Chapter 7

INTELLECTUAL PROPERTY POLICIES AND STRATEGIES

Chapter Contents:

7.1 Chapter outline
7.2 Advantages and disadvantages of patenting
7.2.1 Advantages of patenting
7.2.2 Disadvantages of patenting
7.2.3 Defensive and offensive advantages
7.3 IP policies
7.4 Patent strategies
7.4.1 Patent strategies in general
7.4.1.1 Patenting in technology space
7.4.1.2 Patenting over time
7.4.2 Patent strategies in Japan
7.4.2.1 Evolution of strategy
7.4.2.2 Strategic patents
7.4.3 General response strategies when confronting a blocking or strategic patent
7.4.4 Litigation strategies
7.4.5 Summary of technology and patent strategies
7.5 Secrecy strategies
7.5.1 General secrecy strategies
7.5.2 Secrecy and prophylaxis as alternatives to patents
7.6 Trademark strategies
7.6.1 Trademarks in general
7.6.2 Trademark strategies in Japan
7.7 Multi-protection and total IP strategies
7.8 Summary and conclusions

7.1 Chapter outline

Chapter 6 highlighted the general importance of IP and patenting for the commercialization of new technologies. In this chapter we will elaborate on the advantages and disadvantages of patents in general and then consider policies and strategies for patenting, as well as for trade secrets and trademarks. Finally, total IP strategies including the concept of combining the various IPRs into a multi-protection system will be advocated.

7.2 Advantages and disadvantages of patenting

7.2.1 Advantages of patenting

Traditionally, the primary motive for a company to apply for a patent is to increase the economic returns of its R&D efforts by ensuring restricted but enforceable monopoly rights, that is rights to exclude others from the protected technology. This is in concordance with the regulator's motive. However there are a number of other important motives for patenting, as described in Chapter 3. Table 7.1 provides a list of ten common patenting motives or advantages encountered in literature and in the companies interviewed, which were compiled for the questionnaire survey. Table 7.1 also shows the relative importance of each motive, as perceived by each sector, from the sample of large Japanese corporations. Protection and bargaining advantages of patents constitute two broad categories of external advantages, corresponding to items 1 – 3 and 4 – 7 respectively in Table 7.1, with corporate image improvement as a third category of external advantages. A fourth category is internal advantages of patents, corresponding to items 9 – 10.

Technology protection

As seen from the table, the protection of product technology offered by patents is the single most important advantage regardless of industrial sector. This is as expected. For process technology, the protection advantage ranks third to highest, although the difference from

second most important advantage is not significant.[1] The high ranking of patents as a source of retaliatory power is noteworthy. This defensive aspect of patents was also emphasized in the interviews.

Retaliatory power and patent arms race

As each process or product becomes increasingly linked to several patents and each patent to several processes or products (although the latter perhaps to a lesser extent, see Chapter 5), companies become increasingly interdependent on each other's patent portfolios, which in turn puts a premium on second-order deterrence and relative bargaining power in general. Second-order deterrence occurs as a result of an imitator or potential infringer holding patent rights relevant to some business area critical to the innovator or original patent right holder. Such a business area may not even be an area in which the alleged infringer has a business, but only has patent power for possible retaliation. Thus retaliatory power through a broad patent portfolio held by a competitor may weaken the protective advantage of single patents held by an innovator. Similarly an innovator can strengthen deterrence with a broad patent portfolio. Thus the protective advantages of patenting become increasingly dependent upon large patent portfolios and one attains a kind of arms race situation. At the same time, the vulnerability of companies to infringement accusations increases with their diversity of businesses and technologies. This opens up possibilities for inventors and small firms, with perhaps just one patent and without any vulnerable manufacturing, to act as "patent extortionists" by accusing large firms of infringement and escaping their retaliatory power.

[1] Appendix D gives the approximate size for a difference to be significant.

Table 7.1 Advantages and disadvantages of patenting in large Japanese corporations[1)]

(Scale: No importance = 0, 1, 2, 3, 4 = Of major importance; Tend = Tendency 1987-1992: Decreasing = -1, 0,+1=Increasing)

