

HIGH TECHNOLOGY AND ITS PHILOSOPHICAL PERSPECTIVE

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Introduction :

'Technology' derived from the Greek word 'Technologia' means systematic treatment of practical arts and/or applied science. It also means the system by which a society provides its members with those things needed or desired.

'High Technology' would thus imply constant and continuous modernisation and up-gradation of industrial and engineering methodologies and the machinery/equipment, through research and innovations, to provide industrial products, processes and services, to meet the ever-changing and ever-growing needs of the people/consumers, consistent with standards of quality and criteria of efficiency, utility and economy. Economy would mean not only about expenditure, but also about time and labour.

It is noteworthy that with the shifting of emphasis in industrial production and engineering education from the good old traditional and conventional fields to the more sophisticated fields of new emerging Technologies, the application of High Technology has, with a view to

meet the challenges of the impending Twenty First Century, extended to such diversified and specialised branches of modern engineering such as :

- (1) water & Land Resources Management;
- (2) Environmental Engineering;
- (3) Power System Engineering;
- (4) Telecommunication System Technology;
- (5) Aeronautical Engineering;
- (6) Space Technology;
- (7) Oceanography;
- (8) Electronics Engineering;
- (9) Computer Engineering;
- (10) Solar Energy Technology;
- (11) Petro-chemical Technology
- (12) Instrumentation;
- (13) Telecommunication Engineering;
- (14) Nuclear Energy Technology etc.

Obviously, the application of high technology should be utilitarian, and need not necessarily be restricted or confined to make it the sole prerogative of the abovementioned privileged fields only; but its spectrum extended to cover the needs and requirements of both the classes and the masses, with a view to confer maximum benefits of High

Technology on a maximum number of people, in their day-to-day lives.

A Pertinent Question :

A pertinent question has been posed, whether High Technology is a boon or a curse to the country and in fact, to the entire humanity? This question assumes a special significance in the aforesaid context, and a detailed answer to the question is provided by the discussion that follows :

It has been aptly said that mere information is not knowledge, and mere knowledge is not wisdom. Also, what is more significant is that whereas wisdom without knowledge is useless, knowledge without wisdom is dangerous.

A few examples would illustrate the basic truth of the above statements.

The knowledge of nuclear energy resulting from nuclear fission and fusion of atoms thru' nuclear high technology, has uncovered un-limited resources of energy, which could be utilised for the service and welfare of humanity. But lack of human compassion and wisdom has through misuse of the nuclear high technology, produced the horrible fission and fusion bombs, which have become a menace, and threaten the very existence of humanity.

Likewise, the Space and Robot Technology, have tremendous potential for serving humanity. Unfortunately, these high technologies, which could be described as the triumph of human intelligence, are likely to be misused by the Super Powers in pursuit of their political hobbies of engaging themselves in the 'Star Wars', which could result in spelling the doomsday for the

entire world.

It is heartening indeed that Computer Engineering and nuclear technology in other constructive fields of *Industry and medicine*, have revolutionised the human efforts to eradicate ignorance, disease and poverty to make the world a happier and a more peaceful and pleasant habitat to live in. The use of CNC lathes, which have become a hallmark of distinction in the fields of industrial progress and development, is undoubtedly a gift of High Technology having an immense potential for the future. The importance and significance of the discovery of the high technology of super-conductivity, which is likely to be the engineering marvel of the twenty-first century, may be described as on par with the discovery of the nuclear secrets of the atom. But it is most imperative that high technology in this, as in other fields of modern science and engineering, is evolved and utilised in a proper philosophical perspective, adopting "service before self" as its inspiring motto, and oriented to a "Need based Society" and not a "Greed based society". The ancient wisdom of 'simple living and high thinking', with its consequent blessings, must not be allowed to be overwhelmed by the false glitter and glamour of 'High Living' and 'Simple thinking', as a consequence of the misuse of a High Technology, which would undoubtedly be a curse to the country, and in fact, to humanity at large.

Utilitarian Application of High Technology :

Mr. Sam Pitroda (Advisor to the Prime Minister of India on Technology Missions) inaugurating an Exhibition and Seminar on "The Hi-Tech Product Equipment and Processes" organised by the Victoria Jubilee Technical Institute of Bombay, on 7th December, 1988, and given two interesting examples of the simple and utilitarian application of

High Technology, which are noteworthy.

Mr Pitroda said that whenever he went to the Delhi Airport, he found that a sweeper manually swept the tarmac area with a broom which appeared to be both dis-proportionate and unsuitable for the job. He wished that a simple mechanical sweeping device, which might be attached to a simple cycle or an auto-rickshaw could be designed and manufactured, so as to increase the efficiency of the job.

