TECHNOLOGY WITH A HUMAN FACE

The modern world has been shaped by its metaphysics, which has shaped its education, which in turn has brought forth its science and technology. So, without going back to metaphysics and education, we can say that the modern world has been shaped by technology. It tumbles from crisis to crisis on all sides, there are prophecies of disaster and, indeed visible signs of breakdown.

If that which has been shaped by technology, and continues to be so shaped looks sick, it might be wise to have a look at technology itself. If technology is felt to be becoming more and more inhuman; we might do well to consider whether it is possible to have something better—a technology with a human face.

Strange to say, technology, although of course the product of man, tends to develop by its own laws and principles, and these are very different from those of human nature or of living nature in general. Nature always, so to speak, knows where and when to stop. Greater even than the mystery of natural growth is the mystery of the natural cessation of growth. There is measure in all natural things in their size, speed, or violence. As a result, the system of nature, of which man is a part, tends to be self-balancing, self-adjusting, self-cleansing. Not so with technology, or perhaps I should say not so with man dominated by technology and specialization. Technology recognizes no self-limit principle—in terms, for instance, of size, speed, or violence. It therefore does not possess the virtues of being self-balanced, self-adjusting, and self-cleansing. In the subtle system of nature, technology, and in particular the super-technology of the modern world, acts like a foreign body, and there are now numerous signs of rejection.

Suddenly, if not altogether surprisingly, the modern world, shaped by modern technology, finds itself involved in three crises simultaneously. First, human nature revolts against inhuman technological, organizational, and political patterns, which it experiences as suffocating and debilitating; second, the living environment which supports human life aches and groans and gives signs of partial breakdown; and third, it is clear to anyone fully knowledgeable in the subject matter that the inroads being made into the world's non-renewable resources, particularly those of fossil fuels, are such that serious bottlenecks and virtual exhaustion look ahead in the quite foreseeable future.

Anyone of these three crisis or illnesses can turn out to be deadly. I do not know which of these three is that most likely to be the direct cause of collapse. What is quite clear is that a way of life that bases itself on materialism, i.e. on permanent, limitless expansionism in a finite environment, cannot last long, and that its life expectation is the shorter the more successfully it pursues its expansionist objectives.

If we ask where the tempestuous developments of world industry during the last quarter century have taken us, the answer is somewhat discouraging. Everywhere

the problems seem to be growing faster than the solutions. This seems to apply to the rich countries just as much as to the poor. There is nothing in the experience of the last twenty-five years to suggest that modern technology, as we know it, can really help us to alleviate world poverty, not to mention the problem of unemployment which already reaches levels like thirty percent in many so called developing countries, and now threatens to become endemic also in many of the rich countries. In any case, the apparent yet illusory successes of the last twenty-five years cannot be repeated; the threefold crisis of which I have spoken will see to that. So we had better face the question of technology—what does it do and what should it do? Can we develop a technology which really helps us to solve our problems—a technology which really helps us to solve our problems—a technology with a human face?

The primary task of technology—it would seem, is to lighten the burden of work, man has to carry in order to stay alive and develop his potential. It is easy enough to see that technology fulfils this purpose when we watch any particular piece of machinery at work. A computer, for instance, can do in seconds what it would take clerks or even mathematicians a very long time, if they can do it at all. It is more difficult to convince oneself of the truth of this simple proposition when one looks at whole societies. When I first began to travel the world, visiting rich and poor countries alike, I was tempted to formulate the first law of economics as follows: 'The amount of real leisure a society enjoys tends to be in inverse proportion to the amount of labour saving machinery it employs'.

The question of what technology actually does for us is therefore worthy of investigation. It obviously greatly reduces some kinds of work while it increases other kinds. The type of work which modern technology is most successful in reducing or even eliminating is skilful, productive work of human hands, in touch with real materials of one kind of another. In an advanced industrial society, such work has become exceedingly rare, and to make a decent living by doing such work has become virtually impossible. A great part of the modern neurosis may be due to this very fact; for the human being, defined by Thomas Aquinas as a being with brain and hands, enjoys nothing more than to be creatively, usefully, productively engaged with both his hands and his brain. Today, a person has to be wealthy to be able to enjoy this simple thing, this very great luxury: he has to be able to afford space and good tools; he has to be lucky enough to find a good teacher and plenty of free time to learn and practice. He really has to be rich enough not to need a job; for, the number of jobs that would be satisfactory in these respects is very small indeed.

