CULTURAL ATTITUDE ASSESSMENT: A "LOST" DIMENSION IN THE TECHNOLOGY ENVIRONMENT EQUATION

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We should begin with a few definitions. By "environment" I mean the whole physical environment in which man lives and on which he depends, including the terrestrial, aquatic and atmospheric parts. Clearly there are links between all three of these parts, many of them exceedingly complex, and most, but not all of them, involving negative feedback mechanisms which encourage stability. The links are such that one can say for sure, as a basic premise, that changes in one part of the physical environment will inevitably result in modifications to at least one of the other two, and often both. Most such changes are technologically induced. In other words, they occur as the consequences of man's actions and choices: the others are normally random, or only semi-predictable events, such as earthquakes, or severe hurricanes. As the speed of technological change is enhanced, as more and more "new" chemical compounds are released on an unsuspecting bios, and as communication networks grow, so accordingly does the speed of environmental change begin to increase, today at an exponential rate. Thus, the need to consider ever more carefully the Technological-Environment Equation, which may be positive -- benefitting the environment -- or negative -- reducing its quality, or rendering it instable. In recent years, this latter trend has been paramount, formerly stable environments having been brought to the point of instability or beyond, either very directly or in more subtle ways. Direct deforestation in the Himalayas has resulted not only in environmental instability within that mountain range, but also produced landslips where none had existed before. This has also contributed substantially, though more indirectly, through the enhanced rates of runoff, which result to the major flooding which has taken place "downstream" in Bangladesh this year.

The complicated interactions which exist between the terrestrial and marine environments, and within the marine habitat itself, have been focused more than ever before by this year's viral epidemic, which has killed 14,000 common and grey seals, mainly in the North Sea and the Baltic, as a result of canine distemper spreading to seal populations through the dumping of infected huskie dog corpses into the ocean in Greenland. However, that is not the whole story. There is more than a little suspicion that ocean pollution has weakened the immune systems of the seals to the extent that they were unable to fight off the effects of the distemper, and the pollution elements involved inevitably are man-made. Those most likely to have affected the seals are 1 or more of the 209 known polychlorinated biphenyls (PCSB's), which are extremely persistent in the environment; or mercury, which is known to be present in some of the seals at levels of accumulation which are 40 times greater than those required to kill a human being. Many believe that it is only a matter of time before the virus effectively returns to land and begins to attack the otter populations of North and West Europe. Other land mammals, among them weasels, foxes and badgers, could also be at risk. Curiously, canine distemper has also been reported as affecting fresh water seal populations in Lake Baikal, Siberia, though no link with the present epidemic has yet been worked out.

It is evident in both these cases - that of the Himalayas and that of the seals - that neither the environment, the organisms within it, nor the changing technology which has affected it and them, can be considered entirely in isolation, in the sense that both are socially-constructed. There is a further problem. Social judgements made in the North may only rarely reflect those which are appropriate in the South, and these may add to the potential for technology-environment imbalance. Equally, the rationale of multi-national, western or bureaucratic solutions to problems, may appear to be entirely incomprehensible to those in the smaller communities which they affect. Even when they are understood, and put into effect, unsuspected consequences may ensue which in turn may destabilise the economies and environments of the smaller communities. A well- documented example is that of the Miskito Indian population of the wet eastern lowlands of Nicaragua, who were encouraged to supplant their traditional slash-burn husbandry supplemented by fishing, with intensive cash-cropping practices. At the same time, there was an increase in the rate of demand, by outsiders, for jaguar skins. The response was an intensification of hunting, and a reduction in the numbers of these animals. In turn, one of the jaguar's prey, the white-tailed deer, dramatically rose in numbers. Since this is a major garden pest, crop-losses over and above the ordinary began to be experienced, causing a reduction in the productivity of essential foods, and very quickly making the Miskito much more dependent than ever before on cash inflows to buy imported food, instead of that which they previously had raised themselves.

In this instance, the Miskito survived as a group, retained some of their own culture, and their experience with the environment and how to use it. Other populations, which have been encouraged to change their patterns of life as a result of more advanced technologies, having been introduced to them from outside, have not been so fortunate. The case of an aborigine tribe in northern Australia, the Yir Yorant (Sharp, 1952), is instructive in this context. During the 1930s, their stone-axe hunting culture was rapidly being superceded by a technologically superior steel axe introduced by missionaries. However, the stone-axe in this group had an important social function as well as a practical one. The ownership of these axes was the exclusive preserve of men, so that the women and children had to ask the appropriate male if they wanted to use it. The appropriateness of any particular male was determined by an axe-dependent hierarchy. E.g., elder brothers in a family

were always subordinate to the younger ones within set age limits. The axe accordingly assumed an important social function, which was reflected in the tribe's mythology. All this changed with the introduction of the steel-axe, which was distributed to men, women and children alike; thus, a chaotic confusion of sex, age and kinship roles ensued. As the ownership of axes became less well-defined, so the theft of axes began to take place and the mythological place of the axe in the society diminished. Such destruction of the symbolic and social function of the stone-axe led to a rapid loss of stability in the Yir Yorant culture, and also emphasised the superior social position of the incomers upon which the aborigines became increasingly dependent.

