

CHAPTER – VI

JAWAHARLAL NEHRU'S VIEWS ON SCIENCE AND TECHNOLOGY

INTRODUCTION:

Development in the fields of Science, Technology and Education during the British Rule was essentially designed to suit the ruler's defence, trade and administrative requirements, ignoring completely the large scale prevalence of hunger and poverty, insanitation and illiteracy among the Indian masses. In the wake of Indian Independence, Nehru visualized that adoption and integration of science and technology with the national planning was a must to improve the alarming socio-economic conditions of teeming millions of people. In 1945 when Gandhi insisted on the Hind Swaraj model for the future of India, Nehru said that "the question of independence and protection from foreign aggression both political and economic has also to be considered. In this context, I do not think it is possible for India to be really independent unless she is a technically advanced country, and I am not thinking for the moment in terms of just armies, but rather of scientific growth."¹

Science for Nehru was an essential and basic component of development and progress. He had a clear perception of progress of the developed countries and felt that attainment of superiority in science and technology alone can maintain world order. But for his ceaseless efforts, clear vision, and an uncompromising commitment, science and technology in India would not have been developed as a major force for social and economic transformation. In this paper an attempt is made to reflect the influence of science and technology on Nehru himself, and his endeavors to transmit the same to the fields of industrial development, agriculture and food production,

modern scientific development, formulation of science policy and atomic energy.

Nehru's Scientific Spirit:

Nehru's attitude towards life was based on a scientific spirit, and his views were clear on scientific and technological development. He was convinced that the methods and approaches of science have revolutionized human life more than anything else in the long course of history; and have opened doors and avenues further, and even led to more radical changes, leading to the very portals of what has long been considered the unknown.² Nehru felt that "it is the scientific approach, an adventurous and yet critical temper of science, the search for truth and new knowledge, the refusal to accept anything without testing and trial, the capacity to change previous conclusions in the face of new evidence, the reliance on observed fact and not on preconceived theory, and the hard discipline of mind. All these are necessary not *merely* for the application of science, but for life itself and solution of its many problems."³

He stressed that "the scientific temper are, or should be a way of life, a process of thinking, a method of acting and associating without fellowmen."⁴ His scientific temper and approach has come in conflict with the traditional and religious beliefs. Focusing light on some of the negative aspects of religion, Nehru pointed out that "religion as I saw it practiced and accepted even by thinking minds whether it was Hinduism or Islam or Buddhism or Christianity, did not attract me. It seemed to be closely associated with superstitious practices and dogmatic beliefs, and behind it lay a method of approach to life's problems which was an element of magic about it, an uncritical credulousness, and a reliance on the supernatural."⁵ Nehru thought that religious attitude

connected with austerity was bound up with the world of long' ago. Though conditions changed and raised the human level in material prosperity beyond the wildest dreams of the past, the stranglehold of the past continued, and the stress is now being laid on certain vague and immeasurable spiritual values. The industrial age has brought many evils; but we are apt to forget that taking the world as a whole especially the parts that are most industrialized, it has laid down a basis of well-being which makes cultural and spiritual progress far easier for large numbers.⁶ Nehru opined that religion comes into conflict with rationalism. Religion as practiced either deals with matters rather unrelated to our normal lives and thus adopts an ivory tower attitude, or is allied to certain social usages, which do not fit in with the present age. Rationalism, on the other hand with all its virtues, somehow appears to deal with the surface of things without uncovering the inner core. Science itself has arrived at a stage when vast new possibilities and mysteries loom ahead. Matters and energy and spirit seem to overlap.⁷

Nehru said that in the ancient day's life was simpler and more in contact with nature. Now it has become more and more complex, more hurried without time for reflection or even for questioning. Scientific developments have produced an enormous surplus of power and energy which are often used for wrong purposes.⁸ Nehru expressed that man is not a victim of nature, "nothing is so remarkable on the progressive conquest or understanding of the physical world by the mind of man today, and this process is continuing at a terrific pace. Man need no longer be a victim of external circumstances. While there has been this conquest of external conditions, there is not the same time this strange spectacle of a lack of moral fiber and self control in a man as a whole conquering the physical world, he fails to conquer himself".⁹ Nehru, with all passion for science and technology, and rationalism, never let an opportunity to

go by without stressing the need for the development of the spiritual side of man. He firmly conceived that the two must walk together if human beings were to lead a life of peace and happiness.