(Code) Question	Chemical (n=9) Tend.	Electrical (n=10) Tend.	Mechanical (n=5) Tend.	Total (n=24) Tend.
(F8) How important are the possible **advantages** that patenting may give your company?				
I. External advantages				
a) For protection				
1. Protecting own product technology	3.89 (0.5)	3.60 (0.6)	4.00 (1.0)	3.79 (0.7)
2. Protecting own process technology	3.00 (0.3)	3.30 (0.4)	3.40 (1.0)	3.21 (0.5)
3. Creating retaliatory power against competitors	3.11 (0.4)	3.40 (0.6)	3.20 (0.8)	3.25 (0.6)
b) For bargaining				
4. Giving better possibilities of selling licenses	2.89 (0.5)	3.10 (0.6)	2.40 (0.6)	2.88 (0.6)
5. Giving better possibilities of accessing technology through cross-licensing	3.00 (0.5)	3.30 (0.6)	2.60 (0.8)	3.04 (0.6)
6. Facilitating R&D cooperation with others	2.44 (0.3)	2.40 (0.3)	2.00 (0.4)	2.33 (0.3)
7, Giving a better bargaining position in standard-setting	2.22 (0.1)	2.90 (0.5)	2.00 (0.4)	2.46 (0.4)
c) For image				
8. Improving the corporate image	2.11 (0.0)	2.70 (0.3)	2.20 (0.2)	2.38 (0.2)
II. Internal advantages				
9. Providing motivation for employees to invent	2.56 (0.3)	2.90 (0.5)	2.40 (0.2)	2.67 (0.4)
10. Providing a measure of R&D productivity	2.11 (0.1)	2.50 (0.5)	2.40 (0.6)	2.33 (0.4)
(F9) How important are the possible **disadvantages** that your patenting may give your company?				
Disclosing of technical information	2.25 (0.1)	1.70 (-0.1)	1.20 (0.0)	1.78 (0.0)
Incurring direct costs of patenting	2.38 (0.3)	1.80 (0.3)	1.40 (0.0)	1.91 (0.3)

Note:
1) The highest and lowest values for each industry are overlined and underlined respectively.

Licensing out

The connections between patents, products and processes increase in general due to the emergence of generic technologies ("multi-product" technologies) as well as "mul-tech" products and processes (see Chapters 4, 5 and 6). As a consequence, companies tend to become technologically dependent upon each other, especially diversified firms operating in complex technologies.[2] This increasingly makes patents into bargaining chips.[3]

Licensing out is a bargaining situation where patents have always played a role. Although they are not necessary for selling licenses, they are most helpful. This is a traditional and intended advantage of patents. What has happened, as indicated in interviews, is that companies have increasingly taken out patents outside their immediate product areas and use them for licensing business. Traditionally, companies have sold licenses for their existing product and process technologies and for certain geographic markets or applications where the company has not found it possible or worthwhile to manufacture and/or sell products directly. However with more exploratory R&D in more generic technologies and with more active patenting and technology intelligence, the opportunities for more "stand-alone" licensing businesses has increased.

Cross-licensing

The advantage of patents in accessing technology through cross-licensing is also noteworthy. (See further below.) Here one should also note that the difficulties or high cost in accessing technology ranked high among perceived limitations to profit from innovation, as shown in Table 6.6.

---

[2] In the extreme the technological interdependencies between products and between companies may result in "hold-up" situations in which individual companies have bargaining power to hold up further developments for some time. Thus the IPR system may counter its purpose when such interdependencies result in bargaining breakdown. Instances of this have always occurred, but they seem to increase, e.g. in multi-media.

[3] For some readings on this, see von Hippel (1982, p. 102), Winter (1989, p.54) and Grindley and Teece (1997).

Cooperative R&D

Cooperative R&D offers another type of bargaining situation in which patents are advantageous, both for identifying and attracting R&D partners and for negotiating with them. As cooperative R&D has increased in industry, as discussed in Chapter 6, the advantage of patents has become more pronounced in that context. Still, that advantage ranks at the bottom compared to other advantages, as seen from Table 7.1.

Standard setting

Standard setting provides yet another but fairly new type of bargaining situation in which patents are often important. The importance of patents in connection with standard setting rapidly increased during the 1980s in the telecommunication, computer and consumer electronics industries among others. As described in Section 6.6 standard setting became more economically important and more involved with new technologies, often earlier in the innovation processes and at a more detailed level. By and large this has only recently become a recognized strategic role for patents (see also Chapter 5 on trends). However, although more standard setting involves patents, far from all patents involve standard-setting and thus the ranking in Table 7.1 is not as high.

Corporate image

Improving the corporate image was a low-ranked advantage of patents, but still clearly recognized, as indicated in the interviews and also by the attention paid to the ranking of companies based on their patenting activities, such as the ranking of the top ten patentors in the US (see Chapter 1). The public image of the company as being technologically progressive is generally cultivated among Japanese large companies, not least as a means for attracting graduate engineering students.

