Pacific Rim: Magnet for Technology

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Quality and discipline of people is valuable asset in locating appropriate advanced technology for licensing

The free-market nations on the Pacific Rim — particularly Korea, Taiwan, Singapore, Malaysia and Hong Kong — have achieved impressive economic momentum today, as a result of enlightened policies that they instituted over 20 years ago. Others, such as Indonesia, the Philippines and Thailand, have made somewhat more uneven progress, but are also poised to play important roles in the world economy of the 1990s and beyond.

This is therefore an auspicious time for entrepreneurs in all these countries. The scientific advances of the past decades in such fields as health care, electronics and biotechnology have made many industries less dependent on ready access to special raw materials. Rather, the availability of capital, the intelligence and energy level of the work force, including its ability to master the latest advancements in technology, have become the key elements in achieving success.

The quality and discipline of their people is therefore a very valuable asset of the nations on the Pacific Rim. If properly harnessed, this can continue, and even accelerate the gains that have already been accomplished. To fuel this engine, the Asian companies must have access to state-of-the-art technologies, and also to information about the relevant markets. They must also become attractive vehicles for investment to sources of finance.

There are several types of companies that could be interested to find outside technologies. Many of them could share the same range of preoccupations in the search and acquisition of such technologies. Differing emphases can be expected, because of variations among the companies themselves, as to size, financial and technical resources, and established reputations. Certain generalizations can be made, however; where appropriate, an effort will be made to do so herein.

One basic factor to be considered is the philsophy of the company. Is it mainly export oriented and, if so, which foreign markets does it intend to address? For instance, if the major strategy is to ship to Japan, the People's Republic of China, North America or Europe, quite different types of products might be most appropriate. The significance of the domestic market to the company, as well as the strengths and weaknesses of its local competitors, must also be taken into account.

◄ Corporate History ►

Another consideration is the corporate history of the Pacific Rim enterprise (PRE). Was it originally affiliated with a foreign company or group as a subsidiary, a licensee or a distributor? As a result, does the company enjoy a particular image that might usefully be exploited in its future business? Is it a new company, locally financed, but managed by people who were educated in the West or were formerly employed by multinational corporations? Does it enjoy special personal contacts in Japan or in the West which could be appropriately exploited in a technology quest? All of these factors should be taken into account in formulating strategy.

Corporate diversification, involving the acquisition of technology from third parties, is difficult to accomplish in any event. When there are important cultural differences between potential sources of technology in the West and intended recipients in the Pacific Rim, an added possible problem area exists. These issues are taken into account in the discussion that follows.

In formulating strategy, a PRE should initially attempt to gain a realistic understanding of two questions:

- What range of special strengths and advantages does the PRE enjoy that can effectively be employed in this project.
- What market needs and other opportunities are known to exist in the target areas selected by the PRE?

Unless there is a high level of confidence that the PRE has accurate information on both of these points, it is considered prudent to postpone making any definite commitments. Instead, initial energies should be directed to formulating a business plan that would have a realistic chance of success. The PRE might consider obtaining assistance in this regard from its government, or from a specialized western scientific or marketing consultant.

With regard to strengths and advantages, the following issues should be addressed by top management of a PRE:

1. Assuming that the PRE is not a brand new company, identify the areas of engineering design, and manufacturing skills of management and the experienced members of the work force. Are these equal to high internationally recognized standards? If so, does the PRE have the contacts and resources to maintain such skills at the state-of-the-art, so as to keep pace with expected advances in the relevant technology?

2. Does the PRE enjoy any special advantages in the form of lower

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labor rates or access to certain key raw materials? Are other special circumstances such as Commonwealth Preferences or most-favored nation trading privileges available that can be profitably exploited?

3. Does the government of the PRE's country have training and financing programs available that can be utilized to supplement the PRE's own assets? Are there bilateral or multinational (e.g. United Nations and its specialized agencies) aid programs in existance to which management of the PRE might gain access? Are private-sector banks, either based in the PRE's country or constituting a part of an international banking or financing group, available to help fund the contemplated project?

4. If, after conducting the foregoing inventory, the PRE recognizes that its relevant resources are less optimum, it need not consider itself disqualified from playing a role in some area of modern technology. Rather, it may have identified the segments of the company that need reinforcement via some form of technology transfer.

Considering the flexibility of the licensing process, a skillful practitioner should be able to fashion a deal that will compensate for such weaknesses and enable the PRE to become competitive in its chosen business or selected niche.

