Let's Build on Our Strengths

❍ **Pushpa M Bhargava**

THE most important element of my vision for my country is to build on its strengths and to cover its weaknesses in a way that a new paradigm of culture, behaviour, development, human satisfaction and values is created, which would inspire other nations. This would have a built-in mechanism of responding in real time to the inevitable changes that must occur with time as historical imperatives. So that the country becomes a world leader in at least a few specified areas where it has special strengths.

For this to happen, we must first identify our strengths and weaknesses. Let us first recognise our strengths.

Few countries in the world have some 5,000 years of political, social and scientific history. Both our successes and failures in these areas must be regarded as our assets, as long as we make a sincere attempt to understand, in retrospect, their socio-political-economic basis. As an example, let us take the case of science.

It is widely recognised that till about 5,000 years ago - in some areas such as naval architecture, agriculture and number theory, even a hundred years ago - India was the world leader. And our successes in science and technology covered a vast range: mathematics, astronomy, chemistry, medicine, surgery, botany, geology, metallurgy, and perfumery, to name some. But along with numerous discoveries in these areas that have stood the test of time, an enormous number of untruths were also perpetrated. Many of these untruths have stayed unchallenged even today not only with the vast masses but even a substantial number of the highly educated, including the scientists. It is, therefore, appropriate to ask as to what has been the basis of our remarkable successes on the one hand and our failures and the lack of scientific and technological development from the 15th century onwards (when the Renaissance in Europe laid the foundations of the scientific and technological progress that we have seen in the West during the last century) on the other.

The reasons for our successes in the past in science and technology were primarily three: our ability to observe accurately and in the minutest detail, and record our observations faithfully; draw inferences and establish correlations on the basis of the observations made; and learn from trial and error. Indeed, our ancestors must have been compulsive observers

Courtesy: Indian Folk Art

so much so that, perhaps, nothing that could be observed with the naked eye ever escaped their notice. Somewhere on the way, perhaps during the last century, we lost this quality; we must resurrect it.

The tradition of experimentation was lacking in our ancient medieval culture - even in Goutama's *Nyaya Sastra.* It is important to identify these areas so that it should become possible to convert the knowledge of these weaknesses into strengths.

Significantly, science was not the only area where our successes were notable. Kautilya preceded Machiavelli by seventeen centuries. Governance during the time of Ashoka and, later, Akbar, was socially, economically, academically and culturally so effective that these two periods are often called the golden ages of Indian history. Our ancient and medieval literature is replete with masterpieces that go back to more than 2,000 years, and this happened not only in just one language. *Shilpadikaram* was written in Tamil in the first century A.D.

As far as arts go, our outstanding sculptures date back to several centuries before Christ, and the oldest bronze in the world today is from Mohenjadaro in our continent and is some 4,500 years old. Our various classical dance forms have evolved over a period of at least 2,000 years. Bharata's Natya Sastra was, perhaps, written before Christ. Our classical music tradition is just as ancient, and we have a plethora of folk music, dance and painting traditions - be they the Madhubani paintings from Bihar or the Chhau dance from Bengal, Bihar and Orissa, or the Garba from Gujarat.

Our creativity, indeed, has had the widest base in all of human history. Our varied handicrafts that dot the entire country today with characteristic regional biases and bases, are testimony to this unique heritage. Perhaps, India has had the oldest tradition of aesthetics. In no other country (with the possible exception of ancient Greece) have beauty and elegance manifested themselves in all aspects of everyday life as they have in India all through our five millennia of recorded history - at least till the end of the last century. And in no other country would some forty per cent of the total cloth requirements of a billion people be met by cloth woven on handlooms in a thousand different styles, each characterised by uniqueness in respect of weaving, choice of design and motifs, or the manner of processing of the thread or the cloth; the exquisite Kanchipuram, Kalamkari, Chikan, Patola and Baluchor sarees would be just a few examples of this staggering variety in beauty. I would imagine there would be at least 20 million women in this country who would know how to make a Rangoli which is always a work of art.

