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Description	一般論文

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2C7 Intellectual Property and Patents in Japanese and Western High Technology Companies

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MANAGEMENT OF IP & IPRs

The overall management of knowledge and information by a company is a concept which is seen as increasingly important in today's business and technology world. Various names have been used to describe what is actually being managed including:- Intellectual Capital, Intellectual Property, Invisible Assets, and the like. However, all have in common the idea of treating Intellectual Property or "IP" as a company resource.

This "Intellectual Property" though has to be managed not only internally, within a company but also externally in the context of the company's relations with other companies whether they be competitors or collaborators. Whilst these two aspects of Intellectual Property management are closely linked, at present it is the latter external aspect of "Intellectual Property" management that has been receiving the most attention.

However the word "property" is itself a legal concept implying the possibility of the existence of rights of ownership. It is no surprise therefore that the expression "Intellectual Property Management" in most companies today really means management not of the intellectual property per se but of the legal rights that define it - in other words the "Intellectual Property Rights" or IPRs that a company controls. It is this management process and the issues and attitudes affecting it particularly in Japan and particularly with respect to High Technology industries that this talk addresses even though it represents somewhat preliminary thoughts on the matters concerned.

IPRs & HIGH TECHNOLOGY

There are many varieties of IPRs however, in the context of high technology companies patents have justifiably attracted the most attention. Not only are they the IPR most closely associated with technical invention, but in contrast to say copyright in computer programs they are also the subject of detailed and accurate international records, something which provides an great temptation to researchers to ignore some of the difficulties which, as we shall see, can be encountered in using the data.

In essence patent systems involve giving inventors monopolies of limited duration as incentives to invest in R&D whilst in return ensuring publication of the inventions so that others can learn from them. Whilst ostensibly just a defensive means of monopolising inventions, patents also help define the ownership of inventions and they thus facilitate trade in technology. They thus form not only a means of encouraging technical progress through R&D but also of promoting technological trade through licensing.

The seemingly different roles on the one hand of encouraging and protecting R&D investment and on the other of promoting technology information exchange and co-operation have been emphasised by different countries at different times. However, the two roles of R&D incentive, technology information source and trade promoter are not incompatible and in fact are complementary since each depends on the other for its existence even if the emphasis of the two roles may differ .

A BRIEF HISTORICAL PERSPECTIVE

The patent systems of Europe have a long history going back at least to 15th century Venice. The US patent system has its basis in the terms of the US constitution. However, the use of patents to encourage new inventions was not known in Japan until news about them arrived from the USA around 1860.

After a failed attempt based on French law in 1871, Japan's first effective patent law was instituted in 1885. Interestingly since most criticism of the Japanese patent system has come from the USA, the first

Japanese patent Laws of 1885 and 1889 were mainly based on the US patent system. This was chosen as a model (even to the extent of copying the application forms for the 1889 law) mainly by Takahashi Korekiyo, the first head of the Patent Office, (and later Prime Minister). The interesting feature of the history of the Japanese patent system though, is how it reflects present day attitudes to the patent system. For example the Kôgisho, an early, and short lived, Meiji era representative body passed a motion in 1869 approving the implementation of a patent system and including the following statement:-
「若シ右年限中ニ、同業相始度存候者ハ、株主ニ示談ヲ遂ゲ候様仕度、且又右株式御許ニ相成候上ハ、相当御運上ヲ株主ヨリ相納候様、被　仰付度存候。」- which means approximately :- "In the said period, (of monopoly), if there are people who want to start a similar business to the existing one, we want them to pursue a compromise with the monopoly holder, and moreover, after obtaining the monopoly holders permission we would like the monopoly holder to have them pay a suitable fee."

The word used for compromise was the same as that now used for out of court settlements. The idea that a patent system was something just to enable inventors to use the courts to monopolise markets was not contemplated. Instead, whilst inventors were to be offered the incentive of payment others were not to be denied access to the technology. The aim at the time was after all to spread, not restrict the flow of technology. This resembles a modern compulsory licence system. However, the idea of compromise and license payments in a situation which elsewhere might be thought of as cause for court action and injunctions has perhaps persisted in Japan where the patent system is perhaps more thought of as a means of defining the ownership of inventions and facilitating trade in technology rather than just a defensive means of monopolising inventions to encourage R&D.

