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Science, Technology, and Alternative Modernity in India

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Abstract: The model of modernity accepted by India at the time of liberation from colonial rule still persists, although it is beset with contradictions. These contradictions are becoming more manifest with the advent of structural reforms that are giving free reign to market forces. The crisis is deepening for the people in both rural as well as urban areas. The resolution has to come from the working people as they struggle to creatively survive under hostile circumstances. This paper offers some insights into some principles of social production and distribution that emerge from such a praxis in India, and the role of science and technology in providing substance to those principles.

Science and Technology as powerful “engines” of development have been part of the imagination of India since the 1950s. Thus, successive Five Year Plans have laid emphasis on the training of skilled manpower and investment in research. So much so that India today has one of the largest scientific communities in the world, although there is considerable doubt about how much this community has been able to contribute to national development. In spite of over five decades of experience and persistent challenges to this populist paradigm, the ruling class continues to nurture the dream. Thus, for instance, currently the two dominant themes are those of rural and urban growth. Proper “management” of resources and modern “world-class” cities are regarded as the basic ingredients for all development. The former is supposed to sustain growth in agricultural employment and reduce poverty, while the latter gives the nation an economic and political edge over others in the international arena.

Let us first explore how the “problem” of water in rural development has been posed. Through vast engineering projects, river waters from ‘surplus’ basins are to be transferred to ‘deficit’ ones. This will regulate floods and droughts, as well as generate hydel power, increase irrigation, recharge groundwater, and open up navigation – all, of course, through public-private partnerships. However, periodic floods and droughts are hardly a

“problem”; they are part of nature’s cycle, just as much as the monsoon itself. If the water available in a “deficit” basin is only 300 cubic metres per capita (CMPC) then it is difficult to comprehend how a further 1400 CMPC can be brought from a “surplus” basin to solve the problem. And if utilisable water is limited to 690 billion cubic metres (BCM), can we be foolish enough to say that we will need almost twice that amount (1180 BCM) in 2050 and then begin calling this imaginary deficit a problem?

What is also not discussed is how the multiple objectives of the project are actually in competition with each other. For example, the demands of hydel on impounded water are often in conflict with the demands of irrigation. Farmers require the release of water into irrigation channels in the summer season, and that is precisely the time when power utilities want the water to remain impounded in the reservoir in order to spin the turbines. Similarly, floodwaters should be stored behind the dam during the rains, but that is also the time when dam managers want to release the waters to ensure the safety of their dams. Ground water rechargers want the floodwaters to spread over the flood plain at the same time as flood managers want to confine the floodwaters between embankments. Water “management”, therefore, is not just about throwing a cluster of desires into the same wishing-pot, it is also about resolving the conflicts between competing (and private) demands.

Now let us look into the use of technology for building world-class cities, which are to be the new engines of modern growth through information technology, recreation, and tourism. The emphasis by city administrations is to shift from ‘dirty’ manufacturing to ‘clean’ services. Modernisation of existing industries and the promotion of high technology, high value, low volume and low labour units are intrinsic parts of this transformation. The government agencies are to undergo structural changes to cut down on employment and wages, so that they are no longer service providers but regulators. In addition, key environmental features of clean transportation, green recreational areas, slum clearance, and river front development are incorporated in the vision of the new metropolis. And the overall strategy is to involve the private sector to a significant extent in the provision of utilities, social and physical infrastructure, and housing.

Three trends become apparent when we look at the recent history of urban reform. Firstly, large sections of the urban poor are being displaced from space that they have occupied for many years. Their displacement has as much to do with the space they live in as with the work that they perform. Secondly, the geographical and occupational space that they occupied is being transferred to larger private corporate entities, often coupled up with labour-replacing devices ranging from automatic tellers and computer-aided machines to vacuum cleaners and home delivery services, thus taking over the work earlier done by the lower rungs of the urban population. Thirdly, while the driving force behind these changes is manifestly the new globalised economy, it is offered on an environmental platter of “cleanliness” and “beautification”. In vicious combination these three trends are transforming the urban landscape from the city as domestic “residence” to the city as commercial “estate”.

