

The Science And Technology Policy 2003

A Critical Evaluation: Part II

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This is a revised and enlarged version of a paper prepared for a lecture on the title theme in the short-term courses on *History, Science and Society in the Indian Context*, organized by the Asiatic Society, Kolkata, in the years 2003-05, and included in a collection of articles published by the Society in 2005. The first part was published in *Breakthrough* (vol.12, no.2), and discussed the wrong theoretical approach of the policy makers and the correct scientific approach towards a science policy in the Indian perspective. For some unavoidable reason the second part could not be carried into the last issue and is being published in this number. – Editor, BT

[6] Anti-Science Programme (Agenda?)

However, the Union Governments in the recent past are not driven by such a scientific attitude, nor satisfied at this historical approach. The BJP ministers, then directly involved in the process, out of their ultra-nostalgic love for and euphoria over the ancient Hindu scholarship, took a different course. They wanted to glorify the ancient knowledge as an equivalent, parallel and alternative wisdom in relation to the present body of knowledge, a fact, which – although not clearly spelt out in the policy document – was evident from their drastic reforms in the field of education.

Some concrete cases are cited below:

So, in order to understand the spirit of the declared S & T policy statement we have to go beyond its letters and study it in conjunction with what the different Union Governments had been doing in the field of education in general and science education in particular, how much importance it had attached to scientific outlook and approach in the analysis of various questions of life.

[1] Just before the policy was proposed, in 2001, the BJP Government introduced in the formal school and university curricula some subjects like Vedic Mathematics, Vedic Astrology, Vastushastra, Paurohitya, Yoga, and so on. They were also thinking over the proposal of introducing a similar course on Guptavidya (occultology), which would presumably deal with witchcraft, demonology, magic cure for snake-bite and dog-bite, recipe for bearing a male child, etc. and shamanism with village deities.

At the outset I contest the use of the epithet *Vedic* before the subjects mentioned above. None of these originated in the Vedas or late-Vedic literature. The astrology and palmistry practised in India are of Greco-Roman origin and came to be fully elaborated not until the time of Varahamihira in the sixth century A. D. The arithmetic had begun to be developed in the Buddhist era since the Asokan period (second century B. C.) and algebra around the time of Aryabhata in the late fifth century A. D. These subjects have been thoroughly studied in the historiography of Indian science and

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technology by several authors – some of whom have been referred to above.

Secondly, none of these subjects contains any useful information, which is not already known and need be learnt afresh by the students at present for the sake of a better, accurate and up-to-date knowledge. Moreover, the body of astrology is actually based on mostly wrong information and totally wrong theory, all of which have been studied in detail, thoroughly examined and ultimately rejected by man long back in the light of the advancing frontiers of science⁵⁵ (please note this point seriously in order to meet the repeated plea of the believers for research in astrology). Similar is the case with vastushastra, yoga, etc. Apart from some ancient magico-religious rites and assertions these two subjects can give a modern man no positive and useful information or insight in the respective areas concerned, namely, astronomy, civil construction and human psychology, for the simple reason that there was never any cognizable truth in these.

[2] The NCERT (National Council of Educational Research and Training), under pressure of the Government, in its new framework for school curricula (2002), had proposed to turn the previous syllabus on science for schools into a syllabus on *science and technology*. The CBSE (Central Board of Secondary Education), Delhi, immediately introduced it all over India. It was not a simple and trivial change in title. Even a cursory look into the new courses on science and technology at different levels reveals that the basic spirit of science education – study of scientific laws and principles in course of the explanation of natural phenomena – has been grossly undermined and replaced by drab citation of facts and techniques. The NCERT was forgetful of the fact that school students are not some on-job or pre-job apprentices to factories; they are the learners at the

foundational level of their educational life. So the textbooks they will study cannot be turned into some manuals of handy information and operations. The same job-training approach is specially reflected in the mathematics syllabus, which is similarly loaded with computational problems on shares, debentures, brokerage, income tax, home loan interest, etc., at the cost of the basic concepts of mathematical logic and intuition.