Motivation and productivity

As seen from Table 7.1 the internal advantages of patenting ranked low across industries. The advantage of patents as an indicator of R&D productivity was especially ranked low, which is interesting in light of the frequent use by economists of patent statistics for productivity analysis, as described in Chapter 9. The use of patents for internal reward schemes and motivation in Japanese companies is frequently acknowledged in the literature (see Chapters 5 and 6). It was also acknowledged by the companies interviewed, but as Table 7.1 shows it is not of major importance relative to other advantages. Thus the internal advantages of patents as 'carrots' and 'yardsticks' are on the whole of less importance.

7.2.2 Disadvantages of patenting

Turning to the perceived disadvantages of patents, it is first interesting to note that in total they are ranked significantly lower in Table 7.1 than any of the advantages, which is one way to explain the high levels of patenting in Japanese companies. This holds particularly true for the electrical and mechanical companies. Second, one may note that disclosure is less of a disadvantage in all three industries than the direct costs of patenting, although the difference is not significant. Whether this is an indication of the inordinately high direct costs associated with patenting is left as an open question here.

Another observation is that industry differences in the perceived advantages and disadvantages of patents are not strikingly large on the whole, although significant ones exist in the set of bargaining advantages. Chemical companies seem to be significantly more sensitive to the disadvantages than companies in other industries. The industry differences regarding perceptions of advantages of patents (as shown in Table 7.1) as well as regarding perceptions of limitations of patents (as shown in Table 6.7) are fairly small compared to the significant industry variations regarding perceptions of the role of patents relative to other means for appropriating benefits from innovation (as shown in Table 6.4). If nothing else, this should serve as a reminder of the limitations of perceptual data and the difficulties in interpreting various differences among them.

7.2.3 Defensive and offensive advantages

There are of course other ways to formulate and classify advantages of patents and rationales for their use.[4] One way is to look at defensive versus offensive motives behind patenting. It could be said that the single most important motive behind patenting from a company's point of view is to block competitors in either or both of two senses, the first being offensive and the second defensive (cf. Chapter 3):

1. To block competitors from using a technology and in so doing increase their costs and time for imitation and/or inventing around the patent, which increases their willingness to pay for a license, or stay away from a market (thereby ensuring "market freedom").

2. To block the competitors from blocking oneself in a similar way, and thereby ensure "design freedom").

Among engineers in many companies in the West, the traditional motive for patenting has been to protect significant inventions for one's own business, while not engaging primarily in the patenting of minor inventions or patenting outside one's own business area. In this sense, patenting has traditionally been used primarily for directly protecting one's own businesses. However there has been a gradual shift of emphasis from this more "gentlemanly" behaviour towards other more offensive purposes and aggressive action, where patents are used more strategically as both a competitive weapon and an economic asset.[5] This is also reflected in the way patents are being used in various bargaining situations.

---

[4] Cf. Rahn (1983, p. 489) who cites the following "secondary" functions of patents: (1) attack; (2) hedge; (3) motivation; (4) reputation; (5) credit. Cf. also with Table 3.1, which also gives motives for having a patent system as a whole in society, in contrast to a company's motives behind using it in various specific situations.

[5]The shift towards more aggressive action at business level is not necessarily beneficial for technical and economic development on the whole. On the contrary, it tends to produce hold-up situations and raise transaction costs (see further Chapter 10). The notion of excessive competition has also increasingly gained ground in this context.

As a reminder that there have been Western companies that historically have practised modern, less “gentlemanly”, patenting strategies, the following deserves to be cited from a large US company in the 1930s:

> In taking out patents we have three main purposes – (a) to cover actual machines which we are putting out, to prevent duplication of them… (b) to block the development of machines which might be constructed by others for the same purpose as our machines, using alternative means… (c) to secure patents on possible improvements of competing machines, so as to ‘fence in’ those and prevent their reaching an improved stage.
>
> (As cited in Folk 1942, p. 39.)

7.3 IP policies

Since most of the Japanese corporations in the sample had a written, corporate-wide patent policy, in contrast to many Western firms, a general note about the rationale of policies is in order. A policy is a set of statements to be used as a general guideline for operations in an area. The common distinction among policies, objectives and strategies is that strategies refer to specific courses of action taken over time, perceived as instrumental in reaching certain objectives, while being constrained by policies. A policy therefore simplifies decision-making and action taking by narrowing down options and focusing attention and efforts in the organization. Such a policy is typically fairly long-lived and not specified in terms of time. A (business) policy can express basic business ideas, missions and philosophies for a company as well as being educational. There are many views on how policies should ideally look and how they should be conceived. For example, a policy should strike a balance between the very general and the very specific.

A policy pertains to a certain area of operations. With many interdependent policy areas, a need for policy coordination arises. Policies also evolve over time, mostly as a result of complex policy-making processes, especially in large organizations.

