



A DISCOURSE ON THE ARTS, BOTH APPLIED AND FINE

Timir Datta of the Tulane University Department of Physics has prepared a critique of arbitrary limitation of technological development and deployment. His multi-faceted approach includes historical and anthropological background, and a discussion of the control of technology in the countries of the third world, an area of special interest to this native of Calcutta. Mr. Datta's analysis leads to the conclusion that, as technology begins to satisfy functional requirements, it will become primarily a medium for creative human expression.



Egyptian vultures.

The knowledgeable reader certainly would recognise the title of this article as the translation of the Greek word "technology".

When first borrowed in English in the 17th Century the word was restricted to the applied arts alone; and after three centuries of evolution today many lexicographers and authorities even avoid the word 'arts'. Jacques Ellul, writing for "La Technique," refers to technology as "the ensemble of practices by which one uses available resources in order to achieve certain valued ends"; "certain valued ends," no doubt, but if Monsieur Ellul had said necessary ends he would have been a little closer to the truth.

Anyway, to a user a word generally gives rise to a much broader concept and idea than its dictionary meaning. So, technology is everything that involves farming, animal husbandry, chemicals, metalworking, electricity, automation and space travel, etc.

Further depending on one's threshold, he would assign approximately 70 KBC (Neanderthal Society: simple tool making); 40 KBC (Cro-Magnon: advanced tools with head and shaft); 20 KBC (Neolithic: wheel pottery); 10 KBC (Framing, metals age); or 2 KAD (Electricity, space travel) as the birthdate of technology.

All this is tautology; not only that. Let us look a little deeper: does it mean that a Galapagos finch, a sea otter, orangutan, gorilla, chimpanzee or a termite is a practicing technocrat? They use objects (which are not parts of their own body) to gain mechanical advantage! So maybe agriculture, animal husbandry, irrigation, air conditioning or even solar heating: the right bench mark? The flood gates of the insect world have to be let open to welcome the fellow technologists.

It could be argued that most of the above “behaviors” and activities are “inherited” – no? Yes – but then how much of the “human actions” or even “intelligence” is non-genetic is at best a cultural, religious and anthropomorphic ego-surrounded myth; until very recently it was regarded too sacred to be defiled by any rational investigation.

Finally, those of us “fire-worshippers,” who would, rightly, point out that none of the above mentioned creatures uses fire, should be asked if they are going to rule out the existence of “intelligent,” sustaining and multiplying beings in some oxygen-poor celestial environment just on that ground? Beings might even have non-chemical “vis viva”! There is no justification to rule out such possibilities.

By now we are beginning to realize the difficulties of isolating technology, our object of prey; let alone laying down a code of ethics for it.



Galapagos finch digging for insects.

Of the four environments: cosmic, natural, social and technological, the last two – being man-made – have a symbiotic existence, although there is nothing inherent in the technology – society relationship to make it synergistic. Civilisations have been known to freeze or even disinherit their trades and skills. The preoccupation with theology, a lack of interest in things mechanical and the resulting stagnation of Middle Age Europe being a textbook example. The Hellenistic-Islam-Latin-West-MidEast barter of technology might be just one and one-half cycles in the love-hate relationship between technology and societies.

No matter what values were attached to technology, the stories of the various civilisations closely duplicate their crafts and skills. The rise and fall of an empire is faithfully reproduced by the growth and decline in its technological health – not necessarily as a cause/effect sequence, but almost always coeval.

Let us look back for awhile.

A large period of antiquity may be regarded as the halcyon days of industry, when technology was primitive and there was "general progress" for everybody concerned: bigger cities, more production, more food as time went by. Then the city states became sufficiently large, prosperous and strong to indulge in adventures which sometimes resulted in total depopulation of one by the other. So that technology had ceased to be a harmless activity and means of creating an agreeable environment. The nascent technology not only fostered the genocide of a dense populace by neighbors but also through pathogens, more so due to the increased mobility of the vectors.