Industrial Development:

Nehru's great zeal for science and for scientific approach could be seen from his expressions that "whenever chance offers I say something about the importance of science and technology, and we should realize that modern life is an offspring of science and technology."¹⁰ It was clear to him that political freedom had to ensure social liberation and that becomes possible only through economic growth which invariably demands the fullest use of science and technology to achieve gainful results and exploit untapped natural resources of the land. He said that all his endeavors were to lift the mankind from its age-old state of bare subsistence level to a social level which provides security, material well being, opportunities for advancement and higher life to all; and these could be achieved through establishment of mighty projects, and heavy industries. These are necessary for not only economic development of India, but also for safeguarding its political independence and strengthening its defense.

Though Nehru attached an undue importance to heavy industries, he did also realize the significance of small scale or cottage industries. In his scheme, there was a place also for both types of industries. He explained in the parliament that the argument one often hears against big industry, cottage and small scale industry is misconceived. No doubt in this country we cannot raise the people's level of existence without the development of major industries. In fact we cannot even remain a free country certain things like rapid industrialization adequate defense, are essential for protection and maintenance

of freedom and those cannot be achieved unless we develop industry in a major way. The development of heavy industry does not by itself solve the problems of millions in this country. We have to develop the village and cottage industry in a big way and while trying to develop both, one should not forget the human factor. For, we are not merely out to get more money and more production, but we ultimately want better human beings.¹¹ The gigantic industries of steel and iron, coal, oil refineries, and the ship-building industries established during Nehru's period have provided a strong industrial base to the country. He could for see that industrial development would influence Indian economy and the former by the application of science and technology.

Agriculture and food production:

India is predominantly an agricultural country, and, therefore, Nehru felt that unless the agricultural sector is developed the health and living standards of Indian masses cannot be raised. Nehru observed that "we attach greater importance to agriculture and food, and matters pertaining to agriculture. If our agricultural foundation is not strong then the industry we seek to build will not have strong basis either. Apart from that the situation in the country today is such that if our food front cracks up, everything else will crack up too. Therefore, we dare not weaken our food front."¹² For him, planning, apart from the obvious objectives of raising living standards and bringing prosperity to our people, had a wider purpose of bringing our people into the middle of the 20th century and making India one of the leading countries of the world.

It is obvious that modern agriculture with high levels of production, for example in America, where less than 10% of the population produce more than enough for the whole, is based on modern science and technology for it depends on machinery and giant dams and other steps taken to improve

irrigation facilities. Production of better strains by scientific breeding and an abundant use of fertilizers is product of the chemical industry. He said how has agriculture grown in many other countries greatly, it is because of the application of science and technology, and then we must seize hold of them, understand them and apply them.¹³ The First plan (1951-56) faithfully followed this prescription and devoted 17.4% of its total expenditure to agriculture and community development. A major portion of the outlay on irrigation and power (27.2%) also naturally went to agricultural development. In contrast to this, only 8.4% of the plan expenditure was devoted to Industry and 24% to transport and communication.¹⁴ By the time the second plan (1956-61) was prepared, it was felt that the time had come to pay greater attention to industry and proper allocation to agriculture got reduced. Thus, Industry and mining got 18.3% of the total plan outlay and in addition 28.9% went to transport and communication department and 10% to irrigation and power.¹⁵

It has, however, to be remembered that every decision has its Own costs and Nehru perhaps felt that he had no choice but to give higher priority to basic industries coal, steel, oil and machine building, in order to lay the foundations of a modern, self reliant economy in India, without which even agricultural development was not possible beyond a point, and which was absolutely necessary not only for rapid economic development but also for safeguarding the country's independence and society.¹⁶ If today we are much less dependent on the advanced countries than most of the countries of the third world not merely in the economic field, but also in that of defense supplies, if manufactured goods are occupying an increasing share of our exports to various countries and if we have become self-sufficient in food production, it is due to modernization of agriculture. We owe all this in a good measure to the attention paid to the modernization of our economy during the Nehru era.

Modern Scientific Development:

Nehru visualized that science and technology would be an effective instrument to tackle many pressing problems confronting India, from times immemorial and, therefore, ceaselessly strove for its development to ensure, setting up of a chain of national laboratories covering a wide spectrum of Science. He requisitioned the services of many eminent scientists.¹⁷ He was primarily responsible for the establishment of about 30 research laboratories all Over India, and five Indian Institutes of technology at different centers. For development in the sphere of atomic energy, he sought the services of Homi Bhabha, and persuaded TATAS to set up Tata Institute of Fundamental Research in Bombay.