Regarding patenting and IP in general, policies have evolved in stages corresponding to the increasing importance and attention attached to IPRs in companies. Table 7.2 gives one illustration. These stages can be compared with the stages in the evolution of corporate patent organizations as shown in Table 8.5. As shown, both IP policies and IP organizations have evolved so as to become more comprehensive, strategic and integrated with business management and technology management (including licensing in/out).

As IP policies become increasingly elaborated in companies, more policy issues come to the forefront. For most policy areas in a large company, especially when uncertainty is high and options are many, the demand for policies exceeds the supply from policy-makers. It is then useful to have a "living policy" in the sense that there is always one set of policy issues pending, awaiting a policy decision, and another set of policies already in place. As some written policies, as well as rules and guidelines in general, may outlive their usefulness over the course of time, it may also be beneficial to make clear which policies have become obsolete.

Table 7.2 Stages in the evolution of corporate IP policies

Stage	Characteristics of IP policies
1	• IP ignored
2	• Rewards for patents
	• Intellectual property issues left to the legal department
3	• Selective patenting based on the evaluation of pros and cons of disclosure
	• Licensing in if needed and licensing out if requested
	• Trade secrets defended in court
	• Review of patent positions
4	• Intellectual property opportunities are part of business strategy, project selection and project management criteria
	• In-licensing to maintain focus, speed, external point of comparison, and learning opportunities
	• Technical staff rotate through intellectual property department
	• Out-licensing based on business and technical assessments
	• Comprehensive trade secret policies

Source: Based on Adler et al. (1992, p. 27). Permission to use the table contents has been provided by Sloan Management Review, for a fee paid to the journal.

There are many policy areas and policy issues pertaining to patenting and IP, such as:

- Coordination of patenting across business divisions
- Coordination of patenting with R&D management
- Licensing policies
- Patent-related reward schemes for employees
- When, where, and how to file patent applications (timing, countries, routes, etc.)
- Patent mapping, clearance and review procedures
- Education and training
- Outsourcing of patent operations
- IP handling in external R&D cooperations, joint ventures, acquisitions and spin-offs, etc.
- Patent handling in standard-setting
- Infringement and litigation

When a policy area such as patenting suddenly receives extra attention, there is a tendency to propose and formulate policies that are too numerous and too specific, thus failing to distinguish a policy from a mere manual with operative instructions.

Many Western companies have not yet reached a stage with clearly formulated IP policies, therefore a patent and licensing policy for the Anonymous Business Corporation (here ABC) is presented as follows, briefly presented for the sake of illustration:[6]

General: Each ABC manager with a comprehensive business responsibility is accountable for the build-up and exploitation of ABC's intellectual capital, including its IPRs. Patenting is to be considered a strategic issue, implying e.g. its presence in strategic plans and in strategy-meeting agendas. The business economic aspects of patents should be clearly expressed.

Specific: ABC's current policies to be followed as a rule until further notice, allowing for exceptions and changes as decided by the Corporate IP Board, are as follows:

[6] For an example of IP policy in a Western company (Union Carbide), see O'Brien (1986).

1) Multiple IP protection must be used for each business segment, i.e. whenever possible combining patents, secrets, trademarks, designs, copyrights and utility models to strengthen overall protection.

2) A strategic patent position or the equivalent competitive advantage must be ensured in each core business.

3) Before entering a new technology and/or a new business, patent clearance must be undertaken.

4) If patent protection has been achieved for some parts of the business, vigorous follow-up patenting or patent acquisitions must be ensured.

5) As a main rule until further notice, allowing for exceptions, patents should be applied for whenever possible and at an early stage, starting in a suitable country with international applications covering major industrial countries and markets of current interest to ABC, as well as markets of importance to competitors and markets which can be expected to become of commercial interest to ABC within 10 years.

6) “Speed to patent” must be ensured so that speed to market is not jeopardized.

7) Technical and commercial collaborations with lead users, lead suppliers, competitors, other companies, universities, independent inventors and other parties are important and should be encouraged. Hereby ABC should strive to become the lead patentor in all collaborations especially with users, universities, consultants and inventors. In collaborations with competitors and suppliers, ABC can accept shared patent right agreements, if they are compatible with business goals and licensing strategies.

8) Increase patenting activities in the USA in particular, and file more priority applications in the USA as well.

9) Prophylactic publishing[7] can be used in specially motivated cases, but never as a substitute for patents.

10) Offensive patenting for blocking others outside of ABC's own business on a systematic basis should currently be avoided.

11) ABC has an open licensing policy, subject to proper royalty determination reflecting the commercial and strategic value of its patents and intellectual capital.

12) ABC should actively search for licensing and cross-licensing agreements with other parties.

