R&D and Licensing in Japan

Relationships in licensing examined and changes in international licensing are noted

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According to the White Paper on Science & Technology (1976), the balance of international payments on Technology transfer (A/B), which has long been at the lower level — around 10% — suddenly began to change upward in 1974 and made a new record of over 20% in 1975.

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It explains that Science & Technology in Japan has reached the threshold of the well-developed countries group as a result of long efforts in overcoming a 20-year technological gap after World War II.

As you see in Table 1, the figures-of-balance ratio (A/B) in the U.S.A., Great Britain, France, and West Germany are respectively 9.5, 1.1, 1.1, 0.4 and these show a surplus with the mere exception of West Germany. The low figures of West Germany and Japan seem to be due to natural results of their active efforts in digesting tremendous advanced foreign technologies. This was the reason they were able to achieve a remarkable reconstruction from ruin, to increase their GNP, and to push themselves among the economic giants.

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However, the result has been that the Japanese have been so busy digesting foreign technologies that they have had little time and money to spend on original research. The recent increase of the A/B ratio for Japan is predominantly depending upon the export of improved technology based on the introduced one, to Socialist countries and to Far East Asia. It does not necessarily follow that Japan is enjoying a remarkable increase in original technology.

Nevertheless, Japan is gradually changing its attitude from dependency on imported technology to mixed type of self-developed and imported technology. The weight of self-development, which can be a resource of license, is apparently increasing year by year.

World Recession

As you know, the world economy now is going into a recession era. Two big "crisis" were turning points. The first one was the "Nixon Shock." It resulted from endless red figures in the U.S. economy. The second was the "Oil Crisis" which was an economic challenge of the oil producing countries in the Middle East.

The economic growth of highly industrialized countries shall be limited to fairly low figures and future

Country / Item / Year	JAPAN			U.S.A.			G.B.			France			W.Germany		
	A	B	A/B	A	B	A/B	A	B	A/B	A	B	A/B	A	B	A/B
1966	19	192	0.10	1.515	140	10.8	160	132	1.21	181	244	0.74	79	202	0.39
1968	34	314	0.11	1.867	186	10.0	204	185	1.11	280	282	0.99	105	250	0.42
1970	59	433	0.14	2.331	225	10.4	263	239	1.10	344	356	0.96	128	346	0.37
1972	74	572	0.13	2.770	294	9.4	284	286	0.99	585	587	1.00	211	494	0.43
1973	88	715	0.12	3.238	385	8.4	341	326	1.05	844	741	1.14	216	619	0.35
1974	113	718	0.16	3.805	399	9.5	-	-	-	-	-	-	262	670	0.39
1975	161	712	0.23	-	-	-	-	-	-	-	-	-	308	834	0.37