Mr. Pitroda cited another example from Japan to illustrate a simple application of High Technology. The Japanese, who did import/export business in water melons, had found that the rectangular boxes used for packing the round shaped fruits were unsuitable and uneconomical. They found an ingenious solution to the problem by engineering the modification of the sizes and shapes of the fruits to conform to the size and shape of the package boxes, which was a good example of simple application of High Technology.

A number of similar other examples could be thought of on similar pattern to suit the needs and requirements of masses in India.

In the kitchen, in addition to the pressure cooker, and smokeless chula, micro-wave oven could be cited as an example of this category, resulting in substantial saving of labour and time. These devices could further be improved through innovations of High Technology. As for the bathrooms and toilets of residential blocks, recent innovations made for economising by almost fifty percent in the use of water (a commodity in short supply) for flushing, could be cited as other examples of utilitarian use and simple application of High Technology affecting the daily lives of the people.

Gobar Gas Plants, and Solar and Wind Power Energy; as well as tidal waves, could be put to larger and wider use, by further simplification and economisation of their technologies.

Another noteworthy example, which could be cited in this category is the production of a mobile toilet. Foreign people visiting India are often heard to remark that it is strange that whereas people in this country show extraordinary flair and enthusiasm for setting up "Input centres" (meaning restaurants, bhel puri shops and pavement refreshment stalls etc.) at all and sundry places, they hardly care for setting up any "Out-put Centres" (Meaning toilets and lavatories) anywhere to cater to the needs of the people. Consequently, it is a common daily feature to see people easing themselves at random on roads, streets, railway tracks, parks, and infact in every other conceivable places converting large parts of Indian cities and towns into veritable stinking latrines, which is nothing short of being a national disgrace. It is heartening to note that something tangible is being attempted by certain enlightened and enterprising industries to tackle this problem.

Manufactured by Concept Engineers, a Pune based Company, the mobile toilets van, which can be towed by a tractor, costs about Rs.1.38 lakhs. The mobile toilets van which rests on a sturdy trailer, has two rows of five toilets, each with a water tap and door latch of its own. The individual unit about one metre by one metre cubicle and the Indian style toilet has fibre glass seats. A fibre glass collecting tank is fitted at the bottom and can be emptied by a remote operated valve. A commendable feature of the mobile toilet is that, as soon as its bottom tank is full, a tractor tows the mobile toilet to a selected site, where the tank is emptied into a bio-gas plant for conversion of the night soil into bio-gas and

fertilizers. The mobile toilet thus washed and cleaned, is towed back by the tractor for re-use at the site, as stated. This mobile toilet can be used by about five hundred people before the overhead tanks are refilled with water. The mobile toilets are ideal for use in all congested towns and cities, and particularly in overcrowded slums and other places, where people congregate in large number. These toilets can further be improvised through high technology to make them more useful and economical.

The other potential areas for urgent applications of High Technology in the near future would be Housing. Millions of people languishing in slums in almost sub-human conditions, shall have to be provided with tenements and houses (comprising both conventional and pre-fabricated units) with adequate provision for a decent living with reasonable facilities of living rooms, kitchen and toilets. Application of High Technology would be necessary for finding out economical and durable building construction materials and building techniques, for meeting the urgent housing needs of the millions as stated.

High Technology would also be very relevant and urgent for innovating Technology itself, as also for finding out economical alternate sources of energy to serve as substitutes for the present conventional sources of energy, such as coal and petroleum, whose existing reservoirs are getting depleted at an alarming rate. These alternative sources of energy, apart from meeting the needs and requirements of the people for energy to operate industries and transport systems, shall also have to provide adequate safeguards to maintain the natural ecological equilibrium, without which the world would be confronted with unimaginable disastrous consequences.

Droughts and floods, which have become, more or less, endemic in the country due to the vagaries of weather and disruption of the ecological balance; as also the acute shortage of filtered drinking water in many parts of the country, must be tackled and solved thru' applications of High Technology.

India having already solved its stupendous problems of food grains production thru' its "green revolution", and milk production through its "white revolution", is undoubtedly now poised to enter the Twenty First Century thru' its industrial Revolution thru' High Technology



CHALLENGE OF EDUCATION

In the history of mankind, education has formed a continuum and a basis for the development of human society. Through development of attitudes, values, capabilities both of knowledge and skills, education provides strength and resilience to people to respond to changing situations and enables them to cause and contribute to societal development. History has established beyond doubt the crucial role played by human resource in the development of human resources in the development of nations. And the development of human is the main function of education.