Challenges of Technology Exchange

A discussion of arguments pro and con; technology role in helping developing nations, past and present

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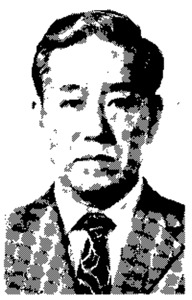
The history of human civilization may be called the history of the development and exchange of scientific technology. The rise of Hittite and the fall of Egyptians, the development of Great Britain, the retreat of pre-modern China and the vicissitudes of world nations were by and large the result of differing degrees of technological development.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A man developed a concept, materialized it as a device and gained the power to conquer others.

Even in today's world, exactly the same phenomenon is taking place not by weapons but through scientific and industrial technology. He who invents a new method by which a product can be produced better, more cheaply may drive others out of the market. We call it "winning the competition." The rule of survival of the fittest prevails in a free economy but it brings affluence to the greater majority of the people.

It's for this very reason that we must try to promote the transfer of technology. Technology gains its real value only when it is exchanged and exploited by the people who need it. A concept in one brain does not by itself benefit human society unless it is transferred to an entrepreneur who exploits it.

I should like to introduce to you a few arguments for and against technology transfer. I shall then try to relate it to the recent industrial development of Japan.

An inherent problem in technology transfer is that we license technology, then we loose our market and our licensee becomes our competitor. But is it really possible to stop the potential licensee from industrializing a certain process by not licensing it to him?

There are many companies today which are capable of licensing various kinds of technology. Ninety-nine percent of the products manufactured today are competitive products. An interesting example is semisynthetic penicillin. Our company recently developed a process for synthetic penicillin, but surprisingly enough four or five other companies accomplished the same achievement at almost the same time. I asked our research director why couldn't he accomplish it somewhat earlier than the others. The answer was that companies which have sufficent R&D facilities and researchers, and which undertake similar efforts, will achieve similar results. This is the trend today, and therefore if we do not license our technology to others, there is always someone else who will.

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Competition

It is true that when we license our technology to others they become our competitors and sometimes they may become stronger than ourselves. But this is life. The only way that you can survive in such competition is to continue R&D efforts and develop still better products at cheaper cost. This is progress and this is exactly what we want in the world today.

At one time Japan exported 3 million tons of urea fertilizer, but last year our exports to the world market were only 1 million tons. Today urea plants in Japan are operating at 25% of their capacity on the national average. Some companies have been forced to shut down plants.

The reason for this is because some Japanese companies licensed their urea manufacturing technology to over 50 plants in more than 30 countries. Those countries, which are mostly developing countries, have now become fertilizer exporters. The People's Republic of China, which has been taking a quarter of Japan's national production is now half self-sufficient and may be completely self-sufficient in a few years. Recently, Indonesia, which has been an importer of urea, has joined the exporting group.

This also applies to Korea, Taiwan and many other countries. But who can stop this?

Responsibility

Developing countries have every right to industrialize and it is the responsibility of the advanced countries to assist their efforts by making technology available for licensing. Japan herself has industrialized through the import and introduction of foreign technology. We imported technology for textile manufacturing from Manchester and now we are stronger in textile exports than England. Japan today is the largest shipbuilding country in the world, but the first navy warship was imported from England and thereafter we endeavored to develop our own technology. Now we occupy 80% of the world's shipbuilding market. But the time will come when we will lose our market in shipbuilding and textiles to the developing countries.

Another argument against technology transfer is being raised by the developing countries. Some say that the industrialized countries are trying to colonize the developing nations through technology transfer.

At a conference of 77 countries at Nairobi, a proposal was made for a Code of Conduct to be followed by industrialized nations operating in LDCs.

The proposal included some items related to technology transfer. It was claimed that licensors often do not conform to the national policy of the recipient's country. They often bar the licensee's access to world technology or withhold information. They often transfer inferior, obsolete or unsuitable technology. They often attach restrictive conditions, and charge excessive license fees and refuse to renegotiate licensing conditions. Through these means, they try to exploit licensees and through such licensors, governments try to realize selfish political ambitions and use technology transfer as a weapon to promote their new colonialism.

You will of course disagree with these charges. So do I.