In this respect, the numbers will speak for themselves. Which other country in the world would have some 1,00,000 species of animals, over 1,25,000 species of plants, nearly 500 distinct tribal groups, and over 5,000 anthropologically distinct human groups?

This has not been all. Ours has been a complete society, with indigenous prescriptions derived from several systems of medicine to combat disease and health problems, and agricultural practices which, till the end of the last century, were contemporary with those practised in Europe.

It was our history - all that I have said and not said, taken together -that made the British rule in India different from the British rule elsewhere. The British recognised that India had an enviable past and that despite the great diversity among the vast array of communities in the subcontinent, they were also united by deep cultural bonds. The foundations of modern science, technology and education were laid in our country during the British rule in a way that it didn't happen in any other colony in which there was a preponderance of the original inhabitants. There has been no colony of any colonising nation or power which, at the time of Independence in the last century, had two indigenous Nobel prize winners and as many as ten scientists who were Fellows of the Royal Society.

India's biodiversity is another area where we have failed to make use of our extraordinary bounty.

In this respect, the numbers will speak for themselves. Which other country in the world would have some 1,00,000 species of animals, over 1,25,000 species of plants, nearly 500 distinct tribal groups, and over 5,000 anthropologically distinct human groups? Amongst all the regions of the world in respect of biodiversity, including human biodiversity, India ranks at the top. The National Bureau of Plant Germ Resources in Delhi has in its National Gene Bank nearly 1,90,000 accessions of different types of cereals and pseudo cereals, millets, oilseeds, pulses, fibre crops, vegetables, spices, medicinal and aromatic plants, and other crops - all indigenous to India. For example, we have several hundred types each of *bhindi* and *baingan*. Not only the size of paper used by us in the office and at home varies enormously in length, breadth, thickness and quality, our vegetables and fruits also show the same variation! While

in some ways all this might be exasperating, the fact is that our rich biodiversity represents an unparalleled gene pool from which, if we draw with wisdom, we could work miracles for our future.

There is no other country, which has such a variety in every respect that we have, be it in respect of history, geography, climate, soil, religion, language, customs, traditions, or personal habits in regards to food or dress. In fact the only statement that is true about India is that no other statement about India is either true or false. We have discussed this in detail elsewhere (P.M. Bhargava and Chandana Chakrabarti, *Of India, Indians and Science,* Daedalus, Fall 1989, pp 353-368); I will not, therefore, dwell on it in any detail except to mention that our tradition of acceptance of this variety in every sphere, has led to the development of adaptability and tolerance as national qualities in a way that has never happened in history anywhere else. These qualities are among our greatest assets today.

As individuals and as a nation, we have proved to be incredible survivors, and coping with such immense variety has provided us an unparalleled opportunity of a world view. Indeed, living amidst this mind-boggling variety has made us capable of creating order out of what may appear to others a hopeless chaos: the way we negotiate traffic in our cities, would be an example.

Only half-a-dozen countries around the world have better infrastructure, in breadth and in depth, in science, technology and administration, than what we have. It is, therefore, not surprising that in the second half of the last century, we have had several remarkable successes, for example in respect of software development, space, scientific infrastructure, and nuclear power. Unfortunately, our successes have been coupled with equally significant failures on account of our weaknesses.

Courtesy: Indian Folk Art

Our Weaknesses

We haven't recognised that every nation in the world, at all times in history, has had a plethora of problems to deal with. However, the more successful nations recognised that there exists a "problem hierarchy," such that unless the problems higher up in the hierarchy are solved, the problems down the hierarchy cannot be solved. We haven't recognised such a "problem hierarchy" for our problems. Consequently, all our solutions have been ad-hoc, unplanned, untimely, and non-sustainable. The problems on the top of the hierarchy that stare us in our face are: education (its democratisation and appropriateness), water, energy, and corruption. Unless we take care of these problems, other problems such as control of population growth, empowerment of women, and combating fragmentation, revivalism and religious fundamentalism, would not be taken care of.

