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Exploiting Innovative Technology in Offshore Markets: A Canadian Perspective*

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I. INTRODUCTION

This Conference is focused on the role that innovation and technology will have in a rapidly changing world — a world in which national trade barriers are either dropping or collapsing after being attacked; a world in which tomorrow's technology, if not exploited today, is no longer of value; a world in which individual corporations are dedicating annually financial resources to research and development in amounts which a decade ago might well have exceeded their annual gross revenues. In essence, it is a time of change and a time of challenge, but also a time of opportunity.

While this Paper is sub-titled "A Canadian Perspective," I do not mean to suggest that the Canadian perspective is different from the U.S. perspective, the EEC perspective or even the Japanese perspective. I believe that all corporations enjoying, or merely seeking, world markets will have more in common than they lack.

My business perspective has been formed in recent years in the discharge of my responsibilities at Northern Telecom Limited. Northern Telecom is a Canadian-headquartered, publicly-traded designer, manufacturer and marketer of a full line of telecommunications equipment ranging from telephone wire and cable to sophisticated central office switching systems and data packet networks.

With 1988 revenues of U.S. $5.4 billion and research and development expenditures exceeding U.S. $700 million, Northern Telecom has manufacturing facilities throughout the world and markets its products in approximately eighty to ninety countries. We are, therefore, vitally interested in exploiting our technology on a world-wide basis, but because our commercial activities are in the telecommunications area and because most countries outside of North America have telecommunications services provided by a government department, the challenges that we have had to address extend beyond those of most commercial enterprises. In order to exploit that technology in offshore markets, certain of our traditional expectations as to how we would like to carry on business

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have had to be discarded and we have had to be innovative in the ways we address the exploitation of technology.

II. A Different Environment

Offshore markets, by definition, differ in form and substance from North American markets. There are those who say, accurately, that North American markets, while having many similarities, also have many variations — particularly when one remembers that the proper definition of North America includes Mexico. In seeking to exploit innovation offshore, one has to bear in mind that foreigners often have different perspectives and objectives than our own. Their cultures are different in varying degrees. After all, even the English take the lift, lift the bonnet and store the bonnets in the boot. Even though many North Americans trace their roots directly to "this sceptred isle," some adjustment is still necessary.

Obviously, when one addresses cultures that are even more foreign, the need for adjustment is that much greater. The rules we have normally followed in domestic markets have to be revised — sometimes "on the run." One has to adapt rapidly to succeed. Americans often have greater difficulty in adapting than Canadians — largely, I believe, because of their higher level of self-sufficiency and their more unified culture.

There are those objectives which are universal and which are to be found wherever negotiations take place and without regard to who is negotiating. But there are other objectives which are special to a country or a region, such as a national need to develop the economy in a certain manner, or to enhance a certain region or race within the country, or sometimes just a need to "save face" — for example a reluctance to concede dependence on a foreign technology.

What one has to be conscious of in such negotiations is what one author has termed the "self-reference criteria . . . the tendency to subconsciously refer to one's own cultural values in anticipating the response of another." One has to refrain from placing too much emphasis on applying one's own standards and criteria to the transaction, but has to view, as best as one can, the transaction from the perspective of the other side, so as to accommodate their reasonable needs. Innovation, in other words, must be exploited in different markets with regard for different perspectives and needs, otherwise the likelihood of success is substantially reduced.

III. The Different Ways

When one has achieved a certain level of success and comfort in the domestic market and has, perhaps, reached a level where the market is generally satisfied, there is a natural tendency to want to expand one's

horizons and to exploit the technology or products elsewhere. This exploitation can take one of the following forms:

1) The export of products manufactured in a domestic operation to other countries either directly or through a subsidiary, branch operation or third party serving as a distributor or with a third party assisting as an agent or representative;
2) The establishment of a production facility in a foreign country and the sale of the production of that facility in that country, and perhaps in other countries forming part of a logical market;
3) The establishment of a joint venture in a foreign country to manufacture in that country — in effect a partnership with one or more other partners (usually local), carrying on the activities of manufacturing and selling the products arising from the technology; and
4) The licensing of technology to a non-affiliated enterprise in a foreign country which permits that enterprise to manufacture the product in whole or in part and to sell in a defined market.

IV. The Northern Telecom Experience

Northern Telecom was driven to exploit its technology beyond its Canadian boundaries during the 1960s, when it realized the costs of developing technology in a rapidly evolving industry could exceed the costs it could support while remaining economically viable. Since its inception in the 1880s, Northern Telecom had had a close association with the telecommunications equipment manufacturing subsidiary of American Telephone & Telegraph, then known as Western Electric. Western Electric, largely as a result of the 1956 Consent Decree, chose to withdraw from a variety of activities, among which was its equity participation in Northern Telecom. As recently as 1956, Western Electric held a 44% equity interest in what was then known as Northern Electric Company, Limited. This withdrawal resulted in Northern Telecom having to become self-sufficient in technology development. Since Northern Telecom revenues at that time were almost entirely derived from Canadian sales activities, and since there were then, as there are now, fewer telephones in all of Canada than in the State of California alone, it is easy to see that the revenue stream, which ultimately funds the research and development of any enterprise, had to be extended beyond Canada in order for the company to have the funds to ensure technology advanced while the company remained financially secure.