PRESENT DAY CONCERNS

In the more recent past though there has been much comment both inside and outside Japan on the subject of IPRs and it is interesting to look at why this might be so in the case of Japan. There is an awareness that the IP climate might be changing from a means of collecting licensing revenue to a means of monopolising markets - implying higher license fees or no licenses at all . However the origin of such thinking lies not in Japan but the USA where recently the view of IPRs as a defensive means of monopolising inventions, albeit to encourage R&D, has gained the upper hand.

Firstly, until the early 1980's, the USA, had for some years been an anti-patent environment with the legal system biased against the enforcement of patents. About that time though it began to implement a number of pro-patent and other measures aimed at strengthening the effectiveness of the IPR system. These included the implementation of a special appeals court in 1982 (CAFC) and the strengthening of the powers of the International Trade Commission (ITC). Secondly, US thinking about its IPR system began to influence thinking at an international level and in particular forums such as GATT, and to lead countries in favour of increasing the presence and effectiveness of IPRs laws.

Thirdly, and partly as a result of these changes a wave of litigation began in the USA involving Intellectual Property and in particular patents which resulted in large damages and injunctions being awarded to patentees. One of the first of these cases involved Kodak paying Polaroid $985m damages and withdrawing from the instant photography market after infringing some of Polaroid's patents. More significant from a Japanese viewpoint were the number of cases involving Japanese companies paying large damages or agreeing to large license fees as a result of stricter enforcement of US patents. One particularly well publicised case was that where Honeywell was paid $127m by Minolta for unintentional infringement of autofocussing patents. The Japanese camera industry as a whole paid in excess of ¥36,000,000,000 to Honeywell in 1991. In another case involving optical fibres Sumitomo Electric paid Corning $25m and quit the US optical fibre market.

One complicating factor sometimes involved in such cases is that the patentee may no longer be involved directly in business concerned. Honeywell for example is not a camera maker. If there is no direct involvement in the industry concerned other than by licensing fewer opportunities exist for cross-licensing. As a result, litigation, injunctions and high royalty rates are much more likely. Another factor encouraging high royalties in such situations is the recent depression since extra licensing revenue presents a direct seemingly cost-free remedy for bad company results. This illustrates the fact that for a co-operative patent system to function participants must be actively involved in the same or at least complementary

technical fields. If they no longer are problems are more likely to follow.

However, such problems when they occur are probably short lived ones. Companies not involved in continuous development cannot dominate a technical field forever. Japanese companies are concerned about "Pioneering" inventions, the view of one IP manager of a large electronics company is that "Many US patents are for pioneer inventions - so we need to get good patents". However, often the only profitable years of a "Pioneering" patent's life are at the end of its life. The Honeywell patents mentioned above expired within two months of the court case. Consequently, exploitation of patents outside the context of a continuous development process is an extremely short term strategy. Honeywell is unlikely to dominate the camera industry in the future.

A fourth reason for the increase in profile of Intellectual Property has been its use in arguments about access to Japanese markets. However, these have come mainly from the USA whose patent system is unique in a number of ways so that the criticisms levelled at the Japanese system by some American commentators could equally be levelled at European systems. However, one good thing to come from such comments is a gradual growing together of the European, Japanese and US patent systems.

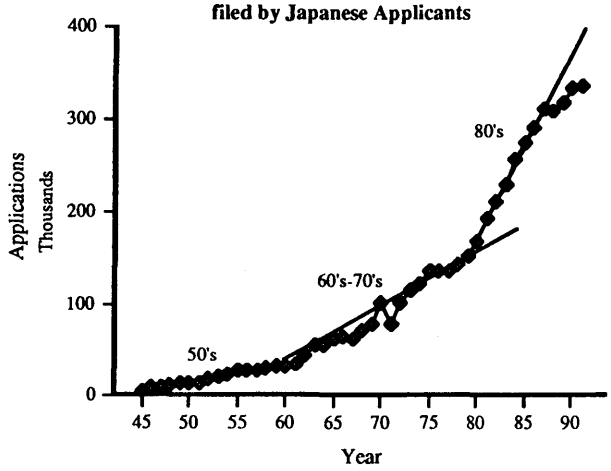
A fifth reason for increased interest in IPRs in Japan is that it is no longer just trying to catch up with the West. It now holds technology which is important to competitors now trying to catch up with it and seeking technology from Japan. Whilst this process began some years ago the technology now being sought is the most advanced available and the hardening of IPR systems now also works in Japans favour in regard to other countries seeking its technology. Some comments from managers in the Korean company Samsung quoted in the Financial Times (Jun 3 '93) recently are illustrative. "The Americans and Japanese are pushing us into a corner over patents. That's why we have to have our own new technologies." and "Someday we want to be eye to eye with a company like Sony but the key is bargaining for technology". At the same time Japanese patent managers are saying things such as "We need effective counter-patents" in order to protect their freedom of action in the event of an infringement action.