13) Ample caution must be exercised in dealing with intellectual property related to de facto standards.

14) Infringement detection and litigious action regarding all IPRs should be pro-actively pursued with a long-term economic view.

15) ABC respects the IPRs of other companies as legally recognized in their respective countries, and refrains from all kinds of wilful infringements.

It should be noted here that policy statements could as well be formulated regarding desirable emphasis or de-emphasis on any of the commercialization strategies in Table 6.4, or on any of the advantages or disadvantages of patents in Table 7.1 – linked to the company and business situation in question. Similarly, secrecy and intelligence policies could be formulated in terms related to Table 7.5.

[7] The term 'prophylactic publishing' is commonly used to refer to disclosing technical information about an invention with the purpose of preventing prospective patentors to fulfill the novelty requirement.

7.4 Patent strategies

7.4.1 Patent strategies in general

The literature in economics on management of patent strategies is generally very thin, as was the case for technology strategies until that area grew popular in the 1980s. The popularity of the strategy concept has also started to grow in the IP community. Several works on IP strategy from mainly a legal perspective have appeared, see e.g. Anawalt and Enayati (1997) and Glazier (1995). A more management oriented work is presented by Momberg and Ashton (1989). Manuals and textbooks (as well as licensing strategies) for patenting, often discuss patent strategies in terms of when (in the R&D process), where (choice of countries), why and how to patent. Patenting strategies described by statistical indicators of patenting and the patent portfolios of firms and related to their economic performance have been studied by Ernst (1995).Patent strategies in Japanese industry have been studied by Rahn (1994). Various business history studies also account for patent strategies used in the evolution of an industry or a company. A recent example from the electronics industry is given in Takahashi (1994).

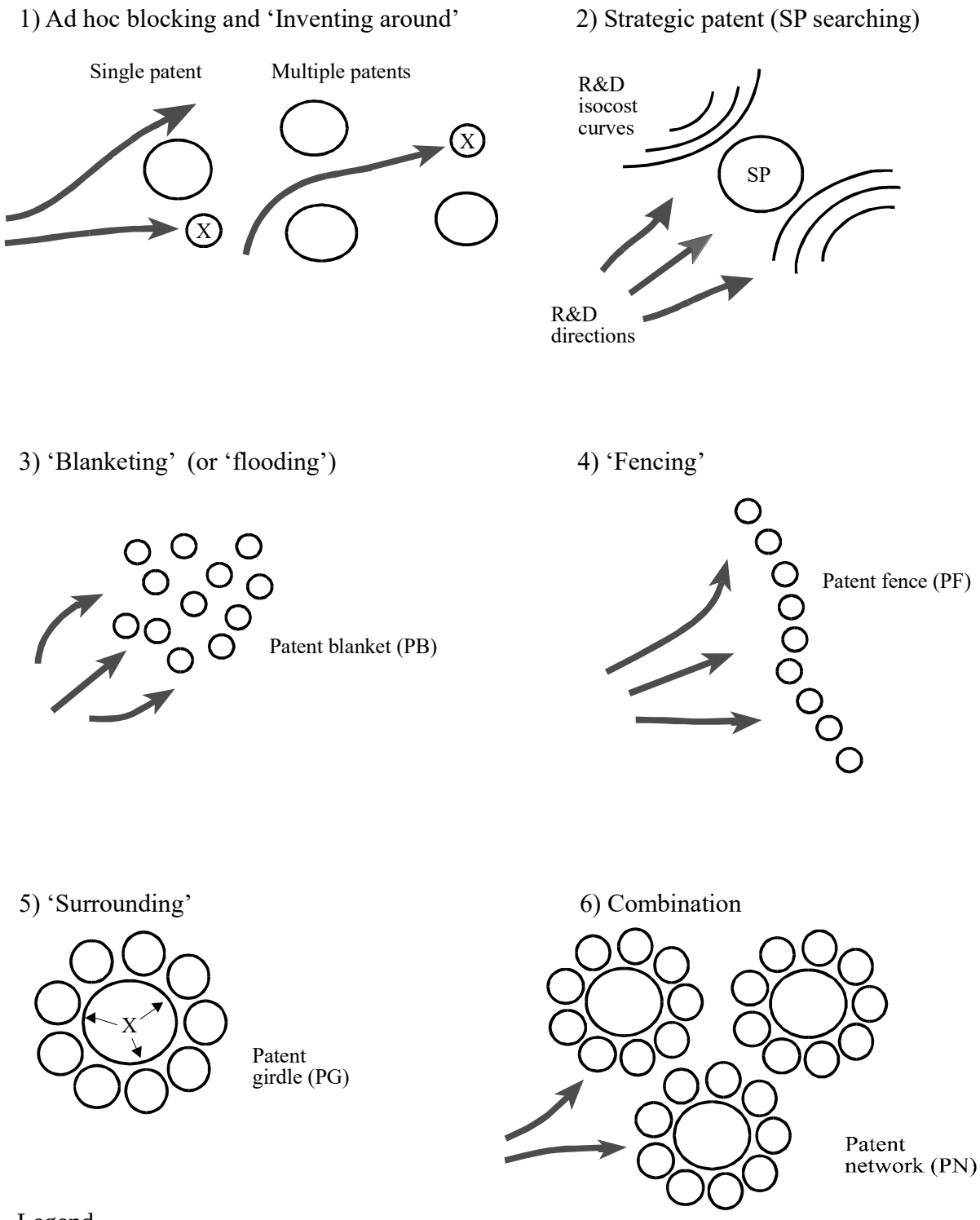
In these types of works, various ways are used to characterize and classify patents and patenting strategies. Below, a somewhat novel way to represent these strategies, based on the concept of a technology space, the product lift cycle and the technology life cycle, will be used. Patent strategies could also be defined at the level of individual patents or at the level of the patent portfolio for a business or a company as a whole. Here, patent strategies will be discussed at the portfolio level. Patent strategies are also put into the context of other strategies such as technology strategies as described in Chapters 4 and 6.

