

Dec 7, 1987 by Prof S. Dhawan

We live in an age of change. The last world war in some sense was a unique agent of change in history. Never before had such an epic struggle between good and evil taken place encompassing the whole world. Strange as it may seem, the collective conscience of all mankind was awakened and there gathered widely different and heterogenous people with a common purpose to overthrow the monster of fascism. In its wake also went colonialism. Science and scientists contributed in an unprecedented way: aircrafts, rockets, electronics and radar, operations research and the atomic bomb marked a watershed in the history of the world which would never be the same as before.

Freedom movements awakened the chained and exploited three fourths of humanity and the dream of a free, safe, humane and just society was kindled in all corners of the earth.

The Indian freedom movement made unique in many ways by Gandhi, Nehru and others, forged a national consensus of purpose among the remarkably diverse communities living on the subcontinent. The urge to win political independence was allied with the hope to transform India into a self reliant, egalitarian and humane society. A special element of this consensus included the removal of social and economic impediments from the millions of poor and under privileged. The world view of the freedom movement was that of a peaceful, democratic and just socio-economic order based on

cooperation with and and moral support to all freedom struggles.

A glance at the India of today shows impressive advances in the last 40 years along with some deep and dark patches of gloom and decay in the national scene.

On the positive side, first and foremost Indian democracy has survived against all odds and against all prophecies of doom. There have been impressive advances in agriculture, transport and communications, science and technology, industry and the creation of a large pool of skilled manpower especially at the higher levels.

On the negative side - the snapshot also shows a grim aspect of the landscape: the benefits which have accrued from independence are extremely unevenly distributed. For millions of Indians there is as yet no social security and serious impediments continue in the access to education and health support. Over two thirds of the population still cannot read or write and nearly half remains below the poverty line, bereft of regular employment, shelter and access to the most rudimentary necessities for a safe and civilized life.

These brief remarks focus on education and the educated, the scientists and intellectuals of the present day and some of the tasks they will have to face. It is useful to recall that however heterogenous the background of

intellectuals who got drawn into the freedom struggle and whatever part they played in it - a characteristic feature which transformed all of them to a greater or lesser degree, was a sense of idealism in which austerity, service and recognition of the strength and values of the common people of India were the hall marks.

In the last four decades the number of intellectuals and institutions where they work has grown phenomenally. A few of them participate in political and public life and the processes of government. But most of them engage in professional activity rather removed from the common people.

It is a common observation that the needs of most professionals, especially the professional scholars, scientists and intellectuals requires varying degrees of objectivity and immersion in the pursuit and cultivation of knowledge. Study, lecturing and research, publications, seminars and symposia all require standards of judgement and quality. Over the years perhaps unduly influenced by the concepts and models of social development borrowed from the advanced countries the intellectual community seems to have been overwhelmed by the notion of academic excellence, impartiality and neutrality. Thus we observe the spectacle of scholarship, teaching and research having become increasingly confined to the class room, campuses and

laboratories. Symposia, seminars and conferences are places where professional academics talk to each other in esoteric language. Theory, model building and debates on methodology or presentation of results of intricate research become the primary and only touch stone of excellence and quality - no matter how far removed or irrelevant they are to the vast millions who remain outside the charmed circle of the educational and related systems.

It is not surprising that among the vast majority of people who cannot hope to enter the charmed circle, a degree of cynicism and resentment should prevail about the academics.

To politicians and others involved in the game of power management, academic activities and institutions appear of little relevance except when they lend themselves as pawns in the power game or can be used as prestige places necessary for production of ideas and concepts which can be used for their own ends.

In an era of explosion of knowledge and change of every kind the issue of how the academic community should participate in the processes of shaping human and social values in a rapidly changing India seems to have been relegated as outmoded, unworthy or irrelevant. Such attitudes impact the intellectual community and institutions. The result is to breed a sense of

powerlessness, frustration, withdrawal and anger which sometimes turns inwards and becomes self destructive. If frustration prevails among the intellectuals who will then act as the conscience of the nation and keep the ideals of the freedom struggle alive for the new generation? Fortunately there are recent signs that some sections of the intellectual community - economists, sociologists, historians, scientists, lawyers and engineers among them, are no longer prepared to remain as helpless agents. Introspection, self questioning and search by individuals and groups all over the country is leading to a growing determination to seek a more meaningful social role.

