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The Golden Triangle

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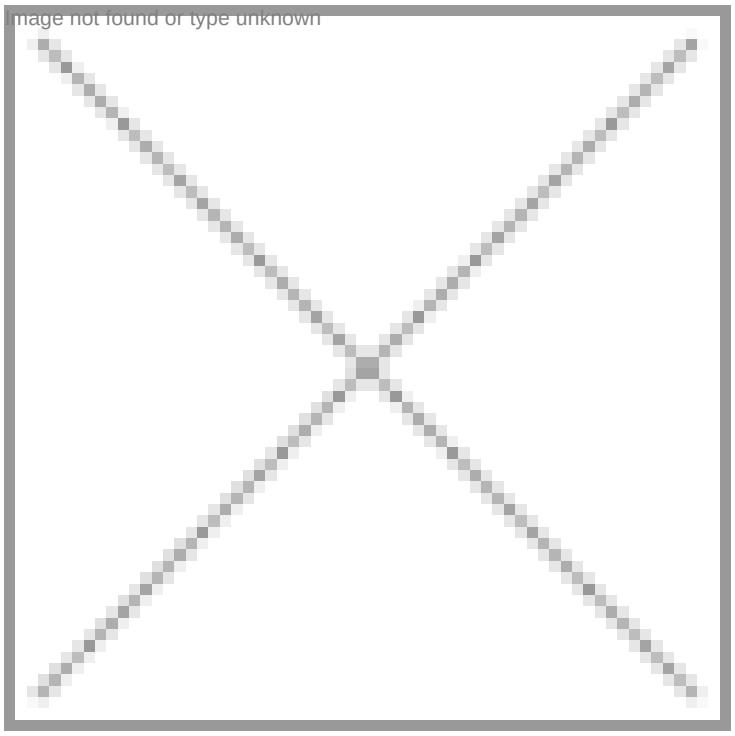
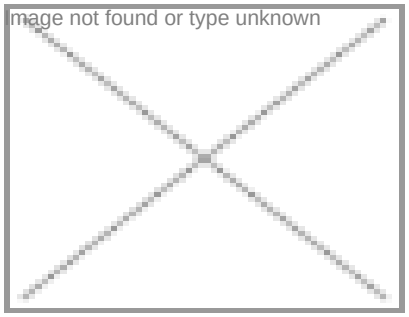


Ayurveda literally means "science of life". It encompasses the total sweep of life sciences and pursues the quest for understanding life in all its ramifications. Ayurveda is one of the earliest systems of health care. It is not a mere compendium of therapeutic recipes. Nor is it the first one to use herbs. These have been used from times immemorial Instead, it is one of the earliest frameworks that systematized knowledge.



This framework is not only self-consistent but also uses cause and effect arguments to correlate manifestations of sickness, its causes and treatment. When this framework was developed in ancient India, the notion of a molecule did not exist. Nor was the definition of a cell and the role it plays in life processes known. The discovery of DNA and functional genomics was more than 3,000 years away. In spite of this, it offered an effective treatment for many disorders, particularly the ones which have multiple causes. For some degenerative diseases, most Indians consider it to be the treatment of last resort. There is a general belief that when all other treatments fail, Ayurveda may yet succeed, and it often does.

The 20th century has revealed some of the greatest insights into our understanding of life at increasingly higher levels of organizationâ€”molecular, sub cellular, organelles, cells, tissues, organs, organisms, species and ecosystemsâ€”the most remarkable feature of modern medicine is its close integration with the basic sciencesâ€”physics, chemistry and biology. For example, we would not have had "gene therapy", a new frontier of modern medicine, if the structure of DNA was not known. This was possible due to the structural elucidation achieved X-ray diffraction, the contribution of advances in modern physics.

While the connection between modern medicine and modern science was always strong, the connection between modern science and traditional medicine, including Ayurveda has been poor. Similarly, the connection between modern medicine and traditional medicine was also poor. India can benefit enormously if it can build a golden triangle between traditional medicine, modern medicine and modern science.

