

CORRESPONDENCE

Technology development: The role of the State

R. Narasimhan's 'Technology development: The role of the State', which appeared in *Current Science*, 1994, 66, 261, is one of the most persuasive and powerful arguments I have read so far on why India has failed so miserably while the East Asian 'tigers' and 'dragons' worked out spectacular miracles in socio-economic development. He points out one major defect in our psycho-social make-up, the pervasive (and perverse?) cultural trait of 'our obsession with the means and the consequent losing sight of the ends'. In this regard, let me point out two major factors that we have often overlooked in comparing our failures against Taiwan's and S. Korea's (both states having levels of backwardness which were comparable with India's in the early fifties) remarkable progress over the last four decades. Both managed quickly and surely to implement two very important preconditions for socio-economic and technological development—ensuring first, that a comprehensive programme of land reforms was achieved so that land is owned and worked on by the ones who need it the most and thus removing very large inequities in land wealth distribution and ownership, and next, ensuring that a universal degree of literacy and education (covering technical and vocational skills as well) is reached. Given our preoccupation with the means and not the ends, by oversight or by design, we have failed miserably so far in both. Not surprisingly, no amount of strategic technological planning and empowerment could lead us to the class of performance that S. Korea and Taiwan have maintained.

Given this scenario, one is forced to agree with Narasimhan that 'one has to be a stubborn optimist to see any

Indian miracle taking shape on the horizon'.

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R. Narasimhan has succinctly argued that the Country has yet to develop 'Technology literacy', and for want of this, we have failed in political bargaining. The recent 'open door' policy of the Government, particularly for the multinational enterprises (MNE), has been a disaster in more ways than one. Unlike the five 'tigers' of South East Asia, we are frittering away the R&D built in the country, by inviting MNE to bring in know-how, even for low-technology products.

A case in point, from my own experience, during the time of Indira Gandhi, the MNE tried their best to stop research, even in infant foods, and if the Government had succumbed, even now the children of the Country would have been reared on Glaxo, Cow & Gate, Dummex, etc. Amul Baby food would not have seen the light of the day. Operation Flood would not have been there, and we would have had the doubtful privilege of importing not only powdered milks but even sterilized milk. Narasimhan has quoted the example of Taiwan, to show that Government intervention has, to a great extent, brought about the miracle.

Narasimhan has, by examples and reasoning, argued that the present 'open industrial policy' of the Government, cannot achieve results. He concludes, 'One has to be a stubborn optimist to see any

'Indian Miracle' taking shape on the horizon'.

While the arguments are excellent, the solutions are ill defined. It is unfortunate that our scientists feel shy of coming to grips with situations, even though they are well aware of the drawbacks. 'There are no think-tanks, brain-trusts, or other study-groups in India, whose primary focus is technology'. Do we cry about this or do we sit down and do something about it?

The scientists, all of them very senior, in positions where, they were the policy makers, and who had all the advantages of being listened to by the Government, are the ones, who wring their hands in despair now. One has a right to ask them, 'what have you been doing all along?' But while in Government, even scientists have to be committed. Whether at BARC, CSIR, ICMR or any other organization, they toe the line of the Government; even scientists who have opted for a pay of rupee one per month are dependent on Government for so many favours,—from fixing their air travel, accommodation to membership of international meeting and bodies. A supine non-aggressive stand is always better than any confrontation.

If Narasimhan and his like-minded peers think that there is something radically wrong with the present policy of the Government, they need not wait for the Government to set up 'brain-trusts', and ask for their advice. When your house is burning, you do not wait for the most sophisticated fire hydrants from USA, you pick up the available bucket, though leaking and go about dousing the fire. The scientists should wake up and set up their own brain-trusts and active groups, in every way independent of the

Government and the politicians, to debate the issues and argue with the Government bodies. In this they will have the support of big commercial houses like Tatas, Birlas, etc. Money will not be a constraint for setting up 'brain-trusts' and 'think tanks'. And if it is necessary finally, the scientists should be prepared to educate

the public and even take to the streets, to bring about the change they are convinced is right. Medha Patkar did not spend her time in arguments only; when a gentle woman like her is prepared to take to streets and agitational methods, for a cause which she thinks right, what are the senior scientists, who have had

a pampered life all along, waiting for? Arm-chair criticism is refreshing, but time is for action.

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New technology policy

The thrust of new technology policy (NTP), 1993 is on globalization, international competitiveness and private funding for R&D in contrast to self-reliance and indigenous development of technology of the 1983 policy statement. The most dangerous omission in the NTP is the spirit of nationalism which found prominent place in the technology policy statement (1983), e.g. safeguarding our independence and our unity, and recognizing the importance of ancient wisdom of our nation. It is worth quoting the end paragraph: 'above all, the entire population must be imbued with *self-confidence* and *pride in national capacity*.

Indian Science and Technology must unlock the creative potential of our people and help in building the India of our dreams'.

The draft on the Uruguay round of GATT shows that the non-actionable subsidies vide Article 8.2 severely limit the funding and freedom in management of R&D laboratories. There is anti-dumping legislation for products, but there is none for obsolete technologies. Obviously, the NTP is based on Dunkel proposals, and the recent drive by CSIR for market-oriented policies and international competitiveness will make our R&D institutions satellite centres for MNCs. If

due to faulty implementation we have so far served the interests of advanced countries indirectly, with the new policy the trained scientific manpower will provide cheap work-force for the MNCs, and the urgent socio-economic problems of our country will be pushed into the background. Therefore, I strongly urge the scientific community to reject the NTP in the national interest.

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The astronomical code of the Rigveda

In the article 'The astronomical code of the Rigveda' (*Current Science*, 66, 323-326), I find that not only is the approach in the article highly unscientific and speculative but the supposed application of Probability Theory to bolster the claim is totally flawed. 'The twentythree numbers' whose 'correctness' the author talks of are arrived at in several stages, introducing many new elements along the way, and the rules of distribution are hardly applicable the way the author goes about them. The author is delightfully vague on specifics at that point. The only clean treatment from a probabilistic point

of view appears in respect of synodic periods, but contrary to the author's affirmation, there is nothing striking about the correlation there. Not only is the set of the 461 numbers arising as combinations large as the author admits, but also has a rather high density in the interval relevant to four of the synodic periods (other than that of Mercury); about two-thirds of the numbers between 237 and 780 belong to the set, so a randomly selected number in that region has quite a good probability of belonging to it. That this holds, that too after adjusting by 1, for the 4 synodic periods is nothing

surprising. If a tally were to occur in the case of Mercury it would have been something to take note of, but in this case the figure had to be adjusted by as much 4! That hardly leaves anything by way of meaningful correlation to talk about, even if one is to ignore other issues with regard to the argument.

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