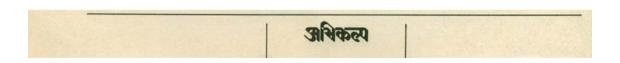# A Humanistic view of Things

– K. Munshi

अभिकल्प

After the launch of Apple i-Pad, I thought I should dig into my archives and bring out the paper -
Humanistic View of Things *- which was written in early eighties, outlining some of my thoughts about 'humanising' computers. I am happy to share it again, as some of these ideas have now seen the light of the day. I am confident that other ideas mentioned therein will also get incorporated in newer and better humanised gadgets......* ***K. Munshi***

Man and Machine

Till now the ergonomics or human scientists have only reacted to the already designed products or man-machine situations. They trend to study these situations in depth and come out with recommendations which become obsolete soon enough, because the technology changes are so fast that product configurations become entirely different from what these were when the studies took place. This is particularly true of computers and VDTs and other electronic data processing equipments. Classical example is integrated key board with screen. It was only after thousands of such units were made that ergonomists realised that it is best to separate them. How long can we keep on making mistakes and correcting these and in the process of correction generate new set of problems? Would it not be better to look for a correct solution in the very first place?

If human being is at the centre of the man-made universe, the machine configurations/physiognomy should be dictated by the qualities of use and usefulness to the human being. Ergonomist or the human scientist should be able to dictate the way in which the technology should be led. It is now time to control technology. Technology should be pushed from being the master to the position of slave. There is enough known about it and enough known about how to manipulate it.

Liquid in Pot Model

Previously the product form or physiognomy of a product used to be dictated by the sizes of the components, mechanical linkages between various components and their physical interference or fit. But with the large scale use of micros & LSI's the technology has become physically pliable. There is very little or no constraint offered. Electronics has become like a fluid.

Electronics in fluid form is going to be a very important commodity for the human being. Like water which is a useful commodity, it will be used in various modes. But its usefulness will be totally dependent on the form of the container or pot in which it is placed. For example if the water is to be drunk, it has to be kept in a glass or tumbler and if it has to be poured, it is kept in a jug with a spout, if it is to be carried on head or hip, the pot takes the shape of round bottomed, narrow mouthed vessel and so on. Similarly electronic components placed in suitable 'pots' perform better in situations for which the particular shape of the 'pot' is considered, as it is the shape of the 'pot' which interacts with people.

The technology can be taken for granted. The real limitations on design will be human capabilities and limitations. So the major design criteria in future will be human criteria. For example it may be possible to make a watch within a flat plate of 5 mm square or even less, but the use criteria has to prevail as the digits of this watch are to be seen from a certain distance which necessitates that the digits should be only "so" big. Nobody even in future would like to carry such a small watch where he is forced to see the time from a distance of 10 cm or less.

Similarly in video display terminals screen may become as small as one wants, but the character dimensions cannot go below a certain limit (which has to be very very comfortable) again to be dictated by human considerations.

In fact it is now the duty of the human scientist to take the lead and show the directions in which the technology or products of technology should be made so that these become more useful, more meaningful and more friendly to the ordinary user.

The Slate Model

This envisages that the future interactions with computers will be like the school boy's interaction with the slate. The computer terminal (the display and keyboard) should behave like a slate.

You have pointer (chalk) and you have a slate (keyboard and screen rolled in one) or you have one slate for writing and another for display. To tryout a simple calculation - write ($2 + 4 = ?$), the question mark should vanish and answer 6 should come out ($2 + 4 = 6$).

In a graphic facility, draw a line in free hand, it should be reproduced exactly or in the modified form as commanded, on the display slate. Write the length and the line should become that length. Write the angle and it should be tilted to that angle. Draw a circle by pointer on the command slate. Write r = 15 cm and machine should draw a perfect circle with radius equal to 15 cm.

The communication between man & computer should be like between master and slave and naturally in the masters language. It has happened all along and it should happen in future. The only difference should be that the slave has been replaced by the machine.

The command slate has to be flexible like a sheet of paper on a thin writing clip board or rather it should be like a slate - put it on the lap

or put it on the desk or on the floor - wherever it is convenient. Or have the command and display slate as one unit with one surface. The matter should get erased with the rub of the hand - just like in a slate so that you can write again.

The programming for such kind of software may be very complicated, but that should be the aim. If this model is presented to the engineers, it is certain they will come out with it in the near future. The technology is available and it has to be refined and used universally.

Written Dialogue versus Oral Dialogue

Many animals, mammals and insects too communicate orally. Writing is the form of communication which is special to the human being. It has taken us centuries to develop this capability. It is superior to speaking and reading ability. It takes longer to learn in any language, and man is considered literate and more civilised if he knows how to write. It will continue to be so in the future also, as it will take us many centuries to undo this notion. Let not the present generation forget writing as many advocate; and be gullible enough to fall into the machine trap (oral computer) and lose for ever what has taken us the ages to develop, for in the future nobody knows whether the computer in the existing form will hold the sway or will be made obsolete by some other fantastic gadget. Think of the Slide Rule - no scientist or engineer could do without it, and now it has completely disappeared and very few even know the name.

Let oral communication be used between man and man and more formal written communication between man and computer. How would one like to be heard talking to a tree or stone or for that matter to a computer (an inn animate object after all)? How would it be if in computer terminal room, everbody is murmuring to the computer? Let oral communication be limited to specialised areas and for people who have the kind of handicap which prevents written communication like the blind or the paraplegic etc.