There is thus now a perceived need to obtain patents both to protect technology and as a bargaining counter in licensing negotiations and particularly for use in staving off litigation by trading access to technology. In short, both to keep up with the leaders, to become a leader and to stay one there is a perceived need for patents and for most companies the more the better.

PATENT APPLICATION NUMBERS

These recent pressures on companies have resulted in a change in the importance with which IP and particularly patents are viewed. However whilst Intellectual Property systems throughout the world are increasingly similar, ways of using them can still differ substantially. The most noticeable aspect of this difference is the very large number of Japanese patent applications that have been filed by Japanese companies over the past few years and also the increasing rate at which they are being filed.

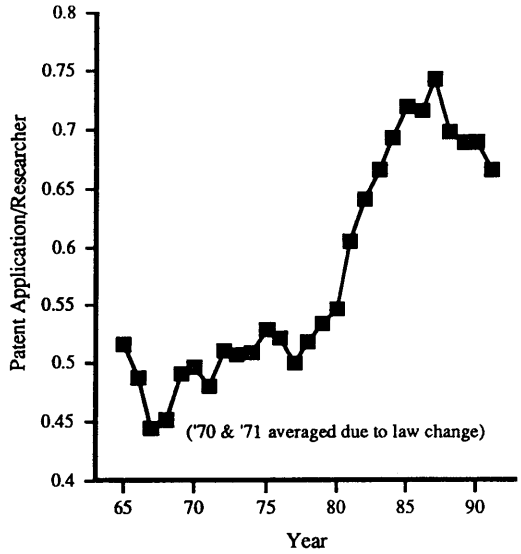
Fig.1 Japanese Patent Applications filed by Japanese Applicants



There was a substantial increase in the rate of filing during the 80's vis a vis the 60's & 70's rate and whilst there seems to be a slight slow down with the beginning of the 90's the rate is still rising (See Fig.1).

In 1885 there were three times as many US patents as UK or French ones, let alone Japanese ones. In 1989 Japanese applicants filed over three times as many Japanese patent applications each year as US applicants filed US ones.

Fig.2 Patent Applications per Researcher
Japanese Applications by Japanese Applicants



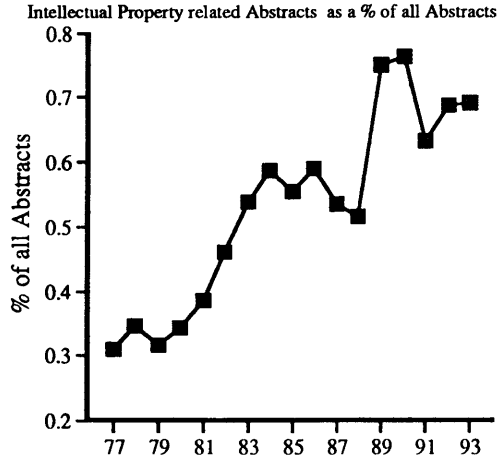
This has attracted comment, criticism and even concern from abroad. However, one is left asking the question whether this difference reflects different technological strengths or different ways of using the patent system. There obviously are some differences in R&D strengths among various fields. However, it is increasingly apparent that due to some of the factors described above, attitudes to patent applications within companies in Japan seem to differ from those of some other countries and also to have been undergoing changes.