7.4.1.1 Patenting in technology space

In order to illustrate various patent strategies it is useful to think abstractly of a general technology space in terms of a technological terrain or technology landscape, which is gradually explored by R&D processes. Parts of the terrain with (roughly) similar R&D difficulties in terms of costs could be delineated by R&D isocost curves, in principle

resembling altitude curves. Various maps of this technology landscape could be constructed, revised and improved as R&D proceeds. (See further Chapter 9.) A patent could be represented on such maps by a circle enclosing the technical solutions in the claims of the patent. The size of the circle could also be used to schematically indicate the scope of the patent. With this type of map a number of generic patent strategies could be illustrated as in Figure 7.a, based on the configuration of multiple patents. Of course, configurations in reality are not as “neat” as in the figure, which aims at illustrating different cases in principle. Moreover, patent strategies can obviously not solely rely on configuration considerations, but must also take into account the actual qualities of individual patents and patent claims as well as the company situation in general (whether the company is leading or catching-up etc.).

Figure 7.1 Various patent strategies in technology space



Ad hoc blocking and "inventing around"

Typically as a result of ad hoc efforts, small resources and/or disregard of small patents and portfolio effects, one or a few patents are used in this case to protect an innovation in a special application. The possibilities to invent around are many, and R&D costs and time for inventing around are low.

Strategic patent searching

A single patent with a large blocking power is (somewhat ambiguously) called a strategic patent. In other words, strategic patents have deterringly high or insurmountable invent-around costs and are therefore necessary for doing business within a specific product area.

"Blanketing" and "flooding"

In the case of blanketing, efforts are made to turn an area into a jungle or a minefield of patents, e.g. "mining" or "bombing" every step in a manufacturing process with patents, more or less systematically.[8] Flooding refers to a less structured way of taking out multiple patents, major as well as minor, in a field and may result from patenting-reward schemes as much as from a conscious strategy. Blanketing and flooding may be used as a strategy in emerging technologies when uncertainty is high regarding which R&D directions are fruitful or in situations with uncertainty about the economic importance of the scope of a patent.

Typically, blanketing and flooding make use of possibilities to take out patents on minor inventions from a technical point of view. As mentioned in Chapter 5.8.1, such minor patents are often frowned on by engineers and inventors and sometimes referred to as "petty patents", "junk patents" or "nuisance patents". However, such judgements are surprisingly often based on the technical characteristics rather than the possible economic importance of the patent. Minor patents can be used as nuisance patents to slow down competitors. Minor patents may also be useful in building the bargaining power of a patent portfolio.

[8] Various military terms and analogies are used among patent practitioners.

Nevertheless, it must be kept in mind that not all patents are economically motivated and that a blanketing or flooding strategy is only economical up to a point.

"Fencing"

This refers to the situation where a series of patents, ordered in some way, block certain lines or directions of R&D, e.g. a range of variants of a chemical sub-process, molecular design, geometric shape, temperature conditions or pressure conditions. Fencing is typically used for a range of possibly quite different technical solutions for achieving a similar functional result. (See the citation in the end of Section 7.2 above, which also shows that "fencing" is an old strategy, which actually was described already by Alfred Marshall[9]).