His endeavors resulted in the establishment of Bhabha 'Atomic Research Centre and the Atomic Energy Commission (1948). During the stewardship of Nehru, the expenditure on scientific research rose from Rs.24 million in 1947 to Rs.550 million in 1964.¹⁸ If India today is one of the leading countries in the world with the third largest reservoir of trained scientific manpower in the world, and occupies a place among those countries, which are highly advanced in the use Of Atom power for peaceful purposes, it is largely because of the farsightedness and able leadership of Nehru.

India's Science Policy:

The Government's commitment to science and technology was enunciated in the National Science policy resolution which was adopted by the Parliament in 1958. It was drafted by Pandit Nehru himself and it clearly brings out the significant role of science and technology and promotion of industrialization. Science and technology can make up for deficiencies in raw materials by providing substitutes or by providing skills which can be exported

in return for raw materials. Development of Science & Technology can greatly reduce the drain on capital by reducing dependence on the import of plant and machinery, highly paid personnel and technical consultants.¹⁹

The main aims of science policy are:

- I. foster, promote and sustain the cultivation of science and scientific research in all its aspects;
- II. ensure an adequate supply of research scientists and recognize their work as an important part in promoting the strength of the nation;
- III. Engage and initiate programmers for the training of technical personnel to fulfill the needs of the country.
- IV. encourage individual initiative in an atmosphere of academic freedom;
- V. ensure that the creative talent of men and women are encouraged and
- VI. Secure to the people the benefits that accrue from possession and application of scientific knowledge including the spirit of scientific attitude or temper.

Technology, as an extension of the science policy formulated in 1958, was announced in January 1983 at the Indian Science Congress session. Its major objectives are.²⁰

- I. attainment of technological competence and self-reliance (strategic and critical areas);
- II. promotion of gainful employment;
- III. Upgrade the traditional skills to make them commercially competitive.
- IV. Ensure the correct mix between mass production technologies and production by masses.
- V. ensure maximum development with minimum inputs of capitals;
- VI. conservation of energy;

- VII. modernization of the existing technological equipments, and
- VIII. Ensure harmony with environment while pursuing all the above objectives.

Nehru had not only understood the process of development through science and technology, but he saw that adverse effects of science too. In this context, Nehru wrote that "Science is advancing far beyond the comprehension of a very great part of the human race and posing problems which most of us are incapable of understanding much less of solving."²¹

Atomic Energy Programme:

In the early days, though India supported the proposal of the Western powers on international control of atomic energy, Nehru was keen that Indian Government's Sovereign power for development of atomic resources should not be compromised.²² In fact; the U.S.S.R., U.S.A. and Canada wanted that India should not manufacture nuclear weapons. Unmetered by the situation so created, establishment of the Department of Atomic energy, and the Atomic Energy Commission during Nehru era laid a strong base in the country for the development of atomic energy programmers. The chief objective of our Atomic Energy programme (AE Act of 1948) is the use of Atomic Energy solely for peaceful purposes, generation of electricity, and development of nuclear application in research, agriculture, industry, medicine and other areas like river valley projects. Commenting on nuclear technology of war, Nehru said that "today there is conflict in the world between two things the atom bomb and what it represents, and the spirit of humanity."²³ That is the paradox of/the atomic energy-sputnik age. The fact that nuclear tests continue even though it is well-recognized that they are very harmful in the present and in the future, because of the fact that all kinds of weapons of mass destruction are

being produced and piled up even though it is universally recognized that their use may. Well exterminate the human race, Science is advancing far beyond the comprehension of very great part of the human race and posing problems which most of us are incapable of understanding, much less of solving. Hence, the inner conflict and stimulate of our times. On the other-side there is the great and over powering progress in science and technology and of their manifold consequences on the other, a certain mental exhaustion of civilization itself.²⁴ It is widely accepted today that nuclear power is economical and that it has to shoulder an ever increasing burden of the future power production in the country. When nuclear power was still in its infancy in the world and its economics unknown, it caught the attentions of far seeing vision and imagination of a great man to embark upon an industrially backward Country on a programme of atomic research and development”²⁵. However, the faith of Nehru in science and technology was not absolute. Nothing was more distant from his thought than this easy optimism-very frequently obtuse-of the fanatics of progress.