◄ Perceived Needs ►

Turning to perceived market needs and opportunities, the management of a PRE should have access to up-to-date intelligence on these points. Perhaps the PRE's own government has facilities to purchase or otherwise gain access to this information on behalf of enterprises controlled by its citizens. The governments of most advanced western countries, and various multinational organizations such as the secretariat of the Commission of the European Communities, may have useful information of this type that could be made available to PREs. Many business-oriented magazines, professional journals and studies by private research firms and consultants can also be purchased to supply necessary background. The services of technology and marketing consultants can also be retained to help in this task.

An international patent search in some clearly focused area of technology can also provide useful guideposts to enable a PRE to locate potentially interesting technology proprietors. Patentees of inventions in areas already identified as being of interest to a PRE, even though the patentee may not have sought patent protection in the PRE's own country. For budgetary reasons, investors frequently limit their patent filings to Japan, and possibly also Korea and Taiwan, among nations on the Pacific Rim. Serious business can nevertheless be conducted in such countries, assuming that valuable trade secrets and other forms of know-how are in the possession of the proprietor.

Assuming that a PRE has already conducted a rigorous strengths-and-weaknesses analysis of itself, visits to carefully selected international trade fairs can be very enlightening. This can enable executives to PREs to make personal contact with executives and employees of several companies, and also to examine their products at first-hand. This is considered to be an efficient and cost-effective way to make initial contact with potential technology transfer partners.

Another type of forum for personal contacts and interchange is conferences organized along industry lines or in accordance with professional specialties. The chief technical executives of the PRE can usually become members of the organizations that sponsor such conferences, and such membership usually includes a subscription to the journal and other publications of the society. The Licensing Executives Society, for example, whose membership includes executives employed by virtually all of the leading multinational firms in the world, as well as many prominent professionals, can provide excellent exposure in this connection to PRE executives.

As one product of the PRE's strengths-and-weaknesses analysis, it is recommended that a corporate brochure — attractively designed and illustrated, if possible — be published that describes the production, marketing, personnel and other resources of the PRE. Such a document can be an effective sales tool in gaining the attention of prospective technology partners. It can be mailed to such technology sources, or given out personally in the course of visits to technology fairs technical conferences. Its main advantage is to accelerate the credibility of the PRE in the eyes of a prospective technology partner. These documents can be published in several languages, depending on the Western or Asian countries of interest to the PRE's.

◄ Three Projects ►

During a recent visit by the writer to Thailand, three potential projects were revealed to this trained eye. All were brought to attention of local personalties who might be in a position to capitalize on these ideas. They are described herein:

1. It was noted that there were copious amounts of water hyacinths floating in the main river of Bangkok, as well as in many of its tributaries and canals. These had been introduced over 100 years ago by a Thai queen who had admired them in Java and thought they would make a charming addition to her country. As is frequently the case when living matter is transferred to a new environment, the growth of these water hyacinths had eventually gotten out of control in Thailand. They became a nuisance that hindered water navigation. The situation was deteriorating.

Investigation by the writer revealed that these water hyacinths had a beneficial side effect in that they absorbed heavy metals that were causing pollution in these waterways. This reduced the hazards to natives who swam and even brushed their teeth in these waters. It also meant, however, that it would be dangerous to harvest the plants for human or animal food. Moreover, simple burning of the plants would add further poisonous elements to air that already had pollution problems.

Research in the United States identified a newly developed combustion process that could not only

dispose of large quantities of this vegetation, but could produce two by-products, namely:

- A medium-energy fuel, free of heavy metals, that could be compacted and used instead of imported petroleum products for domestic combustion purposes.
- A concentrated residue of heavy metals that could be purified and thus recycled for industrial uses.

It is hoped that a pilot plant can be constructed, perhaps with the aid of Thai government funds. If this would be successful, various private interests in Thailand could hopefully be induced to build additional water hyacinth processing facilities. While no patents on the process exist in Thailand, considerable know-how is involved in the successful design and operation of these units. The preferred strategy would probably be the construction of turnkey facilities for Thai investors, perhaps by a joint venture between the technology proprietor and a local or international construction engineering firm.

2. A newly patented device for installation on new and already operating automobiles, trucks and buses could be assembled in one of the Pacific Rim countries, especially for sale in Japan, Korea and Australia, and eventually for other major automotive markets around the world.

This device is a proximity indicator, intended to be installed beneath the rear bumper, that automatically warns a driver backing up a vehicle when it is approaching a wall, fence, or some other object within two meters or less of the vehicle. The product incorporates ultrasonic sensors and electronic circuitry, including an application-specific computer chip. It is projected to be needed in very large quantities, because it is expected to become a legislated requirement. The product can be sold in two versions: the bare circuitry without special housings for the indicators, intended for installation in new vehicles as original equipment, and a completely "packaged" version intended for sale in the after-market.