One may ask, in the light of these examples, whether such cultural clashes and the implied loss of cultural diversity, really matter to the environment-technology equation in the long run. The answer seems to be that in some cases it does. One instance with which I am particularly concerned is that of "famine foods", i.e. foods, invariably wild plants, which are used only in extremis -- at times of severe famine. Most "old" cultures appear to have had a range of these. They were common throughout western Europe in the Middle Ages. Since then, with the ever-growing certainty of food availability, they have fallen into disuse. Most consisted of small roots or plants which had nutritious leaves, or produced edible nuts. Africa also had many wild famine foods, the utilisation of which was clearly defined by local tribes during times of food crisis. Yet during the 20th century, as food became imported and largely standardised, the existence of these foods also came to be forgotten. Two generations appear to be the time-scale required for knowledge of them to cease. Now, however, as famine has spread relentlessly through the Sahel, Ethiopia, the southern Sudan and elsewhere, a search for these famine foods is again under way, supported by national governments and organisations such as the African Nations' Environmental Group. Fortunately, this is expedited by the chance fact that 19th century records of the relevant species, and where they used to grow, are preserved to some extent in some of Europe's major herbaria, and especially at Kew Gardens in England. What is happening is that such records are being coded, put on tape, and then being transferred back to the regions where the plants were first experienced to aid in their rediscovery, and alleviate potential food shortages of the future. Were it not for these records, however, it is most unlikely that knowledge of the existence of many of these plants would ever have been forthcoming again, at least in the short term. The moral appears to be that one can never judge what might be important in the culture of a particular group at any one given point in time, and the knowledge found within them should never be downgraded.

Can these strictures, as applied to the particular cases indicated above, be considered in a broader context; and are they relevant to the maintenance of the technology-environment equation both generally and specifically? Is there a cultural component to this which has been largely overlooked thus far? Also, are we too Euro-centric in our approach to such matters? The answers again seem to be that despite the past and present emphasis placed on the environment by many European countries, this may indeed be so. In Europe and North America over the last 2 centuries we have tended to be defensive about the importance of maintaining a healthy environment. Partly because it has always been discussed in response to technological, industrial and agricultural change, rather than as an element which is significant in its own right. Much of this relates to shock or guilt arising out of the worst excesses of the industrial revolution, but much is a direct reaction to technology itself, and we must be aware of this. The threat of industrial development to ecological systems was first noted in North America by George Perkins Marsh in 1864, and his book entitled Man and Nature has strongly influenced subsequent generations of American conservationists. In the same mould was Henry Thoreau, whose back-to-nature ideas were formulated during the mid-19th century industrialisation of New England. In England, Matthew Arnold's Culture and Anarchy, 1869, pronounced against industrialisation and materialism; and William Morris, 1891, could envisage a London in which industry had disappeared, leaving a clean and "natural" urban area. Reactions against technologies have been clearly expressed by Goethe, Blake and Wordsworth, who were concerned with the potential for destruction which advanced technologies might bring. In many respects, their natural heir was Rachel Carson in the early 1960s, whose Silent Spring, 1962, again brought before the world the dangers of unrestricted technological advance, in this instance, relating to the production of new chemical compounds.

More recently, these views have joined together under the new heading of "environmentalism", which really began as a set of concerns related to the preservation of the quality of life, and to the maintenance of the world global system. This, too, was a movement created in response to technological advances which were endangering the stability of the world, and more local environmental systems, and in many respects has remained that way. As Cotgrove in 1975 put it, there were strong links between environmentalism in the early 1960s and the anti-science movement of that time. Much of present-day environmentalism is founded on a scientific base, and devoted towards the maintenance of a sustainable physical and biological environment, and the control of any technological and economic changes so they accord to this essential aim. There is, however, another version of environmentalism today, which is more radical and humanistic, seeking to encourage technological change only when it fits into humanistic principles.

In the light of all this, it is not surprising that legislation to preserve the technological-environment balance has, in many parts of the western world, been half-hearted at best. The major thrust of political will has been towards the development of technology rather than maintaining the quality of the environment. The results are there for all to see: increased levels of acid rain, ozone layer depletion, enhanced pollution of river and oceanic systems. These are, however, western attitudes, and they may even be more "Anglo" attitudes than those to be found elsewhere in the western world. Perhaps we can learn from elsewhere. In Korea, which was devastated following the Korean War of the early 1950s, the advance of technology and the preservation of the environment have always gone hand-in-hand. There the maintenance of a quality environment has, for centuries, been central to Korean attitudes. Even following the devastation of the war, when people were desperately poor, strict laws were passed and enforced -- at times by the immediate execution of offenders -- to prevent forests from being further destroyed by selection of trees for building timber, or for collection of firewood, with the result that now, following natural regrowth and some replanting, South Korea has some of the finest, and biologically most diverse forests in East Asia, covering some 74% of the land. Preservation of these forests lies deep within the Korean psyche. It is a central part of government policy rather than one subsidiary to

technological advance. Nevertheless, it has not prevented South Korea from becoming one of the most technologically advanced nations of East Asia. Attitudes to environment there are further bolstered by the adoption of many people, of religions which emphasise the importance of a sound environment to personal well-being, including Buddhism and a resurgent Shamanism.

In conclusion, the maintenance of a good balance between technological advance and environment is now recognised by many as being essential to the preservation of stability and quality in bios. The preservation of environmental diversity is a further important factor in this. We now know, for example, the dangers attendant on the forced extinction of species whose medicinal qualities we know little or nothing about -- in parts of the Amazon rain forest for example -- which may potentially have important roles to play in the medicine of the future. Equally, endangered species may also provide a significant food resource in times of famine. Further to this, cultural diversity, as well as biological diversity, should be both encouraged and maintained at all costs. In the cultural attitudes of minority groups, or groups outside the mainstream of western development, may lie the key to the technology-environment balance of the future. In this respect, cultural attitudes and assessments become a significant dimension in the evaluation of that balance, and all too often are ignored.

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