MM$ A : Accounts receivable B : Accounts payable

Table 1

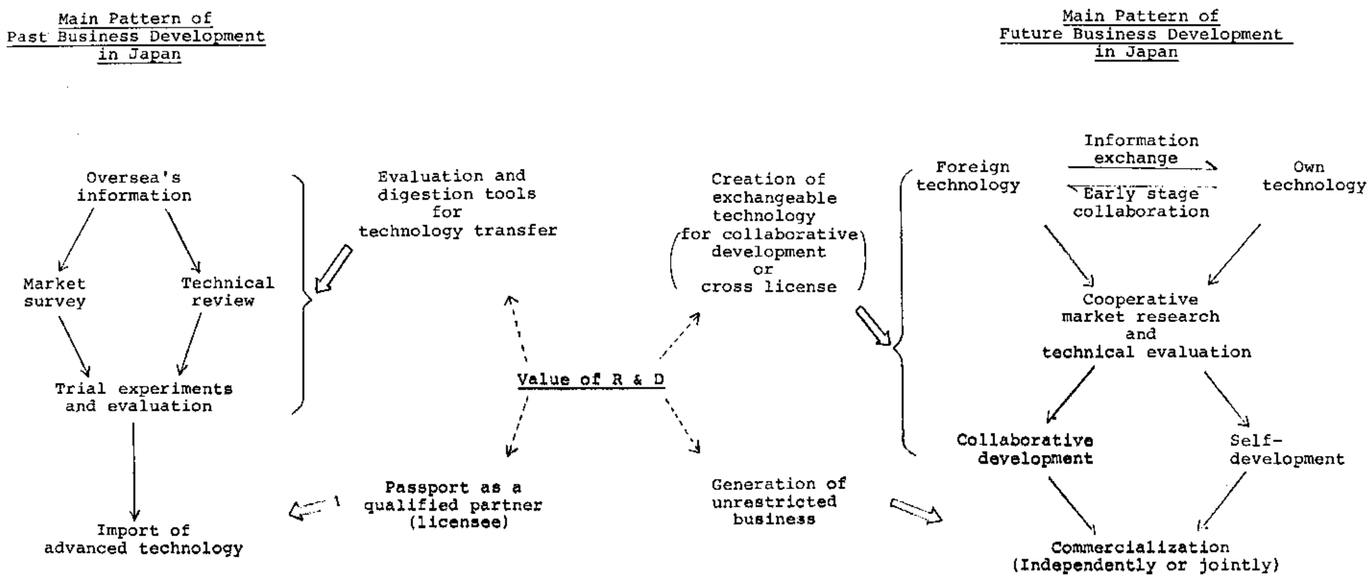

Fig. 1

economic growth shall be expected only in the developing countries or in the socialist countries corresponding to their own resources.

Accordingly, the competition between active enterprises of industrialized countries will become more serious. They can only survive by winning at the sharing game in their block and at the sales game of technology transferring to the above-mentioned countries which have the capability of economic growth. Their necessary and strong weapons for the operations on two fronts must be a firm decision to concentrate their R&D in their leading business field, the effective international collaboration on early R&D to save time and money, and the strategical international license according to long range planning.

To discuss these problems, I would like to explain the relationship between Business Development and R&D concisely summarized in Figs. 1 and 2. We must consider the policy of strategic international licensing based on this background.

The significant post-World War II development in Japan has been supported by the imported technologies commercially proven in Western Europe and/or in the U.S.A. Efforts were focused on the earliest detection, the fastest evaluation and digestion of such technological information, and importing via license to keep the monopoly. Most Japanese enterprises (with the exception of limited numbers of unique technoventures) have monotonously followed this pattern. A passport proving the cooperation capability and a search tool for the earliest information are the mere role of their R&D. Very little effort and resource has been given to creative works, even though such R&D needs to be persistent for a long time. In the protection of intellectual property rights, Japan has long been out of the chemical substance patent concept. They could easily obtain patent protection on improvements in the synthesis of valuable new compounds without any restriction by the chemical substance patents of foreign companies. These improved technologies yielded enormous profit. In addition to this protection, Japan has been supported by various strong tools for their development, including a first-class education system, sophisticated governmental instruction, and reinforced with traditional Japanese aggressiveness, flexibilities and skillfulness. Japan's production technology has been as highly advanced as in Western Europe and in the U.S.A. In some cases Japan's production technology has been superior to those countries. These advances were achieved under the continuous rapid growth in Japan's national economy. It was symbolized in GNP by a quick returns policy. This resulted in enormous payments for the import of technology. This means that the latent burdens, such as royalties and interests for loan, etc. (due to the above-mentioned technological imports) rapidly appear on the surface in this present economical recession.

Needs Change

On the other hand, the saturation in the domestic market and the recent severe import regulation of internal major customers' countries increase the needs for technology transfer and direct investment. This leads to a new hard struggle of existence in technological trade against those countries which hold the parented technology. This is one big reason why well-industrialized enterprises hesitate to give one-way licenses. Instead, they wish to cross-license technology having equivalent value.

One factor in the industrialization of Japan has been the instantaneous communication of technological information. A flood of information makes the company-base or the country-base information processing impossible. It needs and makes possible an international information processing organization. The newest information (through computor systems) instantly connect Japan and overseas countries and these countries can enjoy research and development based upon the same technological information. Though lack of direct communication still remains (due to the distance barrier across any ocean and a major language barrier), execution of laid-open patents in 1971 has enhanced the importance of Japanese patent information as well as German information. In one view, the above-mentioned language barrier seems