One of the primary factors to be considered here is the suitability and economic feasibility of the process selected for the purchase. Before any technology is introduced several factors must be carefully evaluated. Among these are the technical experience and manpower available to the licensee, the availability of raw materials, parts, components, machines and facilities, market acceptance, competition, the availability of funds, government regulations and sometimes even climatic conditions. The technology should be chosen also in terms of commercial feasibility, profitability, and "life" of the product.

Sometimes the most sophisticated technology, under certain conditions, is the least economical or even unfeasible. A process that has been very profitable for one company may prove quite the opposite for another company. Equipment introduced into a plant may prove too costly and require highly specialized technicians. A new mass production system may sustain considerable losses until market demand increases to match the plant's output. Thus, all criteria influencing the selection of technology must be carefully evaluated and understood in preparation for the purchase of technology. If a wrong choice is made, it will be a serious burden on the licensee.

In addition to this, the introduction of technology must always be followed up by redevelopment and improvement efforts. The licensor will always strive to continuously develop new products, new processes and better technology in order to maintain their competitiveness. If their licensees do not take steps to adapt, redevelop and improve imported technology, they may become eternal recipients of technology as new and better products appear and the licensee must buy them in order not to lose ground.

Japan's petrochemical industry has developed only in the last 20 years. Over 92% of the chemical products now sold in the Japanese market are based on technology from abroad, yet today Japan is the number two petrochemical producer in the free world. This is only because they adapted the imported technology and redeveloped indigenous proprietary technology.

Unless the licensee makes such an effort to improve and redevelop, it may end up in a permanent state as a technology recipient. But if it makes rational and efficient efforts to improve and redevelop technology, it may achieve a leading position in that sector of industry. However small a company or a country may be, it could become the leader of the world in a particular field, because even a giant Du Pont or Dow cannot be the master of all.

I certainly agree that corporations in industrialized countries should observe certain codes of conduct when they license technology or when they operate in LDCs. I admit the necessity to work out certain basic guidelines. But this does not solve the problem. The main thrust of the issue rests upon the licensee's and their efforts for improvement and redevelopment.

Another charge against technology transfer is that it diminishes cultural identity of a nation. It is held against not only technology transfer but also against industrial development as a whole.

Here I must admit that technology exchange will to some extent diminish a people's cultural identity. If you come to Japan, you will be disappointed to find that everybody on the street is wearing western clothes and not traditional kimono. The girls are wearing Christian Dior's Paris mode and scenting themselves with French perfume. The famous geisha girls wear beautiful traditional attire when they are on business but wear miniskirts and go to discotheques when off duty.

If you want to call it an aftermath of the introduction of western technology and civilization, you may do so. However, it's not the fault of technology transfer, but that of the people's susceptibility to want something new and better, if you call that a fault. If a cave man sees a cigaret lighter he would want it instead of two big stones which he carries to make fire from straw.

An interesting example is the People's Republic of China. I go to China one or twice a year. After the purge of the so-called "gang of four," the Chinese are apparently proceeding toward modernization and industrialization. By so doing, they may sacrifice a part of their cultural identity, but I believe they choose that way for the benefit of the public masses. If Chinese people were still using the traditional paper-covered book filed by paper strings and writing Chairman Mao's words with ink and brush without using a printing machine, it would have been impossible to let 800 million people learn his teachings and unite their minds.

As long as people desire a better standard of living there will be no end to the intensification of technology transfer. Whether the people lose their cultural identity or not depends on the strength of their determination to preserve it in spite of the inflow of foreign culture and the depth of their affection to their own culture and tradition.

Japan is a typical example. There has been perhaps no other country in the world which has been so keenly

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provision that (the licensee) shall not sell products involving the know-how, and not involving any patents, in the United States." Defense counsel replied that he thought that such a provision would be illegal, and that his client had not done that.

It is thus seen that in practical terms the real legal problems in international licensing transactions do not revolve about the applicable law so much as about the facts. The real questions are how the facts will be viewed in terms of the probable intent underlying, and effects flowing from, the arrangement, and in terms of whether the perceived view of the facts will lead to any antitrust enforcement actions. In that context and for that purpose, the Guide may be invaluable, when it is utilized with sophistication and discernment.