[3] Similarly, in the field of history education and research the BJP had started applying this policy even before it was drafted or made public. They summarily withdrew from the CBSE school curriculum standard textbooks written by well-known historians in conformity with science, logic, literary sources and archaeology, like Satish Chandra, D. N. Jha, Ram Saran Sharma, Romila Thapar, and so on. It may be worthwhile to note here that *the NCERT and the CBSE authorities had strictly instructed the affiliated schools to delete all references to the name of Rajendra Lal Mitra, the first Indian Indologist in the British period, and his discoveries from the existing textbooks on history*.⁵⁶ His crime was to have made some discoveries in the venerated Sanskrit classics, of some popular customs in the Vedic and Puranic ages, like *beef-eating* (both as a regular food habit and as a part of sacrificial rites)⁵⁷, which offend the sentiments of the orthodox Hindu today and which, therefore, the men in power did not want the present generations of students to know. Moreover, the subject of history as such had been merged with geography, civics and economics into an eclectic title – social study – in order to clear the stage to teach whatever they wanted in the name of Indian history; or not to teach whatever they abhorred.

[4] Simultaneously, a concerted propaganda had been launched through various media including the Internet to

highlight the so-called Vedic sciences, controvert the well-founded data on the Harappan civilization on the basis of even fabrication of data. Attempts had been afoot with huge government fund and backing to convert some irrigation projects in the north western India into a programme of rescue and realization of the Vedic Sarasvati River in order to validate the antiquity and superiority of the Vedic culture vis-à-vis the Harappan civilization.⁵⁸ The attitude was: If this attempt succeeded in the case of history it would be extended to new areas.

[5] At the same time they had launched a move to promulgate a Bill in the parliament with a view to prohibiting cow-slaughter all over the country. This was a continuation of the revivalist cow-protection programme initiated by Gandhi, Vinoba Bhave, and some other national celebrities, highlighted by the RSS and other Hindu fundamentalist forces, and an extension of what had already been promulgated in several north Indian States. They advocate this programme from time to time with a semi-religious semi-sentimental slogan centring round cow as the “mother” of the Hindu population for its importance in agriculture. (This reminds us the episode where the great Hindu revivalist leader Swami Vivekananda indignantly bantered some organizers of cow protection as “children of the cow-mom” and branded them as “inhumans”).⁵⁹ They are not only unconcerned about the food habit of majority of the Indian people belonging to non-Brahmin and non-Hindu communities, but also fail to take into account the grave social, economic and ecological implications of the action, if successful, like housing management of the already steadily growing cow-population. The BJP Government was sure that in view of their strength in the Parliament they would not succeed in enacting the Bill; but they were still then

interested in placing the Bill to keep the cassette of Hindu sentiments on.

[6] Add to this the encouragement to the functions of *bhumipuja* and/or *vastupuja* ceremony, which are performed in every governmental construction and developmental project, even in the IITs with great pomp and publicity. Last year a group of scientists of the Indian Space Research Organization (ISRO) went to a temple and offered puja to the Balaji praying for successful satellite and missile launching. Where does S & T feature in all these activities? In a secular democracy, any public programme funded by the state, and specially one that is related to science and technology, should have no connection with any sort of religious beliefs and practices, which are personal affairs of those who believe. It betrays the utter lack of confidence of the S & T personnel in their own profession and wisdom, and of the Government in the S & T programmes as well.

[7] Last year, the NISCAIRE (National Institute for Science Communication and Information Resources), a section of the CSIR, published a pamphlet on tsunami. The scientific part of the literature (up to page 34) is quite good for a lay reader. But after that, the author(s), perhaps in consonance with the new science policy, advised the tsunami victims to take to *yoga, pranayama, asana, yoga mudra, yoga nidra, etc.*, and consume *amlaki, haritaki, etc.*, in order to overcome the psychological trauma this great disaster afflicted them with.⁶⁰ The comedy of the case is that the director general of the CSIR, who happens to be an FRS, wrote its foreword. This helps us to see the height the idiosyncrasy of past-cult has reached in India.

A science policy, which was formulated in the environment of indulgence in such well-known wrong and outworn prejudices, and did not condemn or criticize this senseless obsession for bigotry, could hardly be conducive to the

growth of the scientific spirit. And it can bring about nothing good for the country.

[7] Echoes of Eco-science

It may be worthwhile here to look for the current ideological basis of these revivalist programmes at the national as well as global levels. It has been noted by several authors that this tendency to glorify the past has been strengthened in recent years by the various post-modernist schools of thought, which have directed their attack against the universality of the scientific tradition upheld since the Era of Enlightenment in post-medieval Europe. These schools of thought contend that the criteria of “objectivity”, “rationality”, “reality”, “causality”, etc. are not so much basic to the theories of science as to the roots of western culture. Other cultures may have their own and different sets of criteria to adjudge the value of a scientific theory in terms of the ideological and psychological services it renders to that cultural community.