In rejecting the theory of academic neutrality these individuals and groups question the rigidity of institutional and disciplinary constraints which impose a deadening hierarchical and bureaucratic relationship to research, teaching and application. They are discovering, through their own experience and convictions, the unity in the generation of new knowledge in its dissemination and application in real life. These people question the status-quo and are willing to experiment and search with others and participate in the process of change.

It is clear that intellectuals in India have to rediscover that the greatest teachers are the people - the unlettered, the poor and the dispossessed. Only by helping

them can the intellectuals discover quality and meaning in their own professional activity.

Can the ideals of the freedom struggle, and the fact of a rapidly changing world in which science plays a critical and sometimes dominant role be amalgamated into a guide for action?

We note that the school has, in all ages, been the most important mechanism for transferring the knowledge, experience and tradition from one generation to another. With the explosion of knowledge led by science, clearly the bounds of knowledge and wisdom now transcend national geographical boundaries. Science has played and is playing a remarkable role in this process - not only by winning new knowledge but also by revolutionizing the technologies of printing, transporting and communicating information. Science has also helped in expanding what is called the great liberal tradition and in freeing mankind from earlier restrictive dogmas. The concept that no race is superior to another and that all people, men and women are equal owes much to the liberalizing influence of the science of biological evolution. Thus today's educational system cannot be based on ideas or values of race, caste, class or sex superiority. The framework of education in modern India therefore must include a critical, questioning attitude

towards any pretense of an intellectual or any other meritocracy and cultural elitism - including that of science.

The interaction of the social sciences and economics with society have laid bare the economics and ethics of poverty.

Thus the educational system of today not only has to have the right curriculum but also must actively work in practice with such ideas. If the ideals of austerity and sacrifice, of equality and justice which imbued the freedom fighters are to be realized every educator, every scientist, every intellectual must resist the substitutions of these values by the acquisitive outlook and consumerism life style of the new middle class. Social and economic justice cannot be brushed away with technological gimmicks or with the borrowed cult of false efficiency and manipulative management.

In today's milieu the adoption and continuation of a rigid, imposed educational pattern without real experimentation and active consultation with the community has proved disastrous and will continue to do so until the intellectuals rouse public opinion for a genuine discussion and consultative process and introduce changes towards a flexible, responsible and alive system.

Next to parents, school teachers are supposed to be the most important influence on a child's preparation for life. They are today underpaid, disheartened and

disillusioned and almost disowned by the community. They are not even trusted with a little academic liberty in choosing a part of what and how to teach the students - leave alone in examining their pupils and setting them projects and lessons which may be worthwhile and interesting but are not included in the syllabus. The recent unseemly discord between the university teachers and government only illustrates that you cannot treat highly educated teachers and academics with disdain and hope to enlist the best in them. The new education policy is likely to further increase eliteism and bureaucratization of an educational system already alienated from the mass of people.

The key to the future of education, science and society in India lies in urgent and practical steps in the universalization of the opportunity to enter school for every child. The Directive Principles in the Constitution of India which call for the provision of free and compulsory education for all children up to the age of fourteen years within 10 years need to be urgently implemented through immediate legislation. A country which has adopted a democratic and egalitarian form of government cannot and should not tolerate the distortion caused by spending over 30% of the national budget on armaments and only 7% on social services of which education and scientific research form a still smaller part. How can anyone excuse that after

40 years of freedom the literacy rate is still around 35% and that of women much lower - and accept the argument that this is for lack of funds!

The message to all existing institutions of learning and research is therefore clear. Use every possible means to expand the opportunity for entry into education. With 70% of our countrymen and women denied even elementary education it is cruel and cynical to talk of raising standards by introducing stiffer entrance examinations and selection procedures.

In the last 100 years or so science has conferred extraordinary means to understand the world around us. How can we learn from science?.

Among the more profound lessons to be learnt from the history of science is not what science has accomplished but the way it goes about doing it. In its pursuit of knowledge and truth science welcomes change. It has even come to accept uncertainty of the ultimate truth as inevitable. As a continuous seeking into the unknown there is, always has been and always will be, the risk of mistakes and of being wrong. Through question and answer, observation and generalization, theory and experiment by more or less logical reasoning, interspersed with flashes of illuminating insights and imagination, a grand edifice of ever expanding and living knowledge has been built up.