Our first efforts beyond North America included a joint venture with the Turkish government in the mid-1960s in the suburbs of Istanbul, as well as export sales out of Canada to various countries in Europe, Africa and South America. With the exception of Turkey, our efforts were only marginally successful. In the early 1970s the international marketing activities were largely discontinued and we began to focus on what we considered at that time the prime market opportunity — the

United States. In that market, from the serious commencement of business in the early 1970s, our sales rose from virtually zero to more than the $3 billion level that we have achieved in each of the last two years.

In the mid-1970s, with our growth in the United States still underway, we began to develop non-North American markets while continuing to develop and expand our Turkish joint venture. In a short time we established a wholly-owned manufacturing facility in Ireland and sales and marketing operations throughout Europe, the Caribbean, Latin America and the Far East. Concurrently, we concluded licensing arrangements with a large number of foreign companies that had a substantial market presence, considerable resources, a good reputation in our industry, and a credibility with the local customers — generally the national telephone administrations, usually departments of governments. More recently, as part of our overseas thrust, we established joint ventures in various countries, including China and France. While it will take some time to achieve the market penetration we have obtained in North America, we see an increasing acceptance and support of our activities in overseas markets.

V. A Closer Look

I would like to look, in more detail, at the considerations which will enter into the decision as to how technology is to be exploited in the offshore market. I should note at the outset that one may start in one mode and evolve into another mode. What is right at one time or for one place may be wrong for another time or in another place. Northern Telecom's experience suggests that flexibility is important. A corporation should be prepared to develop markets in all of the ways described above.

The export of products from domestic production is obviously the easiest route. There is no need for a replication of manufacturing facilities; there is often no need for additional corporate entities; one isn't obliged to spend a great deal of time and money in developing tax and other strategies. One need merely appoint a distributor or perhaps send an employee on an occasional sales visit.

The limited demands that this makes usually result in limited success. Customers like to see a supplier demonstrate a commitment to a market by an investment in the form of facilities, people and products, to meet the specific needs of that market. Customers like to communicate directly with people who understand the product line in the context of the local market and who have direct access to more senior management, but who function in the same or adjacent time zone. Customers generally like to deal with the source.

From the supplier's perspective, however, this is a simple, trouble-free and minimal-investment arrangement and, within the limits it imposes there is an opportunity to participate in those markets. Corpora-

tions which have operations of a certain nature sometimes have no alternative. Many natural resources companies mine and process their product in certain parts of the world and sell it to consumers throughout the world. Certain companies, for example, aircraft manufacturers like McDonnell Douglas and Boeing, are limited by the nature of their operations to a small number of facilities. These companies cannot be expected to have strong and economically viable plants wherever their markets may be.

Where a company has chosen to export its product, it may find, particularly when the customer is a government, that it is required to participate in purchases to compensate for its export sales. These arrangements, which are sometimes called offset, compensation or countertrade, are frequently found in the defense industry, but also exist in other industries where the government, or a governmental agency, is the purchaser. They also exist where foreign exchange requirements necessitate exports to recover the hard currency expenditures caused by the imports. The buyer in these instances may want state-of-the-art technology which is only available from a handful of suppliers — all of them foreign. The commitment of the buyer may be substantial, but in relation to the overall activity of the seller it may be comparatively small. The country may not be in a position, particularly if it is a sophisticated product, to participate extensively in the production activity. However, the buyer will often demand some form of local purchases in order to generate economic activity within that country. We have, as a company, experienced these demands in certain countries, even though we are not in the defense industry.

As an exporter, one has to assess very clearly whether or not one can be heavily involved in these re-purchase agreements before acquiescing to such demands, as one becomes dependent on a foreign supplier for substantial quantities of parts or components that may, because of their volume, have to be incorporated into products destined for other markets. Even when those demands are not for the purchase of parts and components to form part of the sold product, but are for the purchase of commodities available in abundance in the offshore market, one has to consider carefully whether or not one should assume responsibility for the disposal of substantial quantities of salt, foodstuffs, carpets or whatever.

I will group together the establishment of a local manufacturing facility by itself with the establishment of one in conjunction with a local partner, i.e., a joint venture. The establishment of a wholly-owned manufacturing facility is attractive in that it allows the exporter the clear right to manage the business and determine its direction. It also eliminates the complaints that might arise where minority shareholders, i.e., the other joint venture partners, allege the majority shareholder is making decisions detrimental to the minority interest. Sole ownership allows one to plan the business consistent with the worldwide operations and

strategy of the parent company. On the other hand, it increases the risk because it requires all the investment to come from the exporter. Sometimes it creates difficulties with respect to foreign investment approvals that may be required in the local country. Of course, some jurisdictions will not allow a wholly-owned foreign investment because of a requirement for local investment. It also deprives the offshore activity of the credibility and insight into the local market that a local equity participation can provide, often at a level beyond that available from locally hired employees.