Of course this is an infinite simplification of the relevant details; further, some civilisations were non-urban, Egypt being the canonical example.

The then contemporary technology was rather ill developed, either to usher in any cosmic improvement, or to leave any permanent scar. Again, the exceptions in parts of Mediterranean Africa under Roman occupation, where due to wanton defoliation and crude irrigation, quickly turned fertile tracts to their present desert-like state. Anyway, globally, there was general growth, and practitioners of the various trades were esteemed and usually accepted or treasured even in foreign lands.

Around the 16th century the returns from applied sciences were sufficiently tempting to attract quite a few prominent Europeans. Remember: this was the Reformation, and at least a knowledge of the printing press was useful. People like Francis Bacon organized groups of enthusiasts to find the nature of things. As is well known, the three succeeding centuries were a period of extreme technological fervor. This romance between the western society and technology reached an orgasmic climax at the spectacular Crystal Palace in the 1851 London Exposition.

To many sensitive people this avalanche of machines was overwhelming and was accepted. Henry Adams was appalled by the displays at the Paris expo in 1900; he felt being faced with a new godless "electric" religion of science. The two global wars that followed have definitely strengthened such suspicions, but they have also made us all aware of the potentials; technology is serious business. Special personal, national and global commitments must be made in regard to it.



Sculpture room of the Crystal Palace.

Parts of a question like the environmental pollution could be handled by technology itself, just as the epidemics that accompanied the neo-industrial urban environ were controlled by improving public hygiene, vaccination, sulphur drugs and other antibiotics, etc. Further, technically it (pollution) is a solvable problem given the time and attention.

Interestingly, the pollution problem reveals the "Goedel"-like "structure" of technology; that is, the existence of situations due to but not controllable by technology. This is a more basic and deeper problem (than, for example, pollution). So (that) by its very nature industrialisation leads to non-technical problems and makes it inseparable from politics and economics. For instance, many nations who by historical accidents, nature's non-cooperation and/or by the design of the more industrialised societies are denied prosperity have strong emotions against any global control of pollution.

Some such national leaders rightly or wrongly suspect such measures to be one more attempt to keep them underprivileged, first by denying the available means to face immediate problems and secondly by making them pay more through futuristic (often untested!) technology.

These concerns may even be legitimate, as the advanced countries traditionally have shown extreme reluctance themselves to conserve natural resources like petroleum or sperm whales. At home they are known to tolerate polluting systems on socio-economic grounds.

Alternative technologies will eventually be developed, but "real-politik" seemingly thrives on ultra-myopic solutions. At the first global environmental conference in Stockholm, a Ghanaian delegate was reported to have said that "a pesticide (which) had such lethal capacity would be good news" to them . . . "my people would use it to kill fish and then eat them." Politicians may accept poisoning of the people so long as tonight's supper is guaranteed, but I wonder who else would settle for that?

The superpower arms race is a similar problem: the real threat here is not the nuclear holocaust alone but also a bleeding of resources. Conceivably the same engineers built both the offensive and defensive panoply simultaneously, but it took the sociologist and politician a third of a whole century to start the SALT talks. The society should prepare itself to be able to appreciate the inventions of a "Leonardo-like" genius, but also so that it can cope with the related politico-economic impacts.

Over-emphasis and -rewarding of technology by the earlier generations, the Indo-China war, a poor balance of trade and the loss of an indisputable industrial superiority have bred the "nature children in the Western Continent in recent times. Many such individuals left for kibbutzes and communes, and, to de-emphasize mechanization, have opted for beasts of burden instead of the internal combustion engines.

It reminds me of a Calcutta family who avoided using electricity in the family chapel and burnt candles for illumination. As long as there is central air conditioning to protect from the vapid Gangetic low lands or a larger stand-by society is available to fall back on in the moments of personal or economic need, such rejection is not above suspicion. If anything, such recidivist actions do not solve the issues but rather postpone them for the time being.

