HERITAGE VERSUS TECHNOLOGY

REFLECTIONS ON THE ROLE OF TECHNOLOGY IN SHAPING THE INDIAN IDENTITY

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No culture today can escape the globally pervasive power of modern technology. Never before in human history has appeared such a globally pervasive power - unless it was the global atmospheric change which finished off the dinosaurs many millennia ago. A culture seeking today to keep free from technology's impact in order to preserve its purity has as much chance as the dinosaurs had then.

The reasons for this pervasive power are not far to seek. Technology creates not only instant global communication, but also its own institutions and forces, its own wants and commodities to meet those wants, its own social organisation and status symbols.

In 1985 the then Prime Minister of India, Sri Rajiv Gandhi, in his inaugural address at the Diamond Jubilee of the Indian Philosophical Congress at Hyderabad, raised the question for Indian philosophers to reflect upon: Is there any intrinisic contradiction between the new technological civilisation that India was determined to develop by the year 2000 on the one hand, and the values of India's traditional heritage on the other?

Before the philosophers could digest the question, Rajiv Gandhi proceeded to answer it from his own point of view. To him there was no such intrinsic contradiction. He pointed to Japan as a nation which had resolved the conflict between technological values and traditional Japanese values.

For those who knew something of Japan, this was a judgment hard to swallow. Japan is still in the first stage of the conflict. The decision has been to give priority to the demands of technology and management as dicisive for the economy. Culture can only be a secondary consideration, since the top priority is to beat America and Europe and become Number One as a nation. Once the technology and the economic resources

are there, the claims of culture and identity can be left to a second stage.

The Japanese have known the problem ever since the Meiji Restoration in 1867, when the westernising trend began in Japan under pressure from the Western powers. For us in India westernisation began much earlier, and under British colonial tutelage we learned to despise our own heritage in a way which the Japanese never did. And unlike the Japanese we were never at the stage where we could compete with the west in their own game of technology. The Japanese certainly show more cultural self-confidence than we in India seem capable of at present; but they too are far from having resolved the question of heritage and culture. We can learn from their experience, but they have given us no model.

Rajiv Gandhi's formula was quite simple: adopt the technological civilisation as base. and then weave into it certain values we can now pick and choose from our rich and varied heritage. He proposed two values he had found useful for himself from the Gita and the Upanishads - nishkamakarma (right action without desire for its fruits), and sthitaprajnata (keeping your cool in the face of impending catastrophe. or in his words: "unflappability is the better part of valour"). All right perhaps for Rajiv Gandhi as an individual, a technologist who had become head of the Indian state; but certainly dubious as a social value for our people harrassed by the impact of western technolgy. We need to go a bit deeper - to look at modern Science-Technology (Sci-tech) both as an enterprise and as a way of dealing with reality, and then see how these fit into the Indian identity.

SCIENCE-TECHNOLOGY AS ENTERPRISE AND COMMODITY

The Inter-dependence of Science and Technology

There was a time when it was fashionable to make a neat distinction between pure science as theoretical knowledge and technology as mere application or the applied science of engineering and technology. Pure science was conceived of as something existing in its own right, independent of whatever technology that may develop from it. The former was supposed to be distilled permanent truth, pure theory, objective and proved, while the latter was simply putting the former

to work for human purposes. I myself used to say once that science tells us how things work and technogy shows us how to work on things using the knowledge about how things work. I no longer do, for three reasons.

Pure Science (e.g., a new general theory of relativity or new attempts to formulate quantum theory beyond the Copenhagen Interpretation) has now become rare, certainly less than 5% of the total scientific/technological research being done today. Most research in science is geared to technological interests, whether that technology be medical, military, agricultural, industrial, communicational, cybernetic or other.

Secondly, scientific research today has to be corporate, since the costs and infrastructure involved are way beyond the means of the individual scientist. Gone are the days when scientific research was a job to be accomplished by the individual scientist in his or her own private backroom laboratory. It is a huge enterprise, sometimes even way beyond the means of individual governments. The new multi-million underground Particle Accelerator at the Centre Europeenne de Recherche Nucleaire near Geneva is 7 kilometers long, partly under Switzerland and partly under France, financed jointly by 14 European governments. Research in Laser Technology or Super-conductivity also has become forbiddingly expensive, even for many governments. And while a case can be made to show that some of this has no immediate commercial application, the enormous quantity of funds needed would not have been forthcoming if the governments concerned had not some hope to be economically rewarded for their efforts.