According to Foucault, a leading theoretician of post-modernism, “Each society has its regime of truth, its general politics of truth.”⁶¹ With this approach the post-modernists emphasize the “difference” between societies, communities, genders, races, ethnicities, cultures, etc., as the prime focal point for determination and defence of truths for the separate identities, and raise it to the status of a major philosophical category. This kind of analysis helps them to justify in pretty colourful terms the liberation of the oriental culture from the colonial aggression of the western culture, defence of the folk-beliefs in the face of the elitist dominance, “democratization from below”, so on and so forth. Truths represented in the culture and tradition of a separate community is meaningful to the “insiders”, although these may be meaningless to the “outsiders”.⁶²

Andrew Ross, a spokesman of this trend, believes that supporting the

popular beliefs is a sign of this democratization, while demanding rigorous tests for these beliefs is sheer elitism. According to him, it is only when we attenuate the claims of empirical rationality and recognize “different ways of doing science, ways that downgrade methodology, experiment, and manufacturing in favour of local environments, cultural values, and principles of social justice” – that we begin to move towards true diversity of knowledge systems.

Similarly, Sandra Harding, a post-modern feminist, argues that modern science as it is now presented to us is far from a universal body of knowledge and is actually a western “ethno-science” with a distinct bias for male dominance over Mother Nature. There is a need to empathize with other cultures in a multicultural world, for which, she thinks, we have to give up the dream of the “one true science” and begin to live with a “borderland epistemology”. By this she implies an epistemology that “values the distinctive understandings of nature that different cultures have resources to generate”.⁶³ She earned a special name among her co-ideologues by branding Newton’s magnum opus *Philosophie Naturalis Principia Mathematica* as “Newton’s Rape Manual” for exploitation of nature by the male scientists.⁶⁴

Examples of this sort of exhortation over local and sectional cultures by the post-modernist writers may be multiplied.

The rightist lobby, the dominant political-ideological group of our country and a majority of the scientific community, were quick to pick up this call for “decolonization” of S & T perceptions as well as Vedic scholarships. They felt very much inspired with the logic that the local knowledge systems embedded in the tradition of a local community should be subjected to the local analytical tools rather than to the western scientific standards. They felt

that the rigorous scientific methods and procedures being applied in the serious Indological studies often rendered results contrary to what they would like the people to believe. With this “ethno-cultural” approach to ancient Indian wisdom it became easier for them to highlight its uniqueness and pertinence. In point of fact, it has really encouraged some intellectuals of the country to look for justification of the outworn brahminical strictures like burning of widow on the dead husband’s pier, and to oppose the modernist view regarding remarriage of a widow.⁶⁵

The irony of the attempt, however, is that it also came first from a group of western scholars who had been engaged in building up an alternative to the synthetic, rational, universal and objective judgment of the world of nature and man since the Renaissance. Thus the post-modernist theoreticians did not really help to “decolonize” scientific standards and cultural values but rather substituted some new and reactionary western post-modernist theses for the four-century-old well-tested scientific reason and heritage of the Enlightenment and transported them to the periphery to satisfy their local ethno-cultural sentiments. And it seemed to fit well with the new science policy.

[8] Words vis-à-vis Deeds

The policy in its other declarations asserted certain other things, which were clearly irrelevant or contrary to what the successive Union Governments have been doing for the last few years. An example of this indulgence in irrelevant proclamation is found in its intentions to “mount a direct and sustained effort on the alleviation of poverty, enhancing livelihood security, removal of hunger and malnutrition, reduction of drudgery and regional imbalances, both rural and urban, and generation of employment”, etc. Clearly, it was imposing the tasks of the Government in the arena of economics

and development on to the science and technology regime. Science and technology has long created the scope to improve the living conditions of man in all aspects of life. But it is the economic policy of the governments and the line of development pursued under capitalism, which are ultimately responsible for depriving the common millions and keeping these opportunities confined among the chosen elite. Neither science and technology, nor the scientific community has anything to do with it.

While the Union Government, led by whatsoever forces, has been pursuing for the last two decades a strategy to discourage research in the universities, cleverly using the funding weapon, the policy statement of 2003 asserted to the contrary, namely, that it will “vigorously foster scientific research in universities and other academic, scientific and engineering institutions”, and that “Government will make necessary budgetary commitments for higher education and science and technology”. The Union Government did not show the slightest sign that it would do so. It planned to go on for speedier privatization in the fields of higher education and research, encouraged private universities and professional institutes, invited foreign capital for investment in the industry of education. The budgetary support to the universities has been so curtailed over the years that many universities have been compelled to downsize their library and laboratory. The BJP Government proposed to rename the UGC as the University Governing Commission and remodel its functions for controlling the statutory universities.