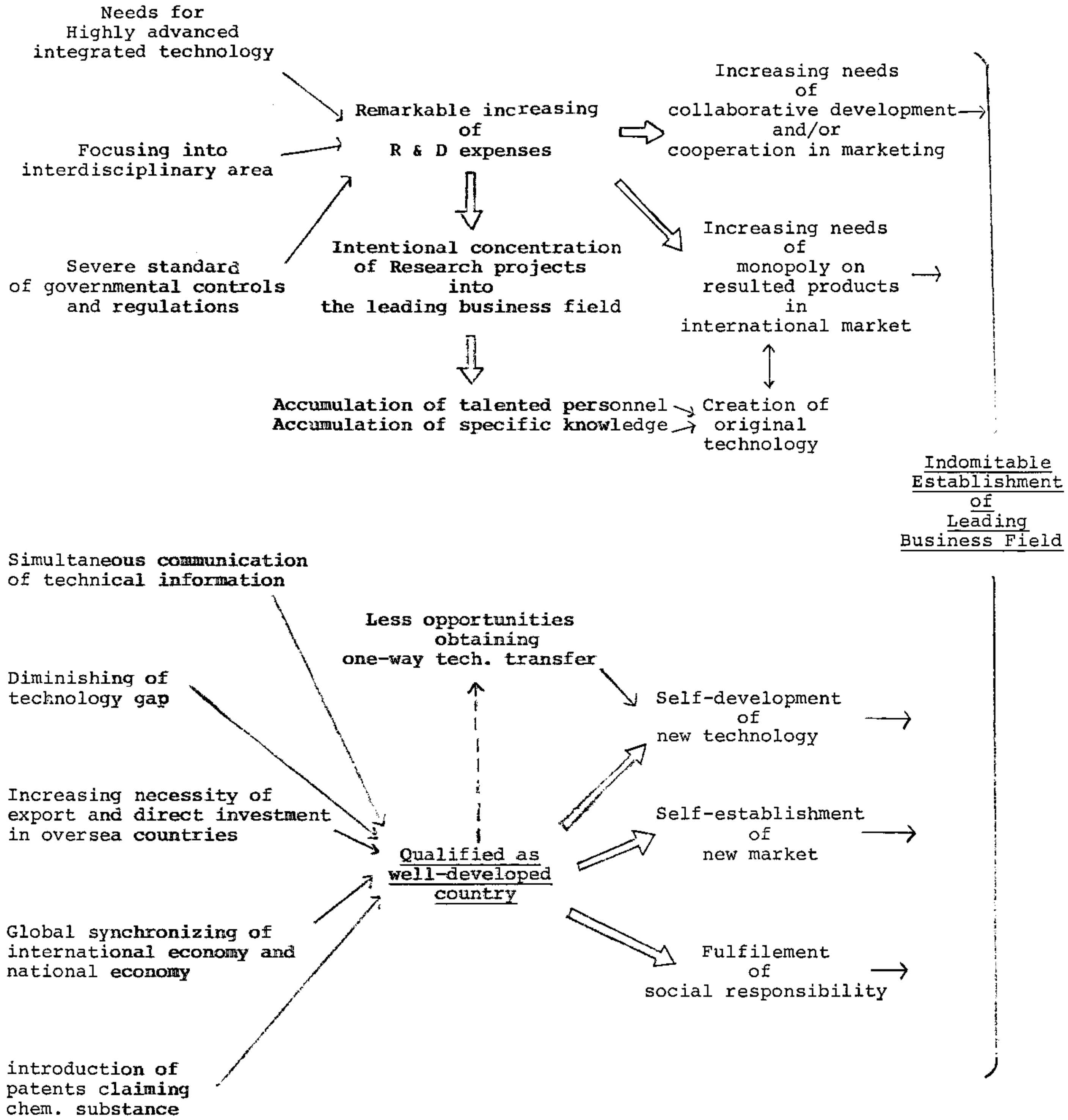
Needs for
Highly advanced
integrated technology
Focusing into
interdisciplinary area
Severe standard
of governmental controls
and regulations
Remarkable increasing
of
R & D expenses
Intentional concentration
of Research projects
into
the leading business field
Accumulation of talented personnel
Accumulation of specific knowledge
Increasing needs
of
collaborative development
and/or
cooperation in marketing
Increasing needs
of
monopoly on
resulted products
in
international market
Creation of
original
technology
Indomitable
Establishment
of
Leading
Business Field
Simultaneous communication
of technical information
Diminishing of
technology gap
Increasing necessity of
export and direct investment
in oversea countries
Global synchronizing of
international economy and
national economy
introduction of
patents claiming
chem. substance
Less opportunities
obtaining
one-way tech. transfer
Qualified as
well-developed
country
Self-development
of
new technology
Self-establishment
of
new market
Fulfilement
of
social responsibility

Fig. 2

to turn to Japanese profit in obtaining the newest information. The advantageous conditions surrounding Japan induced well-industrialized countries, especially West Germany, to force the Japanese Government to adapt the "Chemical Substance Patent" as early as possible.