One indicator which illustrates this latter point is that the number of Japanese patent applications filed per Japanese research worker has risen at a higher rate during the 80's than during the 60's /70's (See Fig.2) even though the number of researchers rose steadily. Even this is an understated picture since it includes all researchers in both government and industry research centres. This higher rate of increase of filing appears to have started around 1980.

Those who use patents as an indicator of R&D results might say that such changes in the level of patent application filings reflect the results of changing R&D investment and effectiveness and to a certain extent this may well be true. However, whilst a gradual increase in inventive capacity is to be expected, it seems unlikely that Japanese inventors suddenly became very much more inventive in the early 1980's and the sudden change in this rate of change suggests that the reason probably lies elsewhere.

It should be noted that we are not trying to explain the underlying causes of increasing filing rates caused by increased investment and efficiency, nor the fact that Japanese filing rates may be generally higher than they would be in other countries because of differences in laws and legal practice but the sudden additional increase in the rate of filings which has taken place since the 1980's. Some of the factors which obviously have had an influence have been mentioned. The timing of this change in the rate of filing patent applications for example coincides with the beginnings of the strengthening of US IP law leading up to the implementation of the U.S. CAFC in 1982. It also coincides with an increasing level of awareness of Intellectual Property in the business press as is shown by the relative incidence of IP related newspaper articles (Fig.3).

Fig.3 Nikkei Newspaper Database
Intellectual Property related Abstracts as a % of all Abstracts



It seems therefore that whilst more patents are being filed than before, the rate of invention may not have risen. This could happen, either by applying for patents previously thought unobtainable or by dividing inventions into but narrower applications. Unfortunately testing either of these hypotheses is extremely difficult but it does seem very likely that one or the other is going on.

The way in which patent filings are encouraged in Japanese R&D labs thus seems to lead to a greater

number of filings than would be the case in a corresponding European or US laboratory. At least in a typical European laboratory few incentives exist to file applications. In a Japanese laboratory considerable incentives may be involved. For a start financial incentives are usually offered for the filing of applications and on publication and grant of the patent application. These may be small but they nonetheless act as an indicator of the importance attached to filings. Other incentives take the form of understandings or encouragements for inventors to file a certain number of applications a month. Application numbers may also form management goals. Finally those retiring and those being promoted can be praised for amongst other things the number of patent applications they filed. Interviews with researchers turn up a wide range of such practices. The result of these indirect and direct incentives and encouragements is that, other things being equal, the average researcher in a Japanese R&D lab will feel considerably more obliged to file patents than his Western counterpart.

This obligation appears to have increased quite considerably since 1980. The present position of the Japanese Patent Office is that it is on the contrary trying to encourage Japanese companies to file fewer applications and to concentrate on quality rather than quantity which it has now been doing for several years. This in itself implies that not all applications filed in the past have been of a high inventive level.

It is more than likely that pressure on researchers to file applications and frequent requests for applications is resulting in inventions being split into smaller units by the inventors in order to increase the number of applications they file. The relatively low ratio of foreign to national filings compared to Western countries would seem to suggest this. In 1989 the ratio of foreign to national applications by nationals was 0.18 for Japan and 1.2 for the USA. Since foreign filings are considerably more expensive than initial national ones more care will be taken over their filing decisions. Furthermore, in making them it is sometimes possible to combine several national applications reducing the number of foreign filings, particularly if the initial national applications have been unduly multiplied.

In addition to all this, the number of patents held by a particular company, (for which league tables appear in the Japanese press,) is still an area of competition between companies. This can lead to a temptation to file more applications irrespective of the consequences on the quality of the applications filed. Numbers of patents are also even used in advertising. In a recent marketing brochure produced by Toyota, customers' attention was drawn to the fact that over 302 inventions had to be patented in creating one particular car.

Fundamentally the problem is that the easiest thing to measure about patents are their numbers and the most difficult thing their quality. Even measures of the frequency with which later patents mention earlier patents only measures their similarity to those later patents and not their effectiveness in a potential court action . There is much useful information that can be gleaned from patent statistics especially regarding inventors and the trajectory of technological development. However, there is also good cause to think that great care needs to be taken in making direct numerical comparisons between numbers of Japanese and other patent applications and particularly so since 1980.