Keying versus Long Hand-Writing

With the severance of physical connection between the type-head (printer) and the keys (key board) a whole new area, (modes of usage) have opened up. Keyboard, which is a hangover from the past (from traditional mechanical typewriter) has the possibility of being dispensed with, at least partly.

It is now possible to store various type forms in the memory of a computer and compare the text written in various type forms on the display slate. The keyboard may now be kept aside, instead using the command slate on which one may write in long hand and get the display and print in any typeface and size one wants.

This raises the question of efficiencies of keying vis-a-vis long hand writing.

Many claim that keying is more efficient than writing. But keying is efficient only:

1. If the person using keyboard is highly skilled and proficient, which means special training in these skills to be imparted to everybody. The costs are enormous both in terms of productive time and infrastructure development.

2. If it is plain typewriting from a copy, which in most of the cases is in hand written or a hand corrected type written draft. Duplication all the way! If the person has to "think and key" then keying efficiencies drastically reduce because of the inevitable corrections where the process of search gets involved. This is generally ignored in efficiency calculations. Think and write process is overall efficient for drafts where the insertions and erasing is very frequent.

While writing, erasing can be done with one stroke which is not possible in keying. Insertions are even more difficult and time consuming with the keying process. A blend of keying and writing needs to be evolved for overall efficiency of the system e.g. Pressing an 'ON ' key is more efficient than writing 'on' on the 'slate'.

Home Computers vs. Personal Computers

Computers were miniaturised and further maniaturised till they became very compact - small and cheap enough to be affordable by an ordinary family. These became personal computers. At present there is no difference between a personal computer or a computer for home or a small computer for office. These small machines are marketed as both. There is a basic difference between the two which has not been recognised or it has been deliberately ignored.

A home machine has to be a multi user device with varying personal characteristics of users as in a home you have children of various ages, adults, old people. Their requirements are also variable. The present machine is a single user device. The most it can take is two users at a time.

Grey-board Model

A home machine should have a big screen so that it can be watched by a whole family of six or eight people. It should be like a "Black Board", or a "White Board" or literally a "Grey Board" - put it on wall or a table with an assortment of command slates which can be plugged to it by various users for simultaneous use or otherwise. Standard commands including standard key board should appear on the grey board or slate and be operative with a touch, thereby achieving an optimised use of writing and keying to enhance the overall efficiency of the man-machine system.

Oral Arithmetic Vs. Calculator

Lot of scientists are reconciled to the idea that with more and more use of electronic compact calculator, oral mathematics/arithmetic should take a secondary place. Oral mathematics/ arithmetic is a mental skill which can be easily learnt up to a certain level or complexity. In the interest of overall efficiency of the calculation process a judicious use of both (oral arithmetic and calculator use) is required. For example, if one has to calculate 2 multiplied by 6, oral multiplication tables can give an instant answer whereas use of calculator for the same calculation involves extra motor and perceptual faculties and is therefore much more time consuming. On the other and a calculation like 24 multiplied by 39 can be done more quickly by calculator than orally. Oral calculations up to a limit should and need in fact be encouraged particularly among children as increased and constant use of mental faculties in any form (one such form is oral arithmetic) improves these faculties, rather than otherwise.

Cultivated Handicap

Any dependence on a thing other than one's body and mind is a handicap. So the effort of any human scientist who is involved in the design of hardware or software for human use should try to minimise the incidence of any sort of handicap that one is likely to acquire.

Dependence on calculator (external gadget) for all kinds of calculations is a handicap. Many persons would try to compare the use of calculator with the use of pen as in future they think calculators are to be used like pens and why not? But then the use of pen is also a handicap in a way as you cannot write without it. If you do not have a pen with you, you cannot write the new telephone number of a friend to whom you are talking from a public phone. To circumvent this handicap you try to remember the number. If you use your mental faculties of memory as much as possible and if you are

trained better, your dependence for such small notes will be less and therefore you have less handicap and so a "superior life".

So far we have maintained a proper balance between the use of our tools like writing instruments and alternatives within our system, but now our external tools are becoming very powerful and if we have to maintain the power parity, between the man and the objects around him, we have to increase our own powers and skills to match, so that we are not left high and dry if these external props to life are withdrawn.

So let us not forget these skills; let our children learn such skills and more such ones which will make them independent from the external gadgetry. One such good example is heart pace-maker which used to be outside the body. It was a bulky unwieldy gadget, which could easily get knocked off. It has been reduced in size and is now being implanted in the body. It has become part of the body, so it is less of a handicap than it used to be previously. Another example is soft contact lenses, which have also become part of the body.

So if we have to be dependent on calculator, let it be implanted and be part of our body. And till that time when everybody can implant a calculator, let the oral arithmetical skills be taught and be used.

Another argument against the above is that instead of using or taxing the brains by remembering tables of multiplications, children should be taught more creative work. This "or instead" business implies that the power of mind or brain is limited. This assumption has however been shattered by many who have proved that full potential of human brain has not been realised as yet. So there is no question of "instead". We can always use "and" - learn more arithmetical skill and do more creative work.

A wise management always tends to keep alternative suppliers for crucial parts or services to ensure that their production goes on if one source fails. Standby power generators are kept at high cost, just in case the main supply fails.

Similarly to lead a full life, a life of freedom and independence we must always keep alternatives available within ourselves, however crude or inefficient. We must therefore use a proper blend of our internal physical and mental powers and external conveniences and tools so that total efficiency of the man -machine system is maintained at a high level under varying circumstances.

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