The establishment of a local production facility, whether alone or with other owners, is the most expensive and hazardous way to enter the local market. Yet, even though it is potentially higher in risk, it may still be the best approach. Our joint ventures in Turkey, China and France are ones that we believe provide substantial advantages to us in the local markets. While the Chinese and French joint ventures are in the early stages, the Turkish joint venture is mature and has been very successful. Our Irish manufacturing facility is wholly-owned and has been able to function very effectively as an extension of our North American PABX and telephone set manufacturing activities.

Now I want to consider the last of the four ways of exploiting technology offshore — licensing. I limit the definition of licensing in this context to the transfer of intellectual property rights required to develop, manufacture and market products in a foreign market, whether in the form of technical information or "know-how," patents or a combination of these two forms of intellectual property. While each licensor has his own particular reasons for licensing technology, some of the more important or usual reasons are the following:

1) To realize financial returns on technological achievements in markets not otherwise readily available to the licensor because of market entry restrictions, insufficient resources, higher priorities, etc.;
2) To share the costs of substantial research and development expenditures not ordinarily affordable by a single enterprise;
3) To capitalize on the market strengths of another firm when it dominates or controls a foreign market;
4) To establish as a standard, or to enhance awareness of, a proprietary technology;
5) To weaken the position of a foreign competitor by strengthening, in a controlled manner, a firm which is itself a competitor of the licensor's foreign competitor;
6) To provide an alternate source of supply for the product on a controlled basis, particularly in low-wage areas of the world;
7) To develop an association with another firm as a prelude to further, and often larger, joint activities; and
8) To permit a licensee to assume the obligations of a licensor in a certain market, thus facilitating the withdrawal from a market or a contract by a licensor.

The decision to license has to be made carefully. Indiscriminate li-

censing can, for the licensor, destroy potential markets for his own products or expose proprietary technology to the whole world. Most licensors are prepared to negotiate license agreements providing for the transfer of technology in a manner which enables the licensee to meet the governmental, legal, economic, political and other requirements of the licensee in the country or countries for which the license is granted. Very seldom are the requirements of different licensees, even in the same country, the same. Licensors have to be prepared to bring a certain amount of flexibility to the licensing arrangements in order to ensure that the transaction is an attractive and viable arrangement for both parties. In terms of risk, one would probably place the licensing risk at somewhat greater than the export risk, but less than the local manufacture or joint venture risk. Licensing often allows one to participate in the foreign markets with a fairly minimal and trouble-free activity which will serve at a later time to provide credibility in the market for a licensor who may wish to assume the role of a local manufacturer. We have also found it an ideal way of combining our technological "smarts" with a local manufacturer who lacks the sophisticated technology to produce a comparable product, but who has a substantial market share and credibility. The lack of sophisticated technology on the part of the local manufacturer is not necessarily an indication of any lack of fundamental skill, but more often an indication of the lack of revenue required to support research and development, or the lack of foresight to determine accurately the direction in which technology or consumer demand is moving.

As previously noted, it is not uncommon for a company in an offshore market to start with periodic sales visits, then develop into a full-scale exporter of goods, and ultimately establish a local production facility alone or in combination with others. The establishment of a local production facility ordinarily results in a license agreement whereby the local production facility replicates the most relevant of the parent company's production facilities.

VI. Conclusion

In all of the above activities, one has to be conscious of the fact that we live in a world of regulation, and while our immediate world at times seems harsh in this regard, the world outside is often harsher. The rules are different; the language in which they are expressed is different; the philosophy underlying the rules is different; and the interpretation and enforcement is different from that with which we are familiar. That should not discourage our exploitation of technology wherever it makes good business sense. It does mean that we should be aware of the tools that are available, be conscious of the need to be flexible and creative, and preserve our confidence and optimism, although at times one may feel the punishment exceeds the rewards.

In this respect one has to be conscious of the substantial restrictions

that exist with respect to transfers of technology, whether imposed by the exporting country to limit the strategic technology made available to foreign countries, or imposed by the importing country to prevent the local licensee from being consumed by an ill-advised licensing arrangement or to prevent the drain of substantial foreign reserves from the country. Rules also cover the investment by foreigners in certain companies, so that one's best-laid plans of exploiting technology abroad may be frustrated by the inability to make the necessary investments. Many other hazards lie in the way.

If one looks around the world, one sees it becoming a global market. One sees it becoming a world in which modern means of communication and transportation have removed the natural barriers to free trade. One also sees the formulation of free trade agreements and the establishment of common markets that transcend traditional national boundaries.

We will have to participate in these world markets or be consumed by those who do. The United States and Canada, standing together, sharing a common language, having a common heritage and enjoying substantial natural resources, should both continue to play a dominant role in world commerce.