A major European company currently has a worldwide license to this technology, with the exception of the United States. A U.S. licensee will shortly be appointed. Both could be interested in identifying a highly efficient, low-cost production source in the Pacific Rim. The item is particularly suitable for this area because there remains a significant labor element: there are three to five separate subassemblies or discrete components, each of which must be incorporated into a wiring harness.

It is understood that enterprises in Malaysia have developed good reputations as suppliers to the auto industry. One of such companies would be an appropriate production source in this instance. It could anticipate large volume orders over a period of many years.

3. A worldwide problem has been perceived with regard to injury to medical workers who handle hypodermic needles, catheters and the like. The problem is often referred to as "needle stick". It is a situation in which medical personnel advertently puncture their skin with sharp objects that have become tainted with the disease in relation to which they were administered. There are numerous recorded cases of doctors, nurses and technicians being infected with hepatitis as a result of such occurrences. There are even a few well-publicized cases of AIDS that have occurred in this way. Other diseases also create serious potential hazards with regard to needle stick.

A group of medical practitioners and engineers in Canada has recently invented and patented an elegantly simple, cost-effective, and completely efficacious method of avoiding needle stick. The addition of the patented feature to a hypothermic needle can possibly be completely automated, meaning that the productivity and cost advantage of Pacific Rim labor would probably be minimized. This is not the case, however, with kits for catheters, which retain a high labor content.

Considering the significance of the needle stick problem and the huge, growing and continuing demand for sterile infusion needles of many types, a license to manufacture these products, and perhaps also to sell them in various defined markets, should be of interest to enterprises in the Pacific Rim countries. Such an arrangement could have international as well as local implications.

In sum, a PRE can maximize its chances of becoming involved with appropriate technology by objectively evaluating itself, by taking steps to maximize its strengths, and thus attractiveness, to Western technology proprietors, and also in gaining a sophisticated understanding of its home market as well as foreign markets in which it might participate.

FORMS OF TECHNOLOGY TRANSFER ARRANGEMENTS

If a PRE wishes to diversify into a more advanced sector of its traditional business, or even to enter into a new business in which its strengths provide it with certain justification, it may be possible to accomplish this goal gradually, and by steps. This approach can tend to reduce risk to the PRE and also enable it simultaneously to learn more about the new business, while earning money at the same time. The various forms of doing business that may be employed by a PRE in this connection include:

Sales Agencies — There are arrangements whereby a local company solicits orders for products of its principal, relays such orders to the principal for acceptance and shipment, with the PRE earning a commission — usually a pre-agreed percentage — on such sales. These arrangements can be on a full-time or part-time basis. Moreover, the PRE could perhaps obtain sales agencies of several noncompeting lines of products in the same industry, or even different (though preferably related) industries, thereby obtaining a broader range of exposure and experience.

It will be appreciated that this approach can permit a PRE to gain first-hand experience in dealing with one or more lines of products, including the acceptability of such products in the PRE's home market, at a relatively low risk level. It is believed that this is a particularly appropriate form of entry for a company interested in becoming involved in some branch of the health care industry.

Distributorships — This approach involves a deeper level of commitment, in that it would require the PRE to purchase the goods of the manufacturer and then resell such goods within some mutually agreed territory. The arrangement might also provide that the PRE would repair and service the goods, depending on what they are. Thus, a byproduct of this higher risk is that the PRE can gain valuable experience in understanding the working of the products and also acquire familiarity with the details of the assembly and even manufacture of such products. Eventually, this type of distributorship arrangement could mature to a higher level of involvement, such as assembly and manufacture under license.

The marketing and distribution function is an activity that almost always requires an intimate knowledge of the local language, laws and traditions. Thus, it would appear to be difficult for a PRE located in one of the countries, e.g. Thailand, to hold itself out as being capable of selling in Singapore or Taiwan. It might be useful, however, for sales organizations in these various countries to form some sort of cooperative arrangement, because this could help their collective bargaining strength *vis-a-vis* a Western manufacturer, and also enable them to improve efficiency by complementing one another's strengths and weaknesses.

Manufacturing and Assembly Agreements — Because of a combination of intelligent, dexterous and literate workers and relatively modest wage scales, many western companies have long looked to PREs for manufacturing and assembly functions in such fields as electronics, cut-and-sew garments, toys and novelties. Sometimes these enterprises have started as subsidiaries of multinational corporations. In other cases, they have been financed by the local government, often with support from private banking sources. Whatever the foundation, this is an excellent way to gain experience in the high-tech area.

