

## TIME TO DEMYSTIFY WESTERN SCIENCE

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A recent article in "The Times of India", "Taking science to the people," described attempts being made to popularise science and rationality in order to eliminate superstition. This is a crusade to be strongly recommended since it is muddled thinking which appears to be at the root of many of our problems.

However, it is necessary to examine closely all aspects of our society, not only the obviously superstitious. And perhaps it may be advisable to start with this article itself for, unfortunately, it contains fallacies and distortions which make it rather irrational and unscientific. Sadly, this sort of confused thinking is not limited to a few articles but to much of what is published often in the name of science, here and abroad.

On some of the attempts being made to popularise science, the article states: "Laudable as these efforts are, they are aimed by and large, at the urban and semi-urban literate and educated readers. That would be an exercise in informing the informed. .... Beyond that lie the rural millions, illiterate and certainly uneducated whose life is governed by superstition".

It is assumed here that those who are literate and formally educated are necessarily rational and not superstitious. But being 'informed' does not automatically confer on one the ability to reason well and to discern inconsistencies. Further, frequently, the information communicated itself may be deliberately or unconsciously false.

Reasoning is also often entirely suppressed when misinformation is spread by members of the scientific establishment, since the common man has been tutored to consider these persons as 'experts' on all topics under the sun, wholly incapable of error and always truthful. 'Superstitions' are defined as irrational beliefs, not necessarily religious. They are not restricted to the 'illiterate' rural millions but are widespread among the urban 'educated and 'informed', too.

Those of the latter are no doubt peculiar to their milieu. Among them can be listed the convictions that material things bring happiness, that cosmetics keep you young, that Vitamin pills are necessary for health and Western science and technology will solve all our numerous problems. This last is probably the most prevalent superstition in the westernised section of our population to

Another common error is the assumption that those who have not passed through the education system are 'governed by superstition'. This is the equation of illiteracy with irrationality and ignorance. It is an opinion that exposes the crass arrogance of those who pass through the formal education system. They believe — and want others to believe — that only their knowledge is valid knowledge. Further, what is absurdly implied is that rural people do not think logically.

Most formally educated persons naively assume that it does not require any reasoning whatsoever to grow crops, to look after cattle, to build huts or to make the thousands of varieties of handicrafts which are appreciated all over the world. Rural people, literate or not, are educated for living. The required information and the methods of using it are orally handed down from parents to children. This is true education, far superior to the western-imported, irrelevant stuff that children learn by rote in the formal education system.

It needs to be strongly stressed that it is the vast knowledge, together with the toil and sweat, of these supposedly ignorant rural millions that is feeding, clothing and maintaining all of us — including the scientists in their air-conditioned labs surrounded by manicured lawns. Without the former not one of the city 'educated' persons would be able to survive.

The article further rather strangely couples superstition and tradition as if all traditional knowledge were superstitious: "When the women folk observed for themselves that ... rice could be cooked more quickly with the new 'chullas', their minds were ready to absorb the 'science' behind many other facets of their daily chores which were bound by tradition and superstition.

In this one sentence, all that has nourished and sustained our ancient civilization for millennia is superciliously dismissed as insignificant. In order to examine what this involves it is necessary to define the terms being used. The word 'science' was derived from the Latin word 'to know'. Its use was later restricted by the West to denote only their specific knowledge of the natural and physical sciences and later, other limited areas of knowledge. This conveniently licensed the West to consider as invalid all other knowledge systems, particularly those of their colonies. The colonizers, by this process, not only occupied our lands but also our mental territories. However, while they have vacated their physical occupation, the foreign rule of our minds still appears to continue — and even expand.

Most members of our own scientific establishment, having internalised the West's view, so faithfully ape them that one is tempted to deduce that they have mental magnets stuck between their ears which orient their noses firmly to the Occident.

Next, it is important to distinguish traditional technology, for which the scientific explanations may not be known, from superstition. One can have a technology and use it without being aware of the principles on which it is based.

There are many traditional practices for which Western science is only now finding explanations. Our farmers, for instance, plant seeds at particular phases of the moon. They believe that if so planted better crops are produced. This has always been discarded by the 'educated' as superstition because the calculated effects of lunar gravity and light on plants are too small.