NOTES

1. *Guide*, preface page.
2. See 15 U.S.C. §§ 45 (a) (b), 46 (g), 57a(a)(1)(B); Petroleum Ref. Assn. v. FTC, 482 F. 2d 672 (D.C. Cir. 1973), cert. denied, 415 U.S. 951 (1974).
3. 5 U.S.C. §§ 553, 556, 557.
4. See *Guide*, p. 1.
5. 28 C.F.R. § 50.6.
6. See 16 C.F.R. § 1.1-1.4.
7. See *Guide*, p. 1.
8. *Guide*, preface page.
9. See *Guide*, preface page.
10. See *Guide*, p.1.
11. Cf. McLaren, *The Licensing of Technology Under the United States Antitrust Laws, 40 Antitrust L.J. 931, 935 (1971)*.
12. *Ibid.*
13. 15 U.S.C. §§ 1-2.
14. See United States v. Topco Associates, Inc., 405 U.S. 596, 607-12 (1972); Northern Pac. R.R. v. United States, 356 U.S. 1, 5 (1958).
15. See *Guide*, p. 3.
16. See *Guide*, pp. 4-5.
17. See *Guide*, p.5.
18. See *ibid.*
19. *Ibid.*
20. *Id.* at 5-6.
21. *Id.* at 9.
22. See *id.* at 28.
23. See *Guide*, pp. 28-29.
24. See *Guide*, p. 29.
25. *ibid.*
26. *Id.* at 30.
27. *Id.* at 3.
28. *Id.* at 30.
29. See *Guide*, pp. 30-31.
30. *Ibid.*
31. *Id.* at 33-34.

Impact of Mexico's Technology Laws

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development of better information about the law and its impact.

As the feasibility study progressed, one area of concern appeared when it became evident there was difficulty in discriminating between the impact of the Law on Transfer of Technology and that of the more recent Law on Inventions and Trademarks which was established coincident with the timing of the study.

The report with its recommendations was submitted to the Mexican Government through UNIDO and recognition was expressed by the parties concerned on the usefulness and validity of the feasibility study. Consequently, UNIDO is considering the possibility of extending this type of study to other countries.

In order to reduce the burden that might be placed by the information gathering chores on the companies affected, should such studies be initiated, a statistical sampling approach will be taken.

It is our hope, if the plans as we understand them are carried out over the next year or 18 months, that we will be able to give you the information resulting from these in-depth studies at a Licensing Executives Society meeting.

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interested in western culture and so vigorously imported foreign technology. Japanese industries may be called a showcase of world technology. I believe it has been one of the primary factors which drove us up to today's industrial level. And yet, we have not completely westernized. We still preserve a strong cultural identity and we intend to do so as far as it does not retard our effort toward affluence — the affluence both in material and spiritural sense.

Japan today is facing mounting problems both politically and economically. Politically we are a divided country. It is not a monolithic nation as it is so often misconceived by foreign people. The government has lost its leadership and it is failing in its attempt to create a national consensus. We are in a stage of political instability. The Liberal Democrats, who have been in power for the past 30 years, may lose its majority in the Diet for the first time. Nobody knows what will happen after the opposition parties assume the majority, because the policies of the opposition are totally unknown.

Economically, it is forecast that the world consumption of oil will exceed production by the late 1980's and oil may be rationed. Japan swallows 250 million tons of crude oil every year. If our oil consumption grows at the current pace, by 1990 we will see hundred-ton tankers lined up three miles apart from the Arabian Gulf to Tokyo Bay. What can we produce to pay for that oil? Automobiles, yes. Color TVs, yes. But just as we are losing competition to Hong Kong, Taiwan and Korea in textile trade someday we will lose our competitiveness in TVs, automobiles and ships, just like England and the U.S.A. lost to Japan in these fields.

Yet there is no master plan to steer the country in these difficult times because of the lack of consensus.

I may sound like a pessimist. But many other business executives in Japan feel the same way. We really need a realistic foundation on which we can establish a consensus of the people. Perhaps the most valuable know-how Japan needs keenly today is how to find a breakthrough in the current turbulent age, and how we can sustain a highly industrialized yet highly fragile economy in the era of uncertainties.