Why are these trends in development becoming manifest today, after over fifteen years of structural reforms? A simple proposition may be put forward, as follows: the thrust of the modern secular democratic approach adopted in the 1950s has made poverty almost inevitable in the succeeding decades, and globalisation has only sharpened the impacts. The “modernism” that was accepted by the new government of liberated India as the direction in which the economy must move had certain specific features:

- a. The encouragement of economic development for private profit;
- b. The growth of an infrastructure at public cost, but for supporting private profit; and
- c. The creation of an extensive market and a labour pool to make production for profit possible.

All this, therefore, demanded, in the beginning, a secular democratic political structure primarily because of the way in which the movement for national independence sought to offer hope to the masses of a release from feudal and colonial bondage. There are, however, two major contradictions between the political drive for modernisation (geared towards private profit) and a truly secular and democratic structure. Firstly, an underdeveloped (and non-modernised) society can develop the basis for private profit

only through the exploitation of a vast mass of producers. In other words, the rich get richer and the poor become poorer. Thus, such a society cannot promote egalitarianism – the first basis for democratic functioning. Consequently, the rulers must be able to keep inventing new techniques to maintain a façade of democracy to conceal a non-democratic political structure.

Secondly, the political structure that promotes modernisation (in the sense of being able to make a profit out of any enterprise) must fall eventually before its own creation. Thus the political system itself becomes an “enterprise”, a business out of which profits can be made. It begins to follow the rules of any business enterprise in terms of the capital to be invested (cf. in getting elected) and the rate of return (from commissions, payoffs, and graft). Such a system can, therefore, remain neither secular nor democratic. It falls victim to its own profit-making thrust, and in order to maintain its political hegemony, the ruling class eventually promotes neither secularism nor democracy. Consequently, it has to take recourse to greater and greater degrees of violence, repression, and crime to control an increasingly restive and dissatisfied working population.

To resolve these contradictions the most commonly held argument is that of further modernisation. In other words, if the economic base is made secure, then the possibility of a modern secular democracy emerging is also easier. If there is enough produced and enough distributed then both profits as well as some form of social and political equality may be ensured. However, this is an argument that has no answer to the problem of how to move rapidly from a “backward” to a “modern” economy. There may, therefore, be much to argue in favour of an alternative viewpoint for resolving the contradictions. The objective is to construct a modern society, which has both a different economic base as well as a secular, democratic structure built on that base. It may not be very clear what this alternative notion is. But that is precisely where the challenge lies. Some of the indications are already emerging from the environmental, gender, labour, and popular science struggles in India. How may one build these indications into a cogent and appealing praxis?

As the social and political struggles in India suggest, one of the components of an alternative structure may be to engineer a system in which public investment is for public betterment. But the environmental movement is concurrently demonstrating, as more and more social and environmental costs get factored into the economics of production, there may not be any space left for a concept of profit. Equally, the ethnic, gender, and caste struggles powerfully illustrate that notions of class are not sufficient to fully describe social and political identity. How then, can all these be integrated into a unitary understanding of society and the process of change? In conceptual terms, perhaps it would mean the design of four interrelated systems for:

1. The production of useful goods generating full employment with full creative growth of human potential;
2. The distribution of these goods for consumption and satisfaction of basic needs, with ample leisure time;
3. The replacement of the notion of surplus or profit with an ethical approach to social survival; and
4. The minimisation of losses to society accompanied by concerns for the preservation of a harmonious environment.

What all the above really boils down to is that a social management system has to come into existence which will attempt to resolve in a creative manner the various conflicts that exist in any society. The general tendency is to try and spell out these styles of management either in the context of “modernisation” (what the new political economy is supposed to lead to) or in the context of “fundamentalism” (what the older society was all about). The alternative viewpoint sought to be discussed here is to learn how the working people have developed certain management systems born out of their own experience, and how these experiences may be generalised into a code that will assist in the reconstruction of a secular, democratic, and creative society. Key to such a management system would be alternatives to the profit motivation underlying production, and the possibility of building alliances between different sections of society to build such an alternative.