...more successful nations recognised that there exists a "problem hierarchy"...

Our electoral system is unsuitable for us, and nothing would change unless we change this electoral system in a way that would make sure that able and committed people occupy positions of

power - in our Panchayats, Panchayat Samitis, Zilla Parishads, State Assemblies and the Parliament. I have no doubt that if there was a column in our ballot papers saying that no one whose name appears on the ballot is suitable, a vast majority of our population (if left to themselves) would have filled in that column in the last few elections!

We have not realised that we are poised to enter the age of globalisation of knowledge. One consequence of this phenomenon would be that, for a citizen to discharge his duties and responsibilities and claim his rights, he would have to know a little about everything, while being an expert in his chosen area. Thus unless the citizens have a wide base of knowledge, they would be exploited.

Our industry has not realised that for it to survive in this century, it would need to be transparent, value oriented and socially committed. The times have gone when they could plan on reaping the maximum possible benefit while giving the minimum possible return to the people, even deceiving them by false advertisement.

Our top scientific and technological management has not recognised that our life in this century and, perhaps, in the next, would be dominated by advances in a few selected areas, that is, microelectronics, computers, artificial intelligence, automation and robotics, information technology, biotechnology, material science, space science, and new ways of generating energy. Not only this, new interfaces would emerge, such as between biotechnology and information technology, which would have the potential of changing our life styles and the way we think, dramatically.

We showed lack of adequate commitment in effectively and genuinely empowering our women.

The Direction to Move

I believe that to close the vision-reality gap in respect of what this country *can* do and *should* do, and what we are *actually* doing, two major decisions or steps would need to be taken - one political and the other non-political.

We have not realised that we are poised to enter the age of globalisation of knowledge.

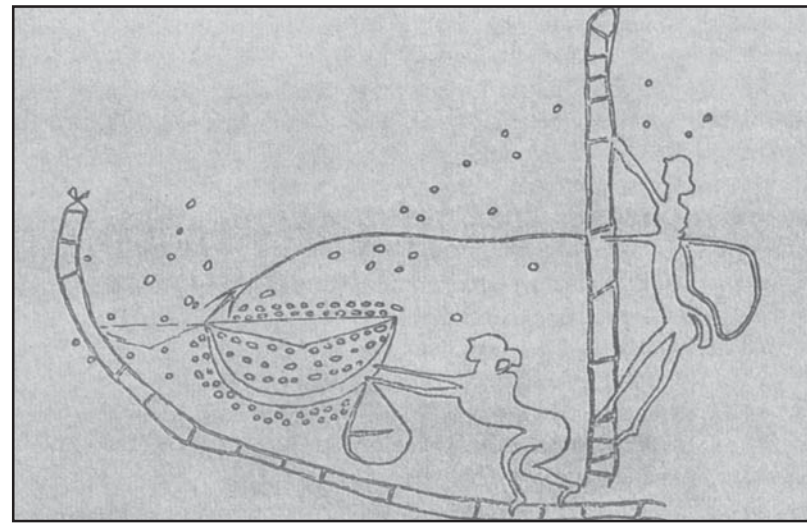
The political decision would be, to bring out three major changes in the manner in which we elect our public representatives to various bodies: (a) have a column in the ballot papers saying that no one is suitable; (b) have a stipulation that no one would be declared elected unless he or she has secured more than 50 per cent of the votes cast; with such a provision, political parties will be obliged to put up only those candidates who have the real confidence of the people, and there will be emphasis on ability, integrity, commitment and the desire to perform; and (c) have a -workable, reasonable and equitable system for empowering women through the political system (excellent drafts of how this can be done are available). I also hope we can make our electoral lists more accurate and persuade everyone to vote.

The non-political step would be to have a meeting of selected individuals who satisfy certain specified criteria (such as, a high level of professional competence and achievement coupled with a wide base of knowledge, proven ability, high public credibility, vision, honesty and integrity, clarity of thought, open-mindedness, social commitment, ability to articulate, and a basic humanistic attitude), to prepare an agenda for the nation which is workable and which takes into account our strengths and weaknesses, our assets and liabilities. We know individually, how to play well; we would need to learn how to, collectively, score a goal.