The extent to which modern technology has taken over the work of human hands may be illustrated as follows. We may ask how much of 'total social time'—that is to say, the time all of us have together, twenty-four hours a day each—is actually engaged in real production. Rather less than one-half of the total population of this country is, as they say, gainfully occupied, and about one-third of these are actually producers in agriculture, mining, construction, and industry. I do mean actual producers, not people who tell other people what to do, or account for the past, or plan

for the future, or distribute what other people have produced. In other words, rather less than one-sixth of the total population is engaged in actual production; on average, each of them supports five others besides himself, of which two are gainfully employed on things other than real production and three are not, gainfully employed. Now, a fully employed person, allowing for holidays, sickness, and other absence, spends about one-fifth of his total time on his job. It follows that the proportion of 'total social time' spent on actual production in the narrow sense in which I am using the term - is, roughly one-fifth of one-third of one-half, i.e. 3.5 percent. The other 96.5 percent of 'total social time' is spent in other ways, including sleeping, eating, watching television, doing jobs that are not directly productive, or just killing time more or less humanely.

Although this bit of figuring work need not be taken too literally, it quite adequately serves to show what technology has enabled us to do: namely, to reduce the amount of time actually spent on production in its most elementary sense to such a tiny percentage of total social time that it pales into insignificance, that it carries no real weight, let alone prestige. When you look at industrial society in this way, you cannot be surprised to find that prestige is carried by these who help fill the other 96.5 percent of total social time, primarily the entertainers but also the executors of Parkinson's Law. In fact, one might put the following proposition to students of sociology: 'The prestige carried by people in modern industrial society varies in inverse proportion to their closeness to actual production.'

There is a further reason for this. The process of confining productive time to 3.5 percentage of total social time has had the inevitable effect of taking all normal human pleasure and satisfaction out of the time spent on this work. Virtually all real production has been turned into an inhuman chore which does not enrich a man but empties him. 'From the factory', it has been said, 'dead matter goes out improved, whereas men there are corrupted and degraded.'

We may say, therefore, that modern technology has deprived man of the kind of work that he enjoys most creative, useful work with hands and brains, and given him plenty of work of a fragmented kind, most of which he does not enjoy at all. It has multiplied the number of people who are exceedingly busy doing kinds of work which, if he is productive at all, is so only in an indirect or 'roundabout' way, and much of which would not be necessary at all if technology were rather less modern. Karl Marx appears to have foreseen much of this when he wrote: 'They want production to be limited to useful things, but they forget that the production of too many useful things result in too many useless people', to which we might add: particularly when the processes of production are joyless and boring. All this confirms our suspicion that modern technology, the way it has developed, is developing, and promises further to develop, is showing an increasingly inhuman face, and that we might do well to take stock and reconsider our goals.

Taking stock, we can say that we possess a vast accumulation of new knowledge, splendid scientific techniques to increase it further, and immense experience in its application. All this is truth of a kind. This truthful knowledge, as such, does not commit us to a technology of giantism, supersonic speed, violence, and the destruction of human work enjoyment. The use we have made of our knowledge is only one of its possible uses and, as is now becoming evermore apparent, often an unwise and destructive use.