The new Science and Technology Policy 2003 talks of attracting “the brightest young persons to careers in science and technology” and “creating suitable employment opportunities for them” at that same moment when the official economic policy of the Government is to

import all the necessary technologies and consultancies from the advanced countries, obstruct the free exercise of research faculties, and virtually stop recruitment in the vacant academic and scientist posts, let alone creating new institutes and posts to attract the promising scientific talents who are going abroad out of utter frustration.

The policy, in Section C: Strategy and Implementation Plan, declared: “A concerted strategy is necessary to infuse a new sense of dynamism in our science and technology institutions. The science departments, agencies and other academic institutions, including the universities, i.e., the science and technology system as a whole, would be substantially strengthened, given full autonomy and flexibility, and de-bureaucratized.” These words were pronounced at a time when the Government had been actually undermining the entire science and technology education and research through the means of fund crunch, fee-hike, privatization, encouragement to capitation fee and donation based institutions, and so forth. We heard these words of autonomy and flexibility at a time when the apex bodies of different national organizations, like the NCERT, UGC, ICHR, ICSSR, IAS, etc. had been reconstituted by throwing out the non-RSS learned members and inducting people of poor academic calibre with but strong RSS background. Even the directors of the IITs were being nominated from amongst persons with ostensible ultra-religious mentality and conduct. Now, with the return of the Congress to the seat of power, the BJP-RSS supporters are replaced by a new batch of yes-men.

The real de-bureaucratization could start only when the socio-cultural ethos handed down from the feudal legacy and left intact even by the earlier Nehru-policy, which directly or indirectly supports the existing administrative

norms of control of research from above and the culture of bossism in the research institutions, could be put an end to. But the guruvadi (authoritarian) mentality of the feudal hierarchical tradition continues to prevail in the relations among the juniors and the seniors of the scientific community and is reinforced by the Government through its various policies, including its eulogy of the ancient tradition. In this situation there can be no question of real democratization of the science and technology administrative system. In the actual performances of the present Union Government too we have so far seen no desire to shift from the undemocratic and bureaucratic narrow gauge line.

[9] Science for Martial Art!

There is only one area where the traditionalist lobby in the Government too kept to the norms of modern science and technology and did not stray away – in speeches or in deeds – into the labyrinth of ancient “glorious” “civilizational process” of Hindu or Indian tradition. I call your attention to the area of military and space (missile) systems.

It is only in this area that the erstwhile Prime Minister Mr. Vajpayee raised the slogan of “Jai Vigyan” (glory to science). The budgetary support for the research and development in these two privileged areas is never sliced off for shortage of fund. One might legitimately question the usefulness of the nuclear bombs and long-range missiles at a tremendous cost when all the developmental and welfare sectors of the economy wither away in budgetary anaemia.

I have, however, another and more fundamental question: The new science and technology policy seeks to “accomplish national strategic and security-related objectives, by using the latest advances in science and technology”. Why? Quite a large number of people in India believe as true all the

episodes vividly described in the Ramayana and the Mahabharata. The BJP as a party in power together with its ancillary wings up and down had been trying by all means to revitalize, preserve and play upon the sentiments of the Hindus centring round these beliefs. They were also busy (through the voice of the ex-professor-of-physics HRD minister) to highlight the efficacy of the “Vedic and Puranic sciences”. Then why were they not also similarly bent on reviving the weapon systems and war stratagems described in so much detail in the two venerated epics for the national security of the country today? Why not “Vedic weapons”?

This question, once raised, squarely puts us face to face with the sincerity of the traditionalist lobby in their revivalist slogans. At the inner recess of their hearts they are also well aware that the ancient wisdom cannot satisfy the modern purposes of warfare. We can only mimic the Ramayana or Mahabharata wars in operas or films, but with that much of resources we cannot hope to stand even for a few seconds in a real modern warfare. The absurdities of all the theories of post-modernism, post-colonialism, ethno-cultural science, alternative local realism, eco-culture, etc., do not come to any help but are exposed in bold relief. We have no way but to resort to the non-Vedic, western, modern science and technology for waging and winning a modern war.

Then the logical question is: Should not the same standard apply in all aspects of life today? Can we really live the modern way of life with the Vedic and Puranic knowledge and value systems? Moreover, if we use, enjoy and employ the fruits of modern science and technology in all aspects of our physical life, should we not also apply the logic and ethic of this science in all recesses of our mental life?

But no! Logic and rationality seem to be highly repugnant themes to the new policy makers.

[10] No More Illusions!