Another nontechnological motivation for industrial self-establishment in Japan is the global synchronization of the international economy and national economies. Up to the 1960s, there was a time lag in economic cycles. These assisted Japan and prevented extreme fluctuation of business. At present, it is not as easy to keep a steady economic growth and avoid world-wide recession. Social responsibility — humanistic, economic and natural circumstances (together with pressure to development Japan's own technology and unique market) — even force private companies to seek new directions.

On the other hand, successive scientific development has reduced the possibility of new development in simple technology. The opportunities of new development are found in the systematic complex of integrated technologies and in highly-advanced technologies. It means that the interesting subjects of R&D are largely discovered in interdisciplinary areas, i.e. the cooperation of different types of experts is necessary to achieve such R&D. Governmental safety standards for commercial products and various regulations for controlling business are becoming more severe year by year. Thus, necessary R&D expenses including for biological and safety screening are expanding enormously. In order to reduce expenses, firms are forced to concentrate research projects intentionally in the specific field where they are at their strongest. They are also seriously searching for partners with whom they can cooperate or exchange knowledge even at the earlier stages of R&D. For the purpose of full recovery of the invested R&D money, the product or technology must be so original and excellent that it has a capability to hold a monopoly (oligopoly).

Therefore, we can summarize the typical future development pattern of technology-oriented business as shown in the left half of Fig. 1.

Unique Technology

The creation of unique technology supports the indomitable establishment of a leading business field and it shall be pertinently oriented by the earlier evaluation through the international information exchange with the first-class competitors in the very field. Occasionally, time- and money-saving collaborative development is possible with the complementary partner for economical commercialization.

A strategy of international licensing should be constructed in due consideration of the above-mentioned pasic concept. Next, I should like to reflect on the question, "For what purposes are we licensing?" Table 2 shows "The typical motivations of international licensing."

In the case of A-D, the active motivation of licensing, licensor, who has developed excellent technology, wishes to establish a powerful oligopoly and it must be executed within the limited number of licensees according to the careful study of a strategic plan. Polar-

"The Typical Motivations of International Licensing"

A: Licensing for setting up monopoly or oligopoly
- A', In order to limit a number of rivals in its business (as the second manufacturer and the sole rival)
- A", In order to take the initiative in standardization of product specification

B: Licensing for aggressive market expansion by producing in consuming countries

C: Licensing for effective introduction of complementary technology

D: Licensing for achieving earlier commercialization in substitution for a small inland market or a premeture inland market
- D', In order to share a risk of too up-to-date technology

E: Licensing for getting over the trade barrier or the direct investment

F: Licensing as a substitute for getting desirable product or technology

G: Licensing for utilizing idle patents, know-how and equipment

H: Licensing for re-use of patent or technology being on the wane

I: Licensing as a dead stone for preparing the satelite technical groups

J: Licensing for forming a part of integrated industrial policy of the government, especially as an assistance for less developed countries

Table 2

oid Corp., who is confident of its own patents, still has a negative opinion, even on such a license, and wishes to keep its absolute monopoly under the strong protection of the patents. Know-how seems to be given slight consideration. Being aware of the anti-trust law, most of the A-type licensors do not insist on the real purposes even when their strategical target is focused there. However, A-type licensing, including its variation A' and A", is predominant in the case of multinational companies.

In the past, much licensing to Japanese companies from the U. S. or Europe seems to be motivated by E. As the industries in Japan have been enhancing their potential in developing the imported technology, and the liberalization of trade and investment became highly satisfactory, type-A, C and passive-F of licensing are gradually increasing.