In fact the success of this approach has been such as to have often created problems. As scientific knowledge has grown, greater and greater specialization has come about with a narrowing of the focus of scientists until even within the scientific community discourse and understanding between different subjects has become very difficult. One very serious and negative result of this concentration of specialization has been the delinking of scientific research from its social ramifications. Many scientists are so immersed in their endeavour to get ahead in their research that their concern about the wider implications of their work has atrophied.

The relationship of science with society is very complex, deep and intricate. The interactions are often subtle and sometimes confront society with most difficult problems and choices. The theory of evolution completely upset and forced changes in orthodox religious beliefs regarding life on earth. The current revulsion of millions of people all over the world against nuclear weapons and war is forcing politicians and governments as also scientists and intellectuals to come to terms with the conscience of humanity and find ways of controlling not only nuclear weapons, but all science and technology and prevent it from harming living beings. Molecular biology and the newly acquired ability of scientists to manipulate genetic

material are raising a host of vital issues which cannot be decided or solved by scientists and experts alone. Who has the right to alter the genes of unborn children - the scientist?, or the mother?, or the father? or the state?

Because of possible dangers thrown up by scientific research is it right to stop science from gaining knowledge which may help to control disease or grow more and better food in the future? How to balance short term needs of hunger and malnutrition which appear urgent, against long term benefits? How to convince people that inspite of pressing and immediate needs it is necessary to tighten our belts and invest in long term conservation research, worry about problems of global ozone depletion and the slow but dangerous increase of global temperatures due to carbon dioxide increase from the burning of fossil fuels.

Such issues do not have simple answers or easy solutions. The educational system - if it is to serve and preserve the future generations - must find ways along with the normal routine learning process to expose the young to the origin of such problems and point to the directions in which possible solutions may be found. This may appear very difficult and unreal considering the already overburdened curriculum in our schools and colleges. Actually a little honest reflection will show that we have allowed quantity to overtake quality. If nearly one third to half of the

syllabus is substituted with projects and exercises devised by the teacher and the fundamentals illustrated with examples of activity in which the students actively participate a revolution in education can begin.

Let us turn to another aspect where we may learn from science. The values of science and scientific activity presuppose the ethics of honesty and truth without which the work of individual scientists cannot be trusted. How has this come about? Even when there is wide disagreement among scientists, and fierce controversy rages in a subject, rarely do scientists assume fraud. Of course scientists being human have weaknesses and there is human frailty among individual scientists as among others, - but over the years the science community has evolved a code of behaviour which presumes honesty in an individual's work but at the same time created social checks and safeguards such as confirmation or refutation of results by repeating the experiments or advancing a better theory. Publications are refereed and research proposals are carefully critiqued by peers. There is an unwritten law in science that anyone may question any ones' results but the questioner is obliged to publicly give (through publication) valid details and proof of his or her research and results.

Of course the system is far from perfect and occasionally you hear of a lapse or fraud - someone stealing

someone else's result, or cooking up data - but these get discovered sooner or later and genuine knowledge is not allowed to suffer. The point to note is that while science and the processes of science cannot claim absolute objectivity and correctness - yet in its method there is a kind of basic honesty and objectivity which is seldom found in any other human enterprise. An intrinsic part of the scientists' code of values is the obligation not to hesitate to honestly and democratically share their work and its implications with other scientists as well as the general public. Currently this latter feature is not very prominent among the Indian Science community but there are signs of a beginning.

Our educational processes and climate would gain immensely if they borrow and adopt from the scientific tradition the attitude that knowledge and learning are best gained in a cooperative mode - the strictest scrutiny and assessments can take place without needlessly invoking prestige or authority or issuing orders. Mistakes can be made and corrected. There is beauty and elegance as well as hard work and disappointments in science - they have to be borne cheerfully. Then only quality and wholesomeness emerges from such endeavours.

Just as the scientists cannot absolve themselves of the results and effects which may follow their

discoveries - the teacher, the school, the college or university is accountable to society about the kind of persons their students turn out to be.

Despite her present material poverty India is not poor in reserves of talent, idealism and cultural values.

If the intellectuals in India wish to be really recognised as the 'excellent elite' they must show firm adherence to the cherished goals and ideals which have illumined India's past and which burst into flame during the freedom movement.

The essence of science, education and values was enunciated by Gautam Buddha many centuries ago. Modern India has yet to put this into practice. It is time to begin

S DHAWAN

DEC 7, 1987