How many of these innocent communes can support say just five generations of natural (should we say Malthusian?) growth? What would happen if the entire twentieth century population preached and converted to 19th Century methods?

One of the above examples shows the popular attempt to keep technology away from morality and religion. But like all other human activities, they overlap and a simplistic exclusion of electricity from the altar does not prevent it. Further, such double standards are no longer operational. As was apparent earlier, some of the contemporary problems may be avoided by restricting the size of the human society. Here could be no more sidestepping. Medicine may give the means but it is the theologians and moralists who have to take them down into the "trenches", to the "front lines" where each couple, each individual is fighting a battle for survival. Those of us who are hesitant to give technology such a profound role in our personal lives may find themselves giving a blanket okay to the extreme technologies needed to support uncontrolled population growth. If the streets of New York or Hong Kong are any indication, I wonder what "rules of the jungle," what morals would be operational under such conditions?

Using nature's controls on population may be attractive to some believers of "natural ways": I for one would like to make the choices myself rather than the gods of flood and rain or the viruses of plagues!

Strict following of a personal Book of Conducts is not much help either, unless the gurus are willing to re-interpret the "sacred codes," because the basic concepts like good deeds, beauty, etc., evolve. Take, for instance, female pulchritude: in feudal days it meant an alabaster complexion, lavish and plumply built. This is

very reasonable when most people are working to death out in the harsh weather; such a well-fed, inactive, pale, pigmentless look is the rare sign of high birth and privileges; who could be so foolish not to be attracted? Industrial revolution turned the table around and trapped everybody in effortless, sedentary, repetitive duty, inside dark, sunless factory shops; then they were the fortunate ones again who could follow the sun, be active and keep slim. Even today in countries like India and Japan a paler, plump woman is appreciated.

Not only subjective concepts like beauty mutate with the technology, but the ethics of particular actions change, too. Mass vaccination, say for smallpox, is recommendable as long as there remains a threat of epidemic, but once the pathogens (smallpox virus die outside of a host body) are irradiated, then such artificial mass injection will itself pose health hazards and naturally would be regarded unethical.

A watertight classification of good and bad is not meaningful. When demand pregnancy termination is made effortless, or premature babies can be better protected, or machines supplement more and more vital bodily functions, or "viva-in-viator" is made possible, the sacred question of life and death will lose being universally good or evil, and will become accountable; mercy will be more meaningful.

Regarding technology the means of the greater good for the greater number (at the cost of others?), as the seat of all good (and graceful?) in a Marx-Engels fashion, should be as unattractive as the doctrine of technology the "master-villain."

Being an environmentalist is fashionable today, but once the design engineers realise that, along with the technical demands, a system is required to protect the surroundings, such a lobby would be unnecessary. Some rigid guidelines may be needed for a specific period, but the efficacy of laying down a permanent role for technology to play is very questionable, and the present author will refuse to comply with such demands. Maybe the tiny social insects were too hasty in clamping a tight social control over themselves and froze their technology, hence clearing the path to glory for our shrew-like carefree ancestor leisurely evolving on the primeval grasslands.



Aberdeen mud-flats, Hong Kong.

The purpose of the human endeavor called art is no longer magical, mystical or religious, and an art historian is quoted to have said, "Art is for life and death." In a like manner, long after technology has given us all the things useful, it is here to stay. Not as the tool-man axis in the Heisenberg way but as a frontier of challenges, creativity and satisfaction.

Such directions are already apparent even in some engineering disciplines like architecture, where the functional needs are supplemented by the personal needs of the residents, neighbors and the designer. A painter today is not required to guarantee a good hunt as his ice age counterpart in Lascaux caves had to. We will be creating machines long after they are needed to keep the bread lines away.

In the millenia to come technology freed from any set role to play would be one more personal involvement, reflecting the life, death, heartbreak and the glory of man, the humble us.



Cave paintings, Lascaux, France.