Recently, there is a growing tendency that the Japanese companies enter into active-F type licensing for the companies of well-developed countries. On the other hand, for the companies of developing countries, conventional E-type licensing is spreading widely, and B and H-J types of licensing are becoming popular gradually. D- and G-type licensing are very likely to be aimed by those companies who do not have enough marketing capability or do not have enough market to utilize their technology in their countries. Since these types of licensing are not supported by their experiences of commercial operation, mostly they could not enjoy such joyful harvest due to lack of enthusiasm and affection for achieving their own project. Frequently they only get nominal compensation for the licensed technology. If you expect only to avoid the initial risk and recover a part of its research expense, it may be fairly useful for you.

Classification		Countries	Special patents	Policy	International convention or treaties	
Bloc I	Well-developed countries	U.S.A. EC Japan	• Chemical substance patent • Pharmaceutical patent	• International unification of patent concepts • Strict protection under patent law	Supporting existing Paris Convention	
Bloc II	Socialists countries	U.S.S.R. Eastern Europe	• Patent and Inventor's Certificate	• Priority is given to National interest		
		Red China	• No patent law		COMECON Treaty	
Bloc III	Medium-developed countries	South America Southern Europe Common Wealth countries	• Import patent • Confirmation of British patent	• Priority is given to encourage their domestic industries	Andean Pact	• Revise of Paris Convention • Code of conduct
Bloc IV	Developing countries	Africa Middle-East Asia Far East Asia	• Premature or primitive patent law	• Earlier compulsory licence • Working requirement must be fulfiled for patent	African-Malagasy Union (Libreville Agreement)	

Table 3

The license of first-class technology having commercially success, under satisfactory compensation, to the first-class licensee, is the essential way of licensing for a manufacturing company. Further licensing (type C, D and F) under desirable terms and conditions can be easily achieved after building up their fine reputation in consequence of the above successful license.

It is extremely important to try to form a complete international patent network when we realize the birth of an excellent invention. Sometimes it is necessary to daringly invest in doing supplementary experiments to protect from the third party's entry. When considering the preparation of such a patent network, appropriate regional strategy depending on the local condition must be requested. Philosophical comparison of patent regulation system in four political regions is shown in Table 3. This simplified classification is not always proper to judge our decision, but it may be fairly useful as a tool to guard a company's interests.

Rights Influenced

In spite of the above consideration, recent serious attitudes are really influencing the practice of patent rights. In well-developed countries antitrust laws are strongly challenging the vested rights by the existing patent laws. In developing countries, the patent law itself has been attacked by the government's economic policy so as to revise it into less protective for outside countries. Thus, the patent protection system is now fluctuating and most of the companies are worrying about the unsettled future of patent protection in addition to the chronic recession of world economics. For instance, not a small number of recent decisions on antitrust patent cases in the U. S. Court appear to be a reversal of the old decisions, and active movements fortifying antitrust regulation repeatedly have come out in EC and Japan. All these tendencies are linked to the cut down of the vested rights by the patent law. Developing countries keenly wish to establish a new order of international economy which has been definitely supported at the conference of United Nations. Their basic policies are mainly concentrated into the economic attacks in order to obtain their industrial self-establishment by controlling their abundant natural resources, especially oil, and by the aid of liberation from the protection of industrial properties. Their direct interests are to increase their income and to obtain strong bargaining power in political negotiation.

Socialist Countries

In the last decade, we should have come to recognize increasingly the importance of technology transfer to Socialist countries. There have been many problems in international licensing with these countries. Some include economic bloc formation for mutual benefit and guarantee of collateral export of licensed product as a necessary condition of license agreement. We are convinced that their real target is the substantial reduction of consideration in licensing and the economic challenge against free-economic region.

Most of the Socialist countries are the members of Paris Convention signed in 1883. However, they are persistently keeping their policy that the special priority is substantially given to domestic inventions. Package license of integrated technologies including know-how seems to be virtually the only way of technology transfer and the mere patent license without any know-how is extremely rare. These attitudes suggest that technology transfer to the Socialist countries are not always hopeful but tough negotiations must be necessary even in the future.

Anyhow, there are apparently big differences in patent situations between the four regional blocks shown in Table 3. It is clear that the establishment of original technology being able to survive in international business war is the first and necessary step of patent protection. Any other things come after this. Another big problem is how we manage this to obtain the higher share of international market, especially in well-developed countries. No doubt licensing to the so-

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