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# OPINION

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## THE TRANSFER OF TECHNOLOGY TO DEVELOPING COUNTRIES

MAURICE AND TAYA ZINKIN

THE term 'transfer of technology' has become a code word. It is used as if the only time technology is transferred is when it is moved to a developing country.

This is a misuse of language. Technology is only a pompous word for practical knowledge. Once this is realised, it becomes obvious that it is being transferred all the time, in developed countries as well as developing ones. Nobody is born with knowledge, it always has to be acquired; and every acquisition of knowledge is a transfer from teacher to taught. This transfer can occur directly, by word of mouth, or through a book, or by watching somebody else do something, or in various other ways, but only in such occupations as bird-watching can one acquire knowledge without its having been transferred, usually by some conscious process, from somebody else.

This may seem a somewhat elaborate statement of the obvious. The lesson to be drawn from it, however, is not so obvious. There is nothing unique about the transfer of technology to developing countries. It is only a particular instance of the general problem of how to transfer knowledge from those who have it to those who do not. Even the question of the price to be paid for it in money or in loss of independence is not so different from the argument over whether pupils should be respectful to their teachers or express their own personalities and whether schools should be free or fee-paying.

The comparison with schooling may be even more exact than our original definition of technology as practical knowledge suggests.

It is not clear that there is any knowledge which does not have a practical application. Historians as eminent as Tawney and Sombart argue that there would have been no industrial revolution without the alvinist ethic. One may have doubts about whether the connection was e as close as they argue and still accept that, for instance, conversion eligion which removes the belief in magic is probably more impor- r economic advance than all the computers in the world. It is difficult, off hand, to see a way in which the study of literature can be included in technology. However, many of the great literary languages of the world like Russian, French and English are also languages in which

much scientific discovery is expressed. Learning one of them is, in many countries, the way into technology : and the process of learning may be made a great deal less painful if the learner enjoys Shakespeare, Racine and Dostoievsky.

Once one defines the transfer of technology as an acquisition of useful knowledge, it follows that the abilities and attitudes of mind of the transferee of the knowledge are quite as important as those of the transferor. It is unfortunate that the word 'transfer' suggests that everything is done by the transferor, and that the recipient is a mere passive vessel taking whatsoever is poured into him.

This is untrue. However good the teacher, however eager that his pupil should succeed, the major effort in all learning is made by the pupil. In the transfer of technology to developing countries most of the work has to be done by the people of the developing countries. The developed countries can make the knowledge available, they can sometimes provide an example to emulate. They cannot by themselves effect a transfer.

This is obvious for that large part of knowledge where the transfer is made for nothing. It is the general convention in all countries that any discovery of pure knowledge is available for all at the price of the article or book in which it is contained. Cambridge has no patent on Newton's laws, the Pasteur Institute does not even have a trademark in bacteria. Whatever is known about the effect of Elizabethan society on Shakespeare's plays or about the make-up of the atom is available to anybody who is willing to do the necessary studying and has a library or a laboratory available. The study may not even be arduous. Many years of painful research can sometimes be encapsulated in one brilliant work of popularisation. Arduous or not, however, the study is a pre-condition. The knowledge cannot be acquired without it.

For pure knowledge this position is accepted. There are no UNCTAD conferences urging that knowledge of medieval history of atomic physics be made available to developing countries on special terms. They do not have to pay a royalty for this knowledge ; and everybody realises that it cannot be transferred to them unless they make the effort of learning it.

The present controversy is, therefore, confined to the sort of knowledge which belongs to somebody, usually a company, and which that somebody is unwilling to teach others unless it is paid for doing so. The analogy with fee-paying schools is exact. This knowledge is usually knowledge which is learnt by experience and which it is difficult to put down in a book so that the pupil cannot do the learning by himself or by going to a library, he has to have a chance of getting the experience or he cannot learn. The problem in a developing country is often that this chance is not available, that there is no way of getting the experience within the country, and that those who have the experience want to be paid for the effort involved in passing it on.

None of this is confined to developing countries. There is much more selling of the knowledge of companies within developed countries and much more acquiring of industrial experience by their inhabitants than

there is in the developing countries, for the obvious reason that their industries are much bigger.

The main problem in transferring technology is how best to transfer experience. Knowledge that can be incorporated in a book can be transferred by the simple process of reading, though even there the student has to have been taught how to read, and has to have enough knowledge already to understand what the author is saying.

The chief distinguishing feature of the transfer of experience is that it has to be done from person to person. Sometimes the transfer will occur merely by watching, as happens with a child and its mother or in the more old-fashioned sort of apprenticeship. Normally, however, it is by showing, telling or letting the learner try for himself.

Many of the difficulties of transfer flow from this person to person requirement.

Problems begin with the teacher. He is normally chosen for his expertise in the subject rather than for his teaching abilities. He is a good chief accountant, section engineer, sales manager, laboratory technician, repairer of tractors or whatever it may be. He is most unlikely to have done two years in a teachers' training college or to have obtained a degree in education. Any appraisals made of him in previous posts probably put limited emphasis on whether or not he could teach.

Nevertheless, unless he is a specialist, he will almost certainly have done some teaching even if he may not have realised that that was what he was doing. Training one's staff is a key managerial function in developing countries. It becomes very much more difficult, however, when it has to be performed across a cultural boundary.

Such boundaries do not exist only between developed and developing countries. The young university-trained engineer faced with instructing a semi-skilled labourer equally has such a boundary to cross. He, too, may find that the labourer does not understand his vocabulary, does not use words in quite the same way as he does, does not make the same assumptions about punctuality and the inequity of absenteeism, does not have the same understanding of the way a machine works and has to be taught why the natural instinct to kick a machine which has jammed is counter-productive.

**(To be continued)**

54. Shri B. Venkatappiah,
B3/59, Safdayang Endowe,
New Delhi 110 016.

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