As I have shown, directly productive time in our society has already been reduced to about 3.5 percent of total social time, and the whole drift of modern technological development is to reduce it further, asymptotically to zero. Imagine we set ourselves a goal in the opposite direction-to increase it six fold, to about twenty percent, so that twenty percent of total social time would be used for actually producing things, employing hands and brains and, naturally, excellent tools. An incredible thought! Even children would be allowed to make themselves useful, even old people. At one-sixth of present-day productivity, we should be producing as much as at present. There would be six times as much time for any piece of work we chose to undertake-enough to make a really good job of it, to enjoy oneself, to produce real quality, even to make things beautiful. Think of the therapeutic value of real work; think of its educational value. No one would then want to raise the school-leaving age or to lower the retirement age, so as to keep people off the labour market. Everybody would be welcome to lend a hand. Everybody would be admitted to what is now the rarest privilege, the opportunity of working usefully, creatively, with his own hands and brains, in his own time, at his own pace and with excellent tools. Would this mean an enormous extension of working hours? No, people who work in this way do not know the difference between work and leisure. Unless they sleep or eat or occasionally choose to do nothing at all, they are always agreeably, productively engaged. Many of the ‘on-cost jobs’ would simply disappear. I leave it to the reader’s imagination to identify them. There would be little need for mindless entertainment or other drugs, and unquestionably much less illness.

Now, it might be said that this is a romantic, a utopian vision. True enough. What we have today, in modern industrial society, is not romantic and certainly not Utopian, as we have it right here. But it is in very deep trouble and holds no promise of survival. We jolly well have to have the courage to dream if we want to survive and give our children a chance of survival. The threefold crises of which I have spoken will not go away if we simply carry on as before. It will become worse and end in disaster, until or unless we develop a new lifestyle which is compatible with the real needs of human nature, with the health of living nature around us, and with the resource endowment of the world.

Now, this is indeed a tall order, not because a new lifestyle to meet these critical requirement and facts is impossible to conceive, but because the present consumer society is like a drug addict who, no matter how miserable he may feel, finds it extremely difficult to get off the hook. The problem children of the world—

from this point of view and in spite of many other considerations that could be adduced—are the rich societies and not the poor.

It is almost like a providential blessing that we, the rich countries, have found it in our heart at least to consider the Third World and to try to mitigate its poverty. In spite of the mixture of motives and the persistence of exploitative practices, I think that this fairly recent development in the outlook of the rich is an honourable one. And it could save us; for the poverty of the poor makes it in any case impossible for them successfully to adopt our technology. Of course, they often try to do so, and then have to bear the more dire consequences, in arms of mass unemployment, mass migration into cities, rural decay, and intolerable social tensions. They need, in fact, the very thing I am talking about, which we also need: a different kind of technology, a technology with a human face, which instead of making human hands and brains redundant, helps them to become far more productive than they have ever been before.

As Gandhi said, the poor of the world cannot be helped by mass production, only by production by the masses. The system of mass production based on sophisticated, highly capital intensive, high energy-input dependent, and human labour-saving technology, presupposes that you are already rich, for a great deal of capital investment is needed to establish one single work place. The system of production by the masses mobilizes the priceless resources which are possessed by all human beings, their clever brains and skilful hands, and supports them with first-class tools. The technology of mass production is inherently violent, ecologically damaging, self-defeating in terms of non-renewable resources, and designed to serve the human person instead of making him the servant of machines. I have named it intermediate technology to signify that it is vastly superior to the primitive technology of bygone ages but at the same time much simpler, cheaper, and freer than the super-technology of the rich. One can also call it self-help technology, or democratic or people's technology- a technology to which everybody can gain admittance and which is not reserved to those already rich and powerful.

- **E. F. Schumacher**

About the Lesson

E. F. Schumacher, in this extract from his book *Small is Beautiful,* focuses on the inhuman side of technology and the need to bring a human face to it. He feels that modern technology has caused crises which will lead to disastrous consequences.