This rational evaluation of the science and technology policy of the Union Government – both in its policy statement and in its actual practices – compels us to regretfully conclude: if implemented undeterred, it is going to take us backward against the progressive mainstream of science. It indicates which kind of education and research the Government will encourage and which they will discourage. It will also be an illusion to think that the RSS-BJP lobby was alone interested in promoting the Hindu fundamentalist line in the field of education and culture. The fact is that it was the Congress Governments, which first raised in clearly audible terms the cry for rescue and application of the ancient Indian wisdom since the time of Indira Gandhi’s premiership in 1983, then in Rajiv Gandhi’s education policy of 1986.

Let us refresh the memories.

The Kireet Joshi Committee to prescribe a course of value orientation in teachers’ training programme had recommended to the Union Government in 1983 the following menu: “Aim in life – supra-cosmic, supra-terrestrial, cosmic-terrestrial, integral; Education of the in-most being and values of psychic and spiritual culture; Philosophy and the idea of God, Proofs of the existence of God, Attributes of God; The problem of evil, suffering and death; The Psychology of worship and prayer; Psychology of action without desire; Psychology of concentration, meditation and contemplation; Central spiritual experience, Liberation from the ego, Cosmic consciousness, Transcendental consciousness; Yoga as practical psychology, Yoga as spiritual experiences, Systems of yoga, Integral yoga of Aurobindo, Synthesis of science and

spirituality; Telepathy and Clairvoyance;” et cetera.⁶⁶ Even the strongest of microscopes would fail to detect in these any value worth the name other than some bigoted religious beliefs.

The national education policy adopted in 1986 had offered a broad scope to introduce any antiquated subject in the formal curriculum in the name of cultivating national heritage: “Efforts will be made to delve into India’s ancient fund of knowledge and to relate it to contemporary reality.” It argued: “The pre-occupation with modern technologies cannot be allowed to sever our new generations from the roots in India’s history and culture. ... Education can and must bring about the fine synthesis between change-oriented technologies and the country’s continuity of cultural tradition.⁶⁷ If the BJP Government had found the shoes fitting to their feet and written the science policy accordingly, one could hardly pinpoint the blame on them for what they did.

And now, after the clock had turned by 360 degree with the Congress leadership back to the seat of power, it is no wonder that the present UPA Government, supported by the Left group and appearing with a secular facial, similarly committed to stick to all the antiscientific decisions of the earlier Governments in the fields of education and science. The only changes they made were in the personnel and not in the policy. So the pursuit of science and rationality remains under the same threats.

The invariance of a policy through several stages of changes in the composition of the government indicates that it belongs to and emanates from an invariant instrument of the social order – namely, the capitalist state. Science and Technology Policy is an extension of the Education Policy. The latter is marked by the following features: (a) Education is *no more* looked upon as *a social welfare* activity (see “The Challenge of Education

1986”). The Ambani Report recommended that the government *completely withdraw* its financial support and should play the role of a ‘facilitator’; (b) Major privatization of higher education system; and (c) Added to it is the promotion of religious, anti-scientific education. It is the *design* of the capitalist *system*; hence it does not really depend or change with the change of government. The intention is to *restrict* education, including science, for the rich; *dehumanize* and *mechanize* people with unscientific obscurantist ideas; *promote technological* aspects of science for smooth and better running of their economy and production.

This state, in the interest of capitalist class, requires a restricted quantum of science and technology. This class requires technology to the extent it is necessary to decrease capital-output ratio in the production and circulation of commodities; it requires science to the extent it is necessary to generate, use, maintain and oversee that technology. Beyond that it abhors any science programme that seems to reinforce the scientific and rational outlook of the people in general. It prefers to present science itself as an overall anti-science pursuit. This would help them to foment mass hysteria over religious and other parochial sentiments and break the unity of the common people. The political scenario of the country for the last two decades has been reeking of communalism and fundamentalism of various shades. Different parties and forces are seen active in all these fanatic misdeeds. That explains the continuity in the education and science policy in spite of changes in the ruling personnel.

We are at the threshold of a crossroads. The experiences of the human society till now have accumulated a vast store of knowledge and perceptions for us. If we fail to differentiate the lessons from the illusions and allow ourselves to be guided by empty demagogy, it may

ultimately cost us even the civilized existence. If, on the other hand, we may properly draw and evaluate the lessons that emerge from the history and the treasury of knowledge, and decide our future course of advance accordingly, we shall be able to hold fast to civilization as the true *Homo sapiens*. For this we have to ask the Government to reject the present bureaucratically formulated policy and hold nation-wide discussions and debates to give birth to a new effective and scientific science and technology policy.

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