A tentative hypothesis may be said to have five inter-dependent elements that are important ingredients for the development of the working people's revolutionary consciousness:

1. The level of information available would appear to be a crucial ingredient.
2. The extent of comfort people have about the size, familiarity and kinship relationships of the population involved in the decisions would also appear to be of great importance.
3. Then there is the maturity and organisation in being able to informally monitor developments and changes in the environment.
4. In addition, there is the confidence level in collectively being able to formally enforce or correct the decisions taken.
5. Finally, there may be a strong element of a means-ends morality – that the methods adopted for resolving the conflicts should not themselves lead to further conflicts.

The hypothesis of the secular behaviour of the working people may be consolidated somewhat by looking at some of the theoretical issues thrown up by popular movements in India. These indicate that groups of people having organised for common good are able to manage their internal and external conflicts within the limits of the knowledge available to them and in the ambience of the comfort provided by personal and professional relationships within the group. These relationships also appear to provide for human considerations normally absent in formal governmental planning processes. And these considerations are often based in the traditions of work itself. Additionally, there appears to be a fundamental difference between a “modern” style of management and, what may be called, “a working people's” style. While the former focuses on the collection and reinvestment of surplus (in other words, of accumulating capital) the latter has a strong tendency towards the production and distribution of useful goods and the minimisation of losses to society.

This is where the question of alternative science and technology comes in. The dissemination of science is supposed to develop ‘scientific temper’, the ability to ask questions, to be curious and inquisitive, to expand the realm of knowledge. However, the

nature of the question asked will quite often determine the nature of the answer. Let us take, for example, the case of the child waste picker in the city who has to sort through garbage, often exposes herself to all kinds of harmful substances, and earns barely half a dollar for her day's labour. If the question posed is, "What can I do to help the poor child?" then it is likely that the answer would be to cut down on the waste picker's exposure to harmful substances by organising households for segregation of waste at the source itself. However, if the question asked is, "Why is the child poor?" then the answer would have to do with the political reorganisation of the trade which denies the waste picker a minimum legal wage. This is perhaps the distinction between **popular science** and **people's science**. The former confines itself to dealing with factors within a given system, while the latter tends to examine the basis of the system itself.

Emerging from the experience of several organisations, four issues may now be posed which confront people's scientists with regard to how do they assist alliances of the people in constructing an alternative mode of production. Two of these questions are external to the alliance, while the other two are internal. Firstly, there is the growing recognition that the processes of globalisation have completely taken over the media institutions as corporate structures. Thus, the media carries intensive coverage of the benefits of globalisation but deliberately ignores or downplays the fairly extensive public protest against it. Hence, a way has to be discovered to couple up technologies of mass communication with science campaigns. Secondly, State policy is no longer responsive to the articulated needs of the poor. Even if people's organisations mobilise on the streets their ability to influence policy is limited. Organs of the State defeat the people either by not listening to their voices or by co-opting them. Therefore, movements and groups have to discover how coalitions of decentralised networks can use the factual base of science to substantiate their viewpoints.

Thirdly, when alliances are made between groups and movements, each member of the alliance has its own constituency and agenda. Leaders of these groups are often very protective of their own interests. Thus, the integration of these diverse strands into one integrated stream constitutes a major challenge. This may be possible by examining the

technological basis of production (including economic, social, and cultural forms) to see how different identities can come together in reconstructing society. In other words, the alliance itself must have a material basis for allying. Fourthly, non-party groups and movements have occupied the space left untouched by the larger political parties but cannot ignore the parties. Since most non-party groups do not contest electoral politics, the question posed earlier resurfaces as to how a democratic polity can be built that does not fall victim to the increased 'free market' incentives offered under globalisation. Thus, new democratic institutions have to match the manner in which production and distribution are re-organised.

All these questions are vital to the growth of a **people's science and technology**. The manner in which they are answered, not only in India but in all societies, will differentiate the politics of defence from the politics of offence. The question before political analysts, therefore, is whether or not contemporary society displays signs of revolutionising the manner in which we look at the basis of knowledge. And if sections of society are beginning to ask the critical questions, then what possible answers can be placed before them in their search for a more humane and sustainable society?

(2632 words)

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