The writer E. F. Schumacher was a renowned economist and statistician. His most famous books includes *Small is Beautiful* and *A Guide for the Perplexed.*

GLOSSARY

metaphysics	:	philosophy (here)
tumbles from crisis to crisis	:	moves from one dangerous situation to another
bottlenecks	:	hinderances
illusory success	:	success which is not real

inverse proportion	:	when one value increases, the other value decreases
neurosis	:	a mental illness
gainfully	:	profitably
giantism	:	being abnormally large
supersonic speed	:	faster than the speed of sound

***Activity 1*: COMPREHENSION**

A. Tick the correct alternative:

1. How, according to the author, can we combat with the bad effects of modern industrial society?
   (a) by using the latest means of comfort and luxury
   (b) by evolving a life style
   (c) by defeating our enemy, i.e. technology
   (d) none of the above

2. Which one of the following crises is not found in the modern world shaped by modern technology?
   (a) human nature revolts against inhuman technological patterns
   (b) the living environment gives signs of partial breakdown
   (c) serious bottlenecks and virtual exhaustion look ahead in the foreseeable future
   (d) the laws of human nature and technology shall become the same

3. The super technology of the modern world acts like a –
   (a) foreign body
   (b) native land
   (c) native tongue
   (d) foreign house

B. Answer to the following questions should not exceed 10-15 words each:

1. What prompts the writer to propose a technology with a human face?
2. How, according to the writer, is technology anti-nature?
3. What are the three crises technology has given rise to simultaneously?
4. How does the writer substantiate his view that technology causes more problems than it offers solutions?
5. What compels the writer to formulate his first law of economics: 'The amount of real leisure a society enjoys tends to be in inverse proportion to the amount of labour saving machinery it employs'?

C. Answer to the following questions should not exceed 30-40 words each:

1. Why does the writer say that doing work with brains and hands has become exceedingly rare, especially in rich countries?
2. How does the writer establish the claim that technology only lightens the burden of work and does not really carry any weight or prestige?
3. Why does the writer state that modern technology does not enrich man but empties him?

4. How does the people's technology that the writer proposes differ from primitive or super-technology?

D. Answer to the following questions should not exceed 60-80 words each:

1. Does the writer argue convincingly that modern technology has evolved to be more and more inhuman and led to more problems in both rich and poor nations?
2. Explain the writer's concept of 'technology with a human face' and find out how it would tide over the crises of the super-technology of the rich.

E. Say whether the following are True or False. Write T for true and F for false in the bracket:

1. The modern world has been shaped by science and technology. [ ]
2. According to the author, the question of what technology actually does for us is worthy of investigation. [ ]
3. Modern technology has deprived man of the most creative work. [ ]
4. A real work has therapeutic value. [ ]
5. The poor of the world, according to Gandhi, can be helped only by production by the masses. [ ]
6. The writer compares the present consumer society to a drug addict. [ ]

***Activity 2*: VOCABULARY**

A. Choose the correct meaning of the word from the options given below.

1. Cessation
   a. protection b. an end c. dominated d. involved

2. inroads
   a. problems b. attacking c. laying new roads d. to use a large part of something

3. alleviate
   a. calculate b. condition c. increase d. reduce

4. endemic
   a. common b. endanger c. painful d. energise

5. exceedingly
   a. expensive b. increasingly c. extremely d. in excess

6. literally
   a. realistically b. literary c. literacy d. adequately

7. chore
   a. work done regularly b. anxiety c. violence d. symptom

8. accumulation
   a. accurate b. collection c. accusing d. consideration

9. foreseen
   a. understand b. enhance c. predicted d. apparent

10. presupposes
    a. pretends b. assumes as truth c. considers d. preserves

***Activity 3*: GRAMMAR**
Compare the sentences in each of the following pairs:

Ramesh eats an apple every day.
An apple is eaten by Ramesh every day.

One of the boys saved his son.
His son was saved (by one of the boys.)

He will pay me the money.
I will be paid the money by him.

or
The money will be paid to me by him.

The first sentence in each pair is in active voice, and the second, in passive voice. In the active voice, the grammatical subject is the doer of the action, and the sentence tells "who's doing what." The passive voice tells what is done to the subject of the sentence. The person or thing doing the action may or may not be mentioned but is always implied : "My car was repaired" (by somebody at the workshop).

Active

Ramesh	eats	an apple	every day.
Subject	Active voice	Object	Adverb

Passive

An apple	is eaten	by Ramesh	everyday
Subject	Passive voice verb	doer or agent	adverb

Use the passive voice sparingly. A general rule is to use the passive voice for the purpose of reporting and when the doer or agent in your sentence is unknown or is unimportant.