The third thing to note is that scientific research has increasingly become dependent on high technology and the independence of science from technology is now mostly a myth. Even simple biological research requires electron microscopes and other high technology equipment. Technology is no longer merely an outcome of science. There can be very little science research today without advanced technology. The two, science and technology - are inextricably intertwined, and it is better to speak of them as one reality -"sci-tech".

The Sci-Tech Colossus

And this sci-tech is today a multi-billi-
on dollar colossal enterprise financed and controlled
largely by military establishments and large transnatio-
nal corporations. The main funding source for sci-tech
research is today the trillion-dollar global military
budget, and the corporations and contractors who benefit
from that inhuman and useless budget, paid for by the
sweat and toil of the working people and costing the
precious life of many young people in our mad world.

Armaments expenditure gives us no
added security; it only creates greater insecurity. But
it decisively influences the direction of scientific
research; most of our present sci-tech research aims at
means for more efficient murder and destruction. One
consequence is the spread of militarism in all our
societies promoting greater social violence than before.
The global sci-tech enterprise thus becomes the most
powerful anti-human force in our societies, with its
increasing subservience to war and profit. Why are we
unable to develop counterforce capacity to combat this
monster? Michael Raemer writing in the Worldwatch
Institute's "State of the World" Report (1990) says:

"The major barriers (to conversion to a peaceful
economy) are not technical but political, ranging
from the power and agendas of vested interests to
the widespread misconception that military spending
makes good economic sense. Military contractors
have little incentive to move out of defense work:
They enjoy low-risk operations, generous cost-plus
contracts, and large profits. Conversion would
mean a loss of power and privilege."

In addition to that, in many countries including India,
defense contractors provide a good chunk of the annual
as well as election-year expenditure of political par-
ties, and reduction in defense expenditure would cut
into these kickbacks: political parties not being based
on the public's financial support can no longer be
controlled by the public.

The myth that defense expenditure creates
new jobs dies hard: in India it takes Rs. 2.5 lakhs to
create one job in an Ordnance Factory; in ordinary
civilian industry Rs.70,000 can create a job; and in
road construction or agricultural investment it takes
only Rs. 1500 to 2000 to create a new job. It is the

military-industrial system that stands in the way of
solving the problem of India's colossal poverty. That
league is today a colossus in India eclipsing the iden-
tity of the ordinary Indian. It is true that in India
only about 3 percent of total industrial employment is
in military establishments, compared to Israel's 22.6 %,
USA's 11.1 % and China's 10%. But compared to Pakistan's
0.8% or Brazil's 0.7%, we are overmilitarised; besides,
the 3% figure does not include those employed in subsi-
diary undertakings serving and supplying the military.

Sci-tech and the TNCs

The progress of Sci-Tech, in rate of
acceleration as well as in direction, depends heavily on
investment in Research and Development. The government
share in that investment is largely in the Defense sec-
tor. Most of the other investment comes from the large
Corporations, both national and trans-national. The
main interest of these corporations is not in the public
good, but in private profit and expansion of their own
power. The world's R&D budget today stands above 200
billion US dollars a year. How much of this is directed
to solving the huge basic needs problems of the poor and
the marginalised? There are no clear estimates on this,
as far as I know. One estmate gives the figures as
follows:

Defence	24%	Basic Research	15%
Space	8%	Energy	8%
Health	7%	Agriculture	3%
Transport	5%	Pollution Control	5%
Information tech	5%	Other	20%

These figures are eminently misleading. Not only is
there a large military component in Space, Information
Processing, Energy, Transportation and Basic Research.
Even the other sectors, like health, for example, are
heavily oriented towards quick profit by targetting on
the rich who can pay for expensive diagnosis and treat-
ment. What is called agricultural research is mainly in
ecologically counterproductive chemical fertilisers and
pesticides, and in developing and patenting high yield
varieties of seed oriented to monopoly interests of seed
companies.

In many countries, what passes as private
industry's research, is funded by government. In the U S

A, for example, in 1977, 45.4% of private industry's research expenses in electronics and communications, was funded by the government, though the profits accrued to corporations and not to the citizens who pay for the investment. The Corporations thus benefit from the taxpayers' labour, without paying for it.

Private Industry, by its very profit-seeking nature, has to target the rich and cater to their needs first and only then to the basic needs of the poor who have much less purchasing power. And so long as the Corporations are interested in profit as primary motive for research, the direction of development in science and technology cannot favour the poor or meet their real needs.