DEFENSIVE AND COOPERATIVE ROLES

Over and above this observation though, the idea behind Japanese companies' attitudes to patent numbers seems to be that patents exist not as a purely defensive strategic implement but as a means of enabling a company to act relatively freely in the market place by having sufficient technological assets to trade its way out of any trouble and to obtain access to any technological assets it doesn't have.

In the past with there being little emphasis on the defensive use of patents within Japan and with the possibility of using market power to obtain licences, there has not been such an emphasis on the acquisition of large patent portfolios. However, over the past ten years there has been pressure from the USA to change the patent system from a means of encouraging invention and trade in technology into more of a defensive means of protecting ones inventions from exploitation by others. That patents have this role is undeniable and in fact those that protest that enforcement of patent rights is "unfair" are actually undermining the whole system, very probably to their own disadvantage. However, to view patents as purely a defensive means of protecting inventions is equally short-sighted.

One result of this view of IPRs though is that US companies are waking up to the fact that their intellectual property may be one of their most valuable assets and deserves more attention. As a result for some companies the issue of what to do with IPRs is not just a sideline but the note that the annual report ends on, This was the case for Honeywell in 1992 in the wake of the Minolta case when Chairman and CEO J.J.Renier said : - "Because technology is our franchise, aggressively protecting our technology and patents is critical to our ability to deliver long-term value to our stockholders". With such news items in the background it is not surprising that Japanese companies feel they cannot afford to neglect the issue.

THE NEED FOR A DYNAMIC FRAMEWORK

However considering patents as either merely a defensive means of monopolising inventions, or as just an information source and promoter of technological trade seems inadequate. Whilst the seemingly different roles of on the one hand encouraging and protecting R&D investment and on the other of promoting technology information exchange and co-operation have been emphasised by different countries at different times the two roles are not incompatible and in fact are complementary since each depends on the other to achieve its aims.

Another way of looking at the use of IPRs though is to include the dimension of time since we are usually concerned with technology flows and their promotion or prevention. This is particularly so in the case of Japan which now has substantial amounts of technology flowing both into and out of it. Extending this view one can say that any man-made barriers to technological progress and diffusion, such as patents, are like dams in the path of that technological flow. However like dams, whilst some last longer and are stronger than others, and some can be used to channel the technological flow this way and that, none can ultimately stop the flow of technology. Patents for example can be very effective barriers. However, at best they last only about 20 years and very often the technology they protect is shorter lived. Other and better ways may be found of achieving the same effect as the invention. Improvements on basic patents may in fact turn out to be the critical features and if these are not developed by the basic inventor, access may need to be traded by cross-licensing. Patents and other such IPRs must therefore be considered in a dynamic framework even though they form static barriers.

CONCLUSION

In Japan, society is perhaps more conducive to a co-operative and non-litigious approach to IPR issues since Japanese society, though highly competitive, is predominantly litigation and confrontation averse. In such a society patents serve a role as a definer of ownership and a means of facilitating licensing and disseminating information rather than as a litigious weapon. Japanese companies attitudes to IPRs and in particular their search for greater numbers of patents are led by the need to try and avoid potential blocks to technical progress represented by others defensive use of patents. There have been instances where these attitudes can be seen to have begun to change and begin to include the defensive use of patents but there is perhaps still some way to go before a state of affairs similar to that in the US or Europe is reached.

In contrast, in the West the effects of recession and the consequent pressure for extra revenue from licensing, a possible decline in cross-licensing opportunities as relative technological capabilities decline or certain technologies and businesses are abandoned and a need to exploit fully previous technological leadership, all contribute to a greater emphasis on protection and litigation. This results in a greater defensive use of patents assisted, particularly in the USA, by the relatively litigious nature of US society.

Japanese and Western companies' past strategies related to IP and IPRs have by and large been moulded by the respective societies and technological positions they were formed in. Even if cultural differences remain, as the trade in technology between them becomes more balanced, it will be necessary for companies to become skilled at exploiting both types of strategy and a study of both approaches will be valuable in doing this.

In doing so and in adapting to a future which includes balanced technological trade it will be necessary to avoid viewing IPRs purely as defensive mechanisms to restrain competition or purely as counters for trading. Instead adopting a dynamic view formed from these two approaches for use within a competitive environment should show that patents are an essential component in the promotion of trade in technology and technological progress to the benefit of all.