerala learned of the tonic, which is claimed to bolster the immune system and provide additional energy, while on a jungle expedition with the 'Kani' in 1987. A few years later, they returned to collect the samples of the plant, known locally as arogyapacha, and began laboratory studies of its potency. These scientists then isolated and tested the ingredient and incorporated it into a compound, which they christened "Jeevani" - giver of life. The tonic is now being manufactured by a major Ayurvedic drug company in Kerala. In November 1995, an agreement was struck for the institute and the tribal community to share a license fee and 2 percent of net profits. The process marks perhaps the first time that cash benefits have gone directly to the source of the knowledge of traditional me dicines and the original innovators. In the new innovation movement in India, we need to multiply such examples by thousands.

We need a particular focus on community knowledge and community innovation. To encourage communities, it is necessary to scout, support, spawn and scale up the green grass root innovation. It will generate employment on one hand and it will use natural resources sustainably through linking of innovation, enterprise and investment. This will again require building up adequate linkages with modern science and technology and market research institutions. One will need new innovative models of development, employment generation and conservation of natural resources.

CSIR is building such new innovation models by forging unusual local partnerships by reaching the unreached in the remote corners of India. A place called Athani, on the border of Maharashtra and Karnataka is the place from where Kolhapuri chappals come to us. They were till recently made by age-old traditional technique. Our scientists from CLRI studied this and helped them to reduce the processing time from 30 days to 10 days through application of some good science, the stamping process was standardized, certain innovative changes in design, based on computer aided techniques, were made to give more comfort to the wearer. But this was not a top down process. The oldest man in the village was consulted and he was convinced that the age-old traditions must change. Today several hundred artisans have been trained by CLRI. This has not only enhanced the family incomes of the villagers but also changed their perception of science, development and change - in short a micro social transformation. CSIR has realized that in this innovation chain, it is not techno-economics alone, but also the socio-economical and socio-cultural aspects, that it needs to be conscious about.

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