If we manage to do what is mentioned above, we would have the following fall-outs:

A political system that would ensure election of committed, honest and capable individuals who understand the situation from the scientific, technological, social, political and economic points of view and who can deliver the goods.

A new educational system which is need and knowledge-based and not examination and memory-based and which makes the process of acquisition of knowledge exciting.



Courtesy: Indian Folk Art

A new set of values, for example, for industry, for scientists, for technologists, for other professionals and for organisations or agencies both in the private and the public sector.

A new system of social security and a new sense of social responsibility.

A new paradigm of sustainable development in which tradition and modernity have been married: not merely a contract marriage but a marriage for ever.

Let me give two examples of what can then happen - one social and one scientific: Let us take the scientific example first. Many of us believe that the future of medicine lies with three classes of drug - peptides, drugs obtained through the process of rational drug design, and plant-based drugs. We can provide world leadership in all these areas on account of our scientific abilities and the richness of our tradition. For example, we have some 40,000 plant-based prescriptions that have come to us through traditional Ayurveda, Unani, Siddha, Tibetan and tribal systems of medicine. We need to appropriately document, standardise and validate these prescriptions. Even if we assume that 10 per cent of them are valid, we have the potential of giving to the world, say in the next 20 years, 4,000 drug prescriptions at a very small cost. Assess this in the light of the fact that every year less than 10 new drugs are added to the repertoire of the modern system of medicine, and that the discovery of each one of them costs anywhere from. a quarter of a billion to a billion US dollars. India thus has the potential of leading world health-care in the 21 st century.

Now the social example. I have no doubt in my mind that if all that I have mentioned above can be done or happens, the Indian woman would serve as a model for the rest of the world in the coming century by defining a new role and a new paradigm of conduct. I say this because in no other country women have gone through the range and variety of experiences that the Indian women have over the last five thousand years. Only an Indian woman has the potential to combine -as many have done through history and some do even today (and I say this from personal experience) - knowledge with wisdom; modesty with courage; kindness and consideration with firmness; wit and humour with sensitivity; external exquisiteness with internal beauty; diplomacy with candour; ability to claim one's rights with a sense of responsibility to discharge one's obligations; sophistication with simplicity; tradition with modernity; ability to use one's mind with skill to use one's hands; discretion with adventure; guile with helplessness; power with persuasion; and aggression with submission. Our women can epitomise all this and more, and on an unprecedented scale, if only they have opportunities and the problems that I have mentioned at the top of the hierarchy are taken care of.

...every year less than 10 new drugs are added to the repertoire of the modern system of medicine... we have the potential of giving to the world, say in the next 20 years, 4,000 drug prescriptions at a very small cost.

Look at what the Indian women have done where they have had opportunities. There is hardly a field in which they have not excelled in our country today, be it in piloting an aircraft, in the police or civil service, in politics, in literature, in painting, or in science. In the hierarchy of those who would determine our future, women would come first, children the next and men the last. I would like to live to see a day when an Indian woman would be proud of being a woman and an Indian, and would bring up men who would complement her, for that is a job that only a woman can do. ❑

Dr. Pushpa M. Bhargava is a renowned scientist and Former Director of Centre for Cellular and Micro Biology, Hyderabad.

Share Your Visions

In Issue no. 115 we started a new column: *My Vision For the Future.* Unfortunately, we got very few responses. Those that came, tended to deal with very immediate and elementary challenges facing us today such as providing education to girls, improving the garbage clearance in our cities. It seems we were not able to effectively communicate the very idea behind this column:

- To go beyond ordinary mundane expectations and dream big. In short, we would like to attempt grand vision.
- To think far ahead and project likely scenarios for the future. These could be either negative or positive, funny or serious, inspiring or frightening.

We hope many more readers will share their dreams, visions, fantasies or even fears of the future through this column.