He knew that contradiction is not an accident but a law: the very substance of history and man himself. We solve our contradictions only to create others. In a lecture given in 1959(Azad Memorial Lectures) he warned us of the dangers of the modern age with great clarity: “The Welfare State is a worthwhile ideal, but it may well be rather drab, and the examples of States which have achieved that objective bring out new problems and difficulties, which are not solved by material advance alone or by a mechanical civilization. Religion has played an important part in supplying some essential needs of human nature. But that type of religion has weakened its hold and is unable to meet the onslaught of science and rationalism. Whether religion is necessary or not, a certain faith in a worthwhile ideal is essential to give

substance to our lives and to hold us together. We have to have a sense of purpose beyond the material and physical demands of our daily lives. Socialism and communism attempt to give this sense of purpose, but they have tended to develop dogmas of their own. Communists have become the metaphysicians of the present age”.²⁵ In the same speech, the poet and artist that he always was, rebels against the sterility and spiritual poverty of the affluent society “A life divorced from Nature and more and more dependent upon mechanical device, begins to lose its flavor and even the sense of function leaves it. Moral and spiritual disciplines break up, and some kind of disillusion follows with a feeling that something is wrong with our civilization. Some people talk of going back to Nature and to the simpler life of the ancient days. But whatever virtue there is in this, there can obviously be no going back, for the world has changed. An individual may take to sanyasa with its renunciation of life, but society as a whole cannot do so. It has to base itself on an acceptance of life with all its problems and difficulties and try to make the most of it. It did not do so, it would perish”.²⁶

But if Nehru deems as possible the return to the past, he also knows that the industrial society threatens us with mutilations no less serious and painful than those of slavery and feudalism: “The value of human personality diminishes in a mechanical society. The individual loses himself in the mass and tends to become merely an instrument in a complex setup which is constantly aiming at social and economic improvements of the group as a whole” In contrast to the majority of the political leaders of this century, Nehru did not believe that he held the keys of history in his hands. Because of this, he did not stain his country or the world with blood. For the same reason, he neither offers us pre-fabricated solutions to the conflicts between industry and private life. He thought that modern society can find an answer to these

antagonisms by itself. The alternative was spiritual and physical death. He saw in the history of Indian an example and not a model. The past was, for him, a stimulus and not something that we could repeat). In the Mauryan age, Indian civilization attained a synthesis between the Greek and Persian cosmopolitan influences and its own tradition. A similar attempt-but partially aborted-had also been made by the Mughal Empire, especially under Akbar. At the end of his life Nehru asked himself: "Can we combine the progress of science and technology with this progress of the mind and spirit also? We cannot be untrue to science, because that represents the basic fact of life today. Still less can we be untrue to those essential principles for which Indian has stood in the past throughout the ages. Let us then pursue our path to industrial progress with all our strength and vigor and, at the same time, remember that material riches without toleration and compassion and wisdom may well turn to dust and ashes...." It is remarkable that Nehru, in spite of his mainly being a political figure, did not fell into the temptation of suppressing the contradictions of history by brute force or with a verbal "tour de passé".²⁷

He does not offer solutions; he shows us the way to find them. I emphasize this trait of his thought and character because it is unique in our world of fanatical Manichaeans and hangmen masked as philosophers of history. He did not pretend to embody, either the supreme good or the absolute truth but human liberty: man and his contradictions.

CONCLUSION

Jawaharlal Nehru, a man of India's destiny was well-known throughout the world and in his own country. For him science was an essential and a basic component to transform an economy of scarcity into one of abundance, and from traditionalism to modernism, the direction in which the whole world is

now running. He understood the other world's progress that it is due to attainment of superiority in science and technology, and those who have most indigenous techniques are maintaining the world order. He was convinced that India's progress and prosperity in all fronts lay in the establishment of vast and firm scientific managerial and technical base. Nehru's attitude towards life was based on scientific spirit and rationality. He was convinced that scientific method and approach alone can revolutionize human life. He visualized that establishment of a strong industrial base for promotion of economic development, and achievement of self sufficiency in the spheres of Agriculture, and food production was possible only through fullest use of science and technology. His ceaseless efforts to building adequate trained scientific manpower to be on par with those countries which are highly advanced, and formulation of an aggressive science and nuclear policy that can reduce dependence on foreign men, material and machinery, carved a place of eminence not only for himself, but also for India and her people as a whole. The great contribution of the towering personality would serve as a beacon light not only to the present but also to the future generations.

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