Recently, however, it has been found that many of the pests that attack these crops have life cycles in phase with the lunar ones. The crops, which are particularly vulnerable at certain stages of their growth, are therefore dependent on the time at which the pests are at their most destructive level.

Then there are our wide range of ancient herbal medicines. They are still used by millions for the simple reason that they are freely available and they have been tested by time.

'Sarpagandha' (*Rauwolfia serpentina*) has been used for millennia in India. But it was only in the last fifty years or so that Western allopathic medicine 'discovered' the drug reserpine in the plant. Did its use become rational only after it began saving and relieving the lives of millions in the West?

Multinational pharmaceutical firms are setting up huge laboratories in India for the sole reason that they believe that our traditional medicines have something of value in them. But the 'western oriented gentleman' will only accept them after they have been patented, processed and packaged by the West and then sold back to us at exorbitant prices. The MNCs are robbing us of our very heritage but this attitude aids and abets them.

The article also states: "These masses need to be informed about the impressive strides taken by science to change their life-style and improve its quality."

While Western science has certainly taken immense strides to change the life-style of all of us, it is highly questionable whether its quality has been improved for the poor. Most alien technologies have helped the minority rich in villages and cities to get richer while most of the poor majority have become further marginalized in the process.

To give a few examples, the large growth in the number of tube wells bored by rich farmers causes a lowering of the water table with the consequence that the due wells of the poor in the area go dry. Big hydroelectric and irrigation projects provide power to the cities and to the rich farmers who can afford pumps, while the poor are displaced from their ancestral homelands.

The use of synthetic pesticides by farmers has produced resistant pests which can no longer be controlled, while at the same time our food is made the most highly polluted in the world. Synthetic fertilizers, washed away from farms, are poisoning the water we drink.

The oil from oilseeds was formerly extracted in village ghanis and even in farmers' homes. The oilcake was fed to their cattle or used directly as manure. Now, with 'advanced' technology, the seeds are bought by middlemen and sent to far cities, using expensive transport run on irresponsibly priced mineral oil which is fast getting over. The oil extracted in big mills is packed in tins, sent back, and sold to farmers at high prices.

The edible oilcakes are preferentially exported to feed Europe's cows and their milk is dried and received by us as graciously given 'aid'. In this process, not only are rural people paying handsomely for all these supposed 'benefits', but we are also exporting our precious soil fertility.

Further, the rationality of a technology that 'improves' our lives by increasing the rate of cancer, genetic malformations and brain damage, all through pollution, is surely questionable. For it is Western science and technology which is responsible for the 70,000 or so chemicals that are irreversibly poisoning our environment.

It needs to be emphasised that Western scientists have to be held directly responsible for Hitler's gas chambers. Hiroshima and all the high-tech atrocities that have been are still being committed today. They cannot blame politicians for using what they invent. With over a million Hiroshimasized bombs in existence and 'scientifically improved' ones being produced day and night, they are leading us relentlessly to global genocide. Can they be called rational when their work has made possible — and perhaps imminent — the total extinction of all earthly life?

Possibly the most dangerous superstition in vogue today is the belief that nations can accumulate weapons which can make our planet lifeless and still expect life to continue indefinitely. The belief that Western science can guide us away from nuclear or environmental disaster is more alarming for the fact that it is being consciously propagated by those who claim to have a monopoly on rationality.

Further, science and technology are not socially neutral. They have been developed in the West to suit their requirements which all too often are contradictory to ours. The empty stomachs of the 300 million who are below the poverty line cannot be filled with research on the neutrino mass, the origin of the universe or the usual type of copy cat work that is being carried out in our establishment labs. In addition, the commercialisation of science by big industry as well as the

desire of individual scientists for fame is resulting in the suppression and distortion of knowledge.

Research results are being withheld so that others may not follow the same track until patents can be obtained. And mainly those subjects are researched which can lead to high profits on sales of resulting technology or which can be funded by military establishment.

It is also a superstition to overrate Western science and assume that it is pure and perfectly rational. The plain but well-hidden fact is that most of the natural phenomena, particularly at fundamental levels, cannot be explained satisfactorily.