"Surrounding"

Typically this is the case when an important central patent of some kind, especially a strategic patent, can be fenced in or surrounded by other patents, which are individually less important but collectively block the effective commercial use of the central patent, even after its expiration. Often, surrounding patents pertain to different applications of a basic invention. Surrounding could be used to get access to the surrounded technology, e.g. through cross-licensing. This is an important possibility if a competitor gets a strategic patent. Other competitors can then hope to win a second patent race for application patents that could possibly block the exploitation of the strategic patent, which in turn would create possibilities for cross-licensing. (For an alleged example of this, see Spero 1990.)

Combination into patent networks

This refers to the building of a patent portfolio in which patents of various kinds and configurations are consciously used to strengthen overall protection and bargaining power.

---

[9] See Marshall (1891, p. 520). See also Scherer (1980, p. 451) which describes how DuPont fenced in their invention of nylon by patenting a range of molecular variations of polymers with potentially similar properties as nylon. In this way, fencing in several dimensions may come close to systematic blanketing.

7.4.1.2 Patenting over time

The patenting patterns in Figure 7.1 are snapshots of the result from patenting activities over time, involving several races for patents of various types – product patents, process patents, application patents etc.. Different patenting strategies over time can be considered as well. Two principal types of diagrams could be used, one showing the development over time of some economic variable (e.g. cash flow) and one showing some technology-related variable (typically of technical performance).[10] A simple illustration of a cash-flow diagram is shown in Figures 7.2–3. Here two alternative patent strategies are illustrated in connection with the cash flow over the product life cycle (PLC) of one product generation. In the first case, called sporadic patenting, just a few patents at key steps in the R&D process are taken out. In the second case a conscious effort is made to build up a rich patent portfolio, and patents are applied for more or less continuously in the R&D process. This second strategy can be called continuous or follow-up patenting and results in the build-up of a patent portfolio for the product business in question. The portfolio is composed of a number of product patents, application patents, production process patents etc., reflecting the shifts of emphasis in R&D work in the different PLC stages. This is more costly and discloses more information as well as it requires more astute management of patent maintenance and expiration, but gives a broader and more long-lasting protection while reducing the risk for the innovating company to be foreclosed by a fast competitor. It should also be noted that continuous patenting is somewhat along the same lines as continuous improvement or "Kaizen." However continuous patenting is not only applicable to continuous improvements of a product. In developing a product of a systems nature, for example a power transmission system, many technologies are involved with patentable advances on many fronts as R&D proceeds, while the final product may represent a radical step in increased overall technical performance.

---

[10] Several technical performance variables could of course be considered, as well as several economic variables. Some technical performance parameters directly affect customer utilities or customer value, while others pertain only to the "inner" working of the product or process. The latter type of technical parameters may be called design variables (or internal performance variables or configuration characteristics). See also Chapter 9.

Figures 7.2–3 illustrate two patenting strategies of a firm in the context of one product generation. Figure 7.4 then illustrates the patenting behaviour of different competing companies A, B and C in two competing product types or two subsequent product generations. These are predicated on two technology bases (sets of technologies), denoted I and II, with partly competing (substituting), partly complementary technologies. The shift from one product generation to the other thus involves a transition to new technologies, perhaps involving a radical innovation. The technical performance of the two product generations or types often improves over time, as shown by the schematic S-curves in Figure 7.4. An example would be digital technology superseding analogue in mobile telephony. Company B holds a major patent for technology base I and concentrates its R&D on further improvements in that area[11], while company A builds patent positions in both technology bases. Company C is a new entrant in the area and focuses only on technology base II. Thus the competing companies have different patent shares in the different technologies for the competing product generations or product types, just as they may have different market shares. Typically, established firms with high market and patent shares for an established product generation are slow to build up strategic patent positions in a new competing technology, thereby risking the loss of market share in the new product generation. At the same time, new innovative firms get an opportunity to enter the market, which has often been the case historically in connection with a radical innovation or technology transition (see e.g. Schon 1965 and Utterback 1994).

[11] Cf. the so-called “sailing effect”, which refers to improvements in late stages of a maturing technology. These improvements are mainly made in response to a perceived threat of a new technology. The expression was derived from the performance of sailing ships, which was boosted in response to the arrival of ships powered by steam engines (see Graham 1956).