The fact that such a connection needs to be established has been recognized for a long time. For example, after visiting the Central Institute of Research in Indigenous Systems of Medicine at Jamnagar on 2 November 1955, Pandit Jawaharlal Nehru observed: "A fascinating inquiry is going on in this research institute and it may well lead to very fruitful results. The only right approach has to be one of science, i.e., of experiment, trial and error. In whatever type of medicine we may deal with, we cannot profit by its study unless we apply the method of science. Nothing should be taken for granted. Everything should be tested and proved and then it becomes a part of scientific medicine â€“ old and new." Unfortunately, this message which was given almost 50 years ago had been lost somewhere.

The importance of such linkages has been stressed over and over again. Bharatiya Vidya Bhavan had launched in 1977 a project titled "Ancient Insights and Modern Discoveries", which was a national cooperative endeavor to explore the possibilities of meaningful co-relations of ancient ideas and concepts and modern scientific discoveries. Modern scientific discoveries are made without any regard to the clues that flow from our ancient wisdom. Here is a brilliant example.

Among scientific journals, Science and Nature are perhaps the most prestigious. Real breakthroughs find a place in these journals. TL Lentz and colleagues reported in 1982 in Science that acetylcholine receptors might serve as receptors for rabies virus. In Sushruta Samhita, the ancient Indian Classic on the Science of Life, there is a fascinating account of Datura as a prophylaxis for rabies. The active principles of Datura Strammonium are atropine and related alkaloids that predominantly block the muscarine action of acetylcholine, precisely what was discovered by Lentz and others thousands of years later. In view of Lentz's findings, Datura for rabies may represent the first documented example of prophylaxis by receptor blockade. However, the use of Datura was found by people, who were not trained in modern science, centuries ago. On the other hand, modern scientists had no clue about the work reported in Sushruta Samhita. How do we build the bridges between the two? To understand this, let us first understand the characteristics of modern science and traditional knowledge.

Scientific knowledge is supposed to be objective and verifiable knowledge. In essence, the scientific method consists of careful observation of nature and cautious confirmation of all conclusions. Good science excludes all unsubstantiated hypotheses. Observation and experiment are the methods of science. As new observations are added to the total body of scientific knowledge, some of the older observations lose their relevance and become obsolete. This dynamic aspect of science is perhaps its most outstanding attribute.

We need to recognize that scientific knowledge generated in formal laboratories is not the only knowledge system. There is knowledge generated in the "laboratories of life" by people over centuries. India has nurtured and refined systems of knowledge of its 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.

Unfortunately, scientists reject traditional knowledge as extraneous. During the colonial period of the world history, which was also the period of phenomenal growth in science and technology, science was perceived, projected and accepted as an essential feature of the western civilization. An unfortunate and retrograde corollary of this was that modern scientific knowledge was seen as an adversary of traditional wisdom and knowledge. The two were seen as mutually exclusive. This has been a regrettable syndrome, because it had the effect of belittling the intellect and wisdom of vast fraction of the world's population and the heritage of the whole humankind. We know better today.

We need to remind ourselves of a profound statement that Mahatma Gandhi had once made. He said: "I do not want my house to be walled in on sides and my windows to be stuffed. I want the cultures of all the lands to be blown about my house as freely as possible". Gandhiji implied that our mind should be open and uninhibited. It should be open to new ideas and new thinking. There should be no artificial boundaries and walls or borders between different domains of knowledge as well as the practitioners of these knowledge systems.

It is only by fusing the ancient wisdom and modern science India can create world class products, because new products cannot compete with products, which have only tradition and empirical observation as the knowledge base. The knowledge to be integrated into the traditional products has to emerge from modern science, especially modern biology and chemistry.

What would be the most fundamental change required for breaking the walls and opening the windows that Mahatma Gandhi referred to? I believe it is going to be that of mutual trust, respect and confidence between the practitioners of modern science and the holders of the ancient wisdom. This has to get reflected in several ways, including the choice of research

problems. We had Professor Ernst, the Nobel Laureate, give the Science Congress plenary lecture in Pune in January 2000. He described the work on getting a molecular level understanding of the Chinese system of "acupuncture" by using the latest advanced tools in high-resolution solid state NMR. You can see that the western scientists are scientifically probing the ancient practices of the East, whereas, our own Indian research is invariably focused on the left over problems of the West. We will need an attitudinal change in reconsidering our choice of problems and also a change in our value system.

(to be continued)

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