In selecting their strategy, PREs must be mindful of technology trends in their relevant industry and rapidly adjust accordingly. Thus:

- Many labor cost advantages recently enjoyed by PREs in "stuffing" printed circuit boards with transistors and other semiconductor devices are disappearing with the advent of more highly integrated circuits and therefore fewer parts, as well as more advanced robotics. This may require the purchase of new equipment, as well as adjustments in quality control procedures.
- Various kinds of electronic and mechanical medical devices could benefit from an assembly operation in a PRE, especially since cost effectiveness and reliability can be particularly important in this field.
- The implementation of certain biotechnology techniques for pilot plant and commercial production often requires keen attention to detail and very precise organization. If training, plant engineering and layout were made available on a sufficient scale at the outset, PREs should be able to operate state-of-the-art facilities in this area. Moreover, since there are large local populations in the same geographical regions that could benefit from these new biological and pharmaceutical products, the PRE might be able to provide local distribution as well as manufacturing support.

An indispensable ingredient for success in all of these scenarios is the requirement of strict quality controls and excellent products. If a PRE acquires and retains such a reputation, it can prove to be a very valuable asset.

Joint Ventures — Once a PRE has achieved a significant position in its industry, as a marketer, manufacturer, innovator or combination thereof, this form of doing business can provide very satisfactory results. Depending on varying circumstances, these jointly owned companies can be owned by a PRE with a majority, minority or 50-50 equity position. They assure continuing commitment by the other company in the joint venture, meaning that there should be regular updates of the technology plus careful consideration of the ongoing role of the joint venture as part of a worldwide strategy.

Joint ventures are usually similar to simple licensing arrangements in that they involve technology transfers. The principal difference is that there is greater commitment of the basic technology proprietor to this type of business because of its equity ownership. In view of the rapidity with which modern technology evolves, it is believed that solid access to this type of source of innovation is very important.

CONCLUSIONS

Many businesses and economic leaders in the West recognize that the 21st century will witness a great power shift to the Pacific Rim. Japan has already succeeded in reaching the first rank in world power, and many of its neighbors have also achieved notable successes. The area has available ample capital resources, its population is vigorous, ambitious and capable. Moreover, the size of the populations of these countries and nearby nations — most notably the People's Republic of China and India — means that there are huge potential markets at hand.

The technology transfer system, based on universally recognized intellectual property rights, provides a flexible mechanism whereby more and more PREs can become serious participants in the modern-day industrial system. One of the attractive features of this approach is that it encompasses many different forms for conducting business, and also allows a new player gradually to become more and more involved in this exciting arena. To be successful, certain behavior based on common sense is advisable. The core of this thinking is to understand whatever special advantages a company may possess, and then to build on that.

The advanced technology marketplace is influenced by brains more than brawn. The ability to attract able and creative minds — and to keep such valuable people committed to the company's success — is therefore a continuing challenge. Conditions have never been more attractive for the success of ventures in the Pacific Rim based on modern technology. The potential rewards

are worth the serious effort.

Negotiations and Implementations

The considerations regarding the form of the technology transfer are equally applicable to potential licensees as well as licensors. The full spectrum, from options through acquisitions, should therefore be in the minds of the parties in order to achieve desirable win-win situations.

Endgame Strategy

The conventional wisdom is to exit markets in decline and to seek those that are in their ascendancy. This is consistent with the dog-star analogy originally proposed by The Boston Consulting Group, and which has been widely accepted. This is often the motivation behind a company's licensing-in strategy.

There is an interesting exception to this rule. The leading proponent is Professor Kathryn Harrigan of Columbia-Business School. She has concentrated on the study of declining markets and strategies for surviving in them. Her catchphrase is "the last iceman always makes money." Thus, there are still isolated companies that are not merely surviving, but are quite profitable, in many markets that one would imagine to be landmarks of obsolescence. These include vacuum tubes, velvet, computer punch cards, leather drivebelts, wooden airplane propellers, harpoons, and even buggy whips.

These are, of course, curiosities in which there may be but one surviving entity, with all the other capacity having been destroyed or cannibalized. The point is mentioned, however, not merely for the sake of curiosity or bemusement. Rather, it illustrates the point that creativity in the development of many types of technologh — high tech, low tech, old tech and even no tech — can drive profitable businesses of many types. This is one of the fascinating aspects of technology management and a reason for its primary importance in a changing world.

CONCLUSION

Although licensing-in can be considered as merely the other side of the coin from licensing-out, it involves many different considerations, particularly in preparing for the exercise. In many ways, licensing-in is the more difficult of the two, particularly since the preponderance of risk in technology transfers usually resides with the licensee or acquirer. Common denominators between the two, however, are the need for high-quality personnel, a multidisciplined approach, attention to detail, peripheral vision, and flexibility.