Figure 7.2 Sporadic patenting in the product business development process

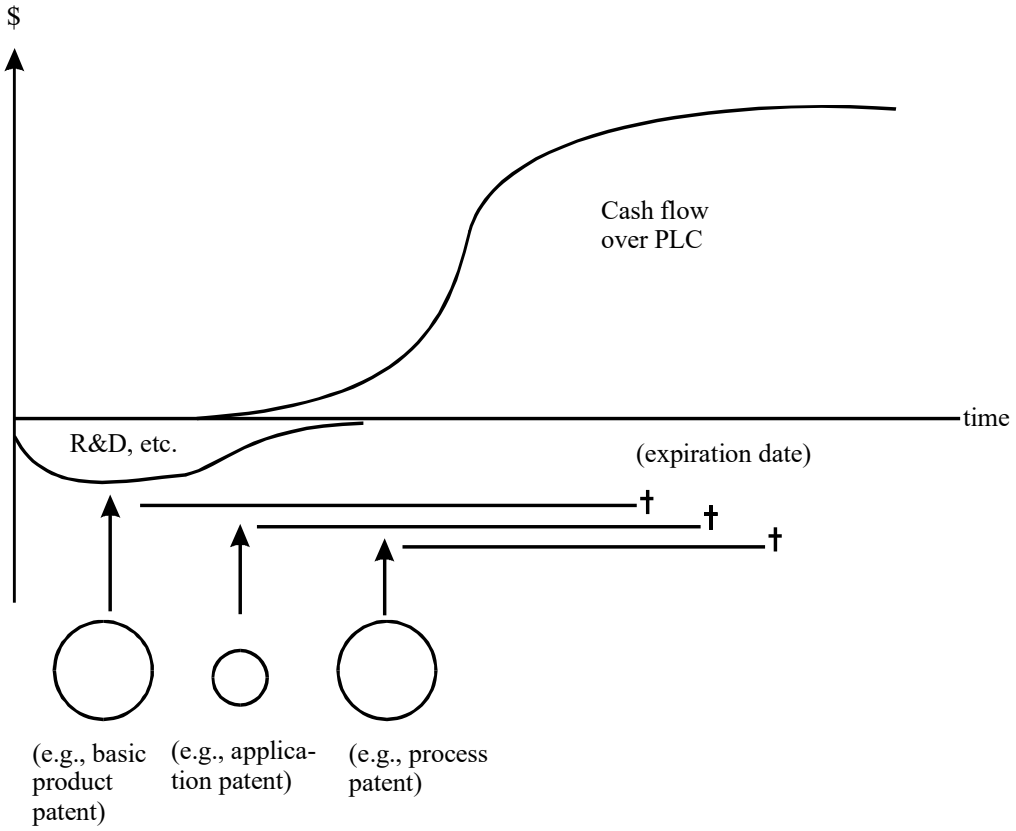


Figure 7.3 Continuous patenting and build-up of patent portfolio

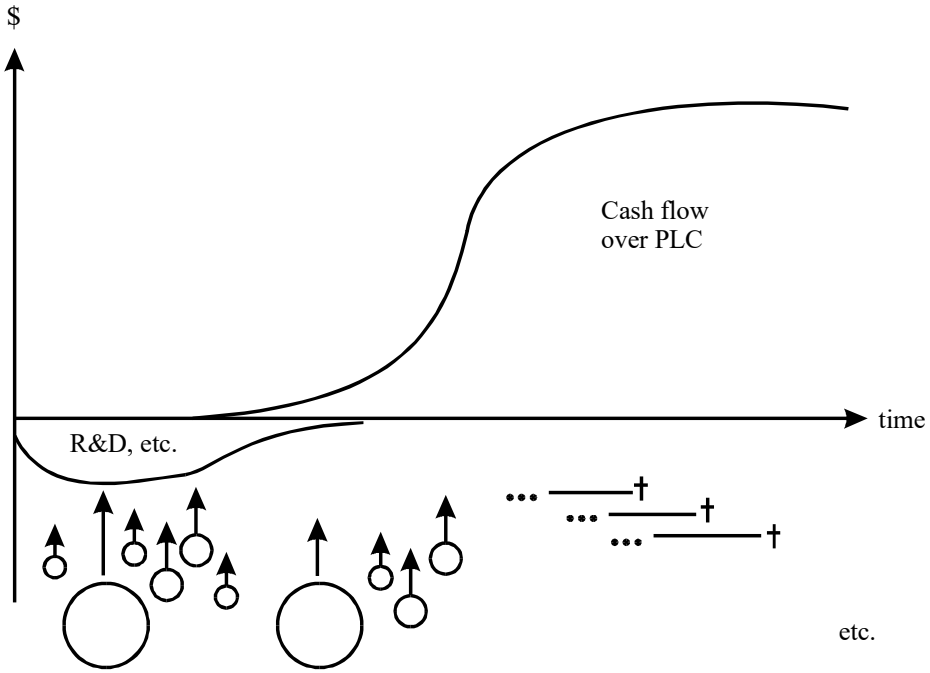