Use the passive voice only with verbs that are transitive. Intransitive verbs such as *happen, occur* and *try* (to) are not used in the passive voice.

The ceremony [~~was~~] happened yesterday.

has
Morality is a concept that [~~was~~] tried to answer many of these problems.

The complete verb of a passive voice sentence consists of a form of the verb be followed by a past-participle.

receiver as subject	**verb : be + past participle**	**doer omitted or named after by**
—> The windows	are cleaned (by someone)	every month.
—> The windows	were being cleaned	yesterday afternoon.
—> The windows	will have been cleaned	by the end of the day.

Auxiliaries such as would, can, could, should, may, might and must can also replace will when the meaning demands it.

The windows might be cleaned next month.

In the case of the 'get-passive', (get + past participle) generally no agent is used:

—> They got married

—> They were married (by a priest)

Note the distinction between a 'dynamic' passive and a 'stative' passive. A dynamic passive denotes action and a 'stative' passive denotes the state:

Dynamic Passive
—> The letter was written on February 1, 2004.
—> When was this house constructed?

Stative Passive
—> Your shirt is torn.
—> My heart is broken.

Expressions like He was born in 1947. She is finished. He is drunk, etc. are to be considered idiomatic because there is neither any implication of an agent, nor of the object - subject relationship in such sentences.

In scientific writing, the passive voice is often preferred to indicate objective procedures. Scientists and engineers are interested in analyzing data and in performing studies other than researchers can replicate. The individual doing the experiment is therefore relatively unimportant and usually is not the subject of the sentence.

—> The experiment was conducted in a classroom. Participants were instructed to remove their watches prior to the experiment.

Do not overuse the passive voice. Generally your writing will be clearer and stronger if you name the subject and use verbs in the active voice to tell "Who's doing what". If you overuse the passive voice, the effect will be heavy and impersonal.

Unnecessary Passive He was alerted to the danger of drugs by his doctor and was persuaded by her to enrol in a treatment programme.

Revised His doctor alerted him to the danger of drugs and persuaded him to enrol in a treatment programme.

Passive voice of questions, commands and requests is used only when some special emphasis is desired.

Sentences marked with a star are not common in modern English. Such sentences should be avoided.

Did you write this letter?
Was this letter written by you?

Do the doctors here make such mistakes?
Are such mistakes made by the doctors here?

How many people attended the meeting?

* *By how many people was the meeting attended?*
Who did this?
Who was it done by?

* By whom was it done?
Please open the door.
You are requested to open the door.
Write his name.

* *Let his name be written*

Exercise

A. Mahesh was given the following oral instructions / information at the time he opened an R.D. account in a post office. Can you rewrite these in the form in which they would be found in a passbook supplied by the post office. The first is done as an example.

1. We accept recurring deposits in equal monthly instalments of Rs.100/- or its multiples.

Recurring deposits are accepted in monthly instalments of Rs.100/- or its multiples.

2. The depositor should, at the time of opening the account, stipulate both the amount of monthly instalment and the number of instalments payable.

3. The depositor can make deposits by way of cash or by mail transfer.

4. The depositor must pay the instalment for any calendar month on or before the last working day of the month.

5. We will not make repayment of the deposit without production of the passbook.

6. You can transfer a Recurring Deposit account from one branch to another.

7. The Post office will repay the balance in the account together with the interest accrued one month after you pay the last installment.

B. Put the following sentences into passive voice:

1. We sell eggs here.
2. He paid ten rupees to each worker.
3. I have given him a beautiful gift.
4. Someone will send you a complete list.
5. Where did you find this ring?
6. Do you allow children here?

***Activity 4*: SPEECH ACTIVITY**

Write an imaginary argumentative conversation between a friend and you who have diametrically opposite views on technology, one supporting high-technology and the other production by masses.

***Activity 5*: COMPOSITION**

Taking a stand against the writer's anti-technological perception, write an essay establishing that all nations, irrespective of their economic status, should possess super-technology rather than people's technology.