Even the methods being used by particle physicists are questionable. In hunting one of the quarks, the "Scientific American" of October 1986 reports: "To search for the top quark, beams of high energy particles travelling in opposite directions are made to collide with each other and the subsequent interactions are analysed. Such interactions, numbering in the millions, have been recorded... Among them investigators have found 40 that could be the signature of the top quark.

Another question we should ask is whether a theory which can be understood by only a few scientists or which can be tested only with the help of enormously expensive equipment, fulfills the criteria which that very science has set: only that is acceptable as science which can be verified by others.

A further fallacy propagated, or at least implied, is that all scientists are governed by a mysterious 'scientific temper' which makes them impartial and objective.

But scientists are human beings and, like any of us, far from perfect. There have been innumerable frauds perpetrated by many of them from the time Piltdown Man was fitted with false teeth to the most recent allegation that Robert Gallo the American who claims to have discovered the AIDS virus, was actually given it by Luc Montagnier, a French scientist.

Even more dubious and dangerous are the frauds which some of our own Western-oriented scientists foist on us today.

Consider this entire statement of the DAE, our supposed premier scientific establishment: "The performance of nuclear power stations during 1986-87 has been good and the gross generation of all the nuclear power stations was 97% of the target, according to the department of atomic energy (DAE). The performance factor of RAPS-2 was very good and the generation was far in excess of the target and the unit achieved a capacity factor of 73%. The reactor was in continuous operation for 163 days, thus establishing a record performance of similar-sized units in thermal stations. The DAE said that

one of the units of the Tarapur atomic power station has achieved a high capacity factor of 79% during the year.

In the first sentence, while "97% of the target" appears to be a high figure, the report does not tell us what fraction of the designed capacity the target itself was. It could well be 25% for all we know. In the second, 73% of the capacity can hardly be considered a 'very good' performance except by the DAE's own low standards.

In the third, since no figures are given of equivalent thermal stations, nor whether their performance is good by general standards, the statement is meaningless. In the fourth, it is not stated whether it is 79% of the designed or derated capacity, as the TAPS reactors have never worked at their full design ratings.

Four sentences, four half-lies. Or, should we call them 'rationalisations' since they are deliberately worded in this way so as to deceive the public into believing that the nuclear power stations are working satisfactorily?

When asked for explanations, Westernized scientists offer us ex-cathedra announcements or hide their incompetence under a 'security' blanket. One of their favourite ploys is to recite modern mantras to hypnotize us into accepting what they want us to believe; "our reactors are perfectly safe", "modern science and technology is beneficial", "the nuclear arms is essential for peace", and so on.

Considering the fact that millions could be affected by a nuclear accident, exploitation by godmen appears preferably to that by the scientific establishment. Or rather, it is as necessary to demythologize science as it is to expose godmen.

Western science alone does not seem capable of solving the horrifying ecological problems of today. The pride which it induces in those who claim to understand the physical basis of the universe makes them arrogant enough to believe that they can dominate and exploit nature.

The science of the West has been divided and sub-divided into many specialities and each scientist is content to limit his studies to and become an 'expert' in one small branch. It is this division that prevents them from realizing the consequences of the use of specific technologies on other areas of our habitat.

The consequences of this attitude are far-reaching. A survey of scientists working on 'Star Wars' projects showed that the majority of them were totally unconcerned about other aspects of the social fabric.

Since all this is the result of the 'rationality' of the West, it is extremely urgent that science and technology be set free

from the clutches of Western monopolists and be used by people for their own liberation.

Many of our traditional technologies can provide safe and sane alternatives to the West's destructive and exploitative ones. We need to search and research our traditions for those which will sustain life on earth, not destroy it.

For people to do their own research, all that they need is to be able to observe, record and seek causes and effects. But Westernized scientists wish to appropriate and monopolize knowledge. By their rules, research and development is only acceptable when it is carried out by formally certified specialists, working in huge institutions, with expensive equipment and further validated by being published in scientific journals in the West.

Peoples' science should mean more than 'taking science to the people'. Equally important is learning from the people; their needs, their technology, their methods. Much of the technology that is developed in laboratories has proved a failure when taken into the field.

The probability that we will find a way out of the social and ecological mess the world is in is not very great. And it will rapidly approach zero if the search for solutions is left to select selfish 'scientists' rather than being taken up by all members of society.

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