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SCIENCE AND TECHNOLOGY AS COMMODITY

The Public Character of Science Compromised

In the early days of modern science it was an article fo faith for it to have all scientific work made public, in order to promote maximum possibility for the refutation of an unreliable hypothesis. Sir Karl Popper's hypothesis that modern science itself is a body of "Conjectures and Refutations" (see his work of that title) is now refuted by the fact that today much of sci-tech knowledge is not accessible to the scientific community, for two reasons.

In one set of cases, science is 'classified' knowledge resulting from military research which the state possessing that knowledge does not want to share with the enemy or with other nations. An increasingly large number of the highest paid and most competent scientific researchers today are sworn to secrecy, because they have chosen to be employed by some defense establishment, which has extracted that unprofessional vow of secrecy as a condition of employment. The public character of science has thus been betrayed by the military research scientists.

The other betrayal is by corporations. Scientific knowledge gained by corporate industry research is kept secret, because it is the source of profit which no corporation wants to share with others. And this knowledge is then transformed into a commerci-

ally useful technology, and promptly patented, as in the case of seeds, medicines, diagnostic medical equipment and manufacturing and packaging technologies. Sci-tech thus becomes a commodity for trading in the market, on a lease or rental basis or for outright sale if the technolgy is becoming outmoded and no longer useful for the corporation which owns it. Denying and violating the article of faith about the public character of science becomes a necessity for pursuing corporate profit.

Sci-Tech as Marketable Commodity

Till the other day we used to talk about three sectors in the economy: agriculture, industry and services. Recently a fourth has been added: Information. Information means largely sci-tech information, and it is now becoming the largest sector of the market economy system; that is where most research is being concentrated, because the great demand is there and hence the bright prospect of greater profit. And who controls the market in this new and highly profitable fourth sector of the economy? Those who can afford to invest sufficiently in research to produce this new commodity called sci-tech information. At this point it becomes evident not only that sci-tech has become a commodity in the market, but also that oligopoly on sci-tech research is fast becoming the most powerful tool of exploitation of the under-privileged.

According to the UNESCO Yearbook (1982), in 1978, out of a total of 2,131,500 personnel engaged in sci-tech R&D, 88.7% was in the developed industrial conutries, while the developing countries' share (including India and China) was 11.3%. Actually more than 90% was in the developed countries, since the UNESCO did not get the figures from the USSR which are not included in the 88.7%. Moneywise, the total world R & D expenditure in 1978 was 123.074 billion U S dollars, again not including the USSR. And the developing countries' share of that ivestment was a mere 4.4 percent. In fact less than 4 percent, if the USSR expenditure is included in the total. Official figures from the USSR for 1982 are 1.43 million research scientists and research expenditure of 23.8 billion roubles.

What this reveals is that the developing countries have just enough sci-tech to be capable of absorbing the "information" that the developed countries

can sell us. We are mostly a market for the fourth
sector of the economy, a market that is being furiously
exploited with the consent of the money-making class in
our societies, through collaboration agreements and
"transfer of technolgy". Even the term "appropriate
technology" belongs to this exploitative marketing
system.

The poor of the world are at the mercy of
those who control sci-tech, the most powerful instrument
both of development and of exploitation. That instrument
shapes our identity and dictates our values. It is a
huge global enterprise which thrives by marketing this
commodity called sci-tech. Our identities are caught in
its mesh and we are no longer free to develop ourselves
according to any human standards.

SCIENCE AND CULTURAL FORMATION

We have pointed to the enormous socio-
economic power of science, which underlies our political
economy and our global exploitative structures. We
should also look at the mind-deforming power of science.
This is not to detract from the great achievements and
potentialities of sci-tech in itself, but to review the
way it has developed in our truth-distorting world.

Modern Science has been unconsciously
based on Naive Realism, or the philosophical idea that
things are generally what they appear to be, and that
the world can be known as it is in itself. Of course
science constantly reveals hidden relations between
forces, fields and things; yet, it is still about the
relations among phenomena that it speaks, not about what
lies behind the phenomena or at their base.

Though Quantum Mechanics has been there
now as scientific theory for at least two generations,
it is only now that its metaphysical implications are
being fully or partly grasped by scientists and philo-
sophers of science. Subatomic physics clearly shows
that the observed object is shaped by the observer's
sense-and-mind and its extension, the measuring instru-
ment. There is no objective world out there. Neither
time nor space can exist in themselves. Things are not
as distinct or discreet as we once supposed. Everything
is inextricably inter-connected. Naive Realism has too
naive a conception of reality, which may be all right

for operational purposes, but does not depict the true character of reality-perception as a joint product of our knowing equipment and what is out there. There is ultimately no theory in science that explains reality, which seems to defy science and its methods.

As the sophisticated western liberal realises this, he quietly abandons theory, which cannot be defended, and opts for various breeds of pragmatism. This happens not only in the natural sciences, but also in politics, economics, sociology and other human sciences. Joseph Rouse, an American philosopher-sociologist of Science, has made two important points in his <u>Knowledge and Power: Towards a Political Philosophy of Science</u>, which are important for our reflection about science and identity. First, Modern Science is to be seen only as a field of practical activity, rather than as a theoretical endeavour. Second, the epistemological and political or power dimensions of science cannot be extricated from each other.

Rouse cites the well known American Deconstructionist Richard Rorty's <u>Philosophy and the Mirror of Nature</u>, to affirm that the 300 year old distinctions between science and politics, science and art, science and philosophy and even between science and religion do not any longer make sense, "though this rhetoric has formed the culture of Europe". In other words science is inextricably bound up not only with politics and economics, but also with other fields of human activity like philosophy, art and religion. If that is so, and if science is as powerful and pervasive as we have shown, then it does fundamentally affect human culture, which is an amalgam of all creative human activity.

Science gets its prestige from a myth; that its practitioners are a community of saintly and ascetic, noble people heroically pursuing truth for its own sake. The fact, however, is that the scientific community is composed of ordinary mortals like the rest of us, driven by all the passions of greed, lust for power and desire for glory, ruthless competition and even a good deal of faking. Our own ruling elite, when it talks of the `scientific temper' and `secularism' as panacea for all our ills, are simply mouthing the outdated dogmas of a defunct western liberalism.

Among western philosophers, Martin Heidegger came closest to a deeper understanding of the western enterprise of modern science. Heidegger sees modern science as the logical and final consequence of the basic western stance of standing outside nature and trying to understand it from the outside. "Science does not think", he said, adding as an afterthought, "in the way thinkers think". For Heidegger western science is the consequence of a mild panic endemic in western culture and psyche. European human dasein, according to him, is always uneasy about the `other', whether that other be person or thing. And until it dominates the other it cannot be secure. So, according to Heidegger, it creates a whole system of if-then perceptions: if the other acts this way, then act this way. If you know how it is going to act, then you can always find a way to counteract and control'it.

According to Heidgger, modern science is the last stage of western humanity's forgetfulness of Being, the first two stages having been western religion and western philosophy. I have discussed this at some length in my forthcoming work <u>A Light Too Bright</u>, (State University of New York Press, 1991). Here I need only to point out that for Heidegger modern technology's real nature is in its defiance of that which is, forcing it to yield up its secret, so that we can use that which is, according to our own choice – to make it, as he puts it, a stand-by slave, waiting to do our bidding. Technology makes mountains and rivers as well as Nature itself our slaves, our <u>Gestell</u> or Standing Reserve to be utilized according to our desires. Science sets up Nature as a system of coherence of forces; technology moves in to capture it and enslave it. Technology, Heidegger says, is not a consequence of science; technology reveals the true nature of science; science came about first, but its\motivation from the beginning was technology.

At this point Heidegger introduces an interesting distinction; between the 'correct' and the `true'. What sci-tech reveals is correct but not true. To find the correct may often mean losing the true. In Science, Humanity makes the universe his/her object; in technology, he/she turns it into his/her Standing Reserve. The end result is that the new Technological Humanity sees only itself wherever it looks. As Heidegger puts it:

"In this way the impression comes to prevail that
everything that humanity encounters exists only
insofar as it is his/her construct. This illusion
gives rise in turn to one final delusion: it seems
as though humanity encounters only itself...**In
truth, however, precisely nowhere does humanity
today encounter itself, i.e. in its true nature**".
(Heidegger, The Question Concerning Technology,
emphasis original, slightly edited to eliminate
sexist language)

The biggest charge against sci-tech so
far is that it eclipses humanity from its own view.
Unless we reflect on the true nature of sci-tech and its
eclipsing influence and power over our perceptions, we
will not be able to use sci-tech as a human instrument
for cultural creativity and for meeting genuine human
needs.

T O W A R D S   A   C O N C L U S I O N

It seems clear that we cannot meet the
basic needs of humanity and sustain our global popula-
tion without the aid of some kind of science and techno-
logy. Our pre-scientific ways of production simply will
not meet the need, though many Gandhians might say so.
It is not a romantic retreat from sci-tech and industry
that will take care of the issue. It is the colossal and
uncontrolled power of the sci-tech establishment that
needs to be remedied. Humanity cannot afford to simply
let that establishment rule, dominate and exploit. Sci-
tech has to be liberated to become a handmaid of humani-
ty, not an oppressive dictator. It should not be allowed
to shape our identity, but we should be able to use it
for the proper shaping of humanity's identity, in accor-
dance with norms wisely chosen, not by sci-tech, but by
humanity itself.

That is indeed a tall order. The Colossus
must be tamed and made responsive to genuine human
needs. One can hardly expect the State to do that for
us, since the State is everywhere part of the system and
unable to change the system itself. The people have to
take charge of the job of making sci-tech responsive to
humanity's real needs, not the needs of corporations and
defense establishments.

The first stage is creating awareness of the problem simultaneously in the community practising sci-tech and in the general public. Self-awareness and self-depiction are important elements in shaping an identity. We in India, under Jawaharlal Nehru's well-intentioned leadership, opted for a secular or western liberal identity. It does not fit our people and they are reverting to communal identities, in order to find themselves. Just as sci-tech is exploited by the power brokers of society, they are also now exploiting religion to suit their selfish ends.

Our elite leadership shows very little capacity to reflect on identity questions, except by positing narrowly communal or unfeasibly secular identities. Neither Hindutva nor the much-vaunted Secularism can help solve the problem of Indian Identity. Both are equally repudiations of the noble humanist heritage that is ours. Not the humanism of western liberalism, which is without foundation, but the noble humanism of the Buddha and the Gita, of the Koran and the Bible, of the Guru Granth Saheb and the Zendavesta.

But that humanism has to be freshly formulated to fit our pluralist context; it cannot be a rehash of the superficial humanism which has developed in the west, and which is now known to be without proper foundation. It will not be either a secular humanism or a scientific humanism; the latter too has now proved itself to be without foundation and is in process of reformulation. We can learn from all, but the foundations must be laid deep into our own rich and varied Indian tradition, which is certainly not Hindutva.

If this identity is to fit India's psyche, it must have a transcendent basis without being parochial or divisive. It cannot ignore sci-tech, but must be capable of going beyond it. What is even more important, sci-tech must be liberated from its bondage to war and profit, and from its false pretenses to be the only way of knowing and doing.

The natural and social sciences must enter into profound dialogue with art and philosophy, music and literature, but also with the religions, for science has no monopoly of truth and technology has no monopoly on the right way to act. Perhaps while all this exercise is going on, there must be a simultaneous

effort to eliminate war, to enforce justice both within
and among nations, and to maintain an environment foste-
ring life. It is precisely in the context of seeking
remedies for war, injustice and environmental disruption
that humanity can also seek to go beyond these to find a
human identity.

There is nothing sacrosanct about Indian-
ness. If it is not at the same time humanness, it is
worthless. National boundaries, whether they be of In-
dia, the U S A. or the Soviet Union. are mere historical
accidents and have no absolute value. But they are tem-
porarily necessary, because we are not yet secure about
the larger human identity,· and have to stick to more
manageable smaller identities, whether national or regi-
onal. But these latter should in no wise be absolutised.
They should be held in the framework of belonging to a
common humanity, a mutually responsible global human
community of nations.

At the same time if even the national
identity is parochialised (as 'in the past the USA and
many European nations thought of themselves in terms of
a White identity, and many Islamic nations still think
of themselves in terms of Muslim identity) and made
exclusive of minorities, havoc will result. No single
religious tradition can be. imposed on a nation like
ours. But neither can the secular scientific identity
chosen by our leadership of yesterday be imposed on our
people. Sci-tech and secularism cannot define or deter-
mine our identity. Sci-tech can serve. when it is
liberated. Secularism can only be the choice of a few.

We need sci-tech. Without it we will make
our people die. But it cannot be allowed to become the
master or the shaper of our identity. This is possible
only when two preliminary conditions are in process of
fulfilment: (a) the establishment of just. peaceful and
ecologically sound societies; and (b) the creation of a
deeper awareness of the true nature of science and
technology as enterprise, as commodity. and as reality-
distorter, among our common people. among our sci-tech
and industrial community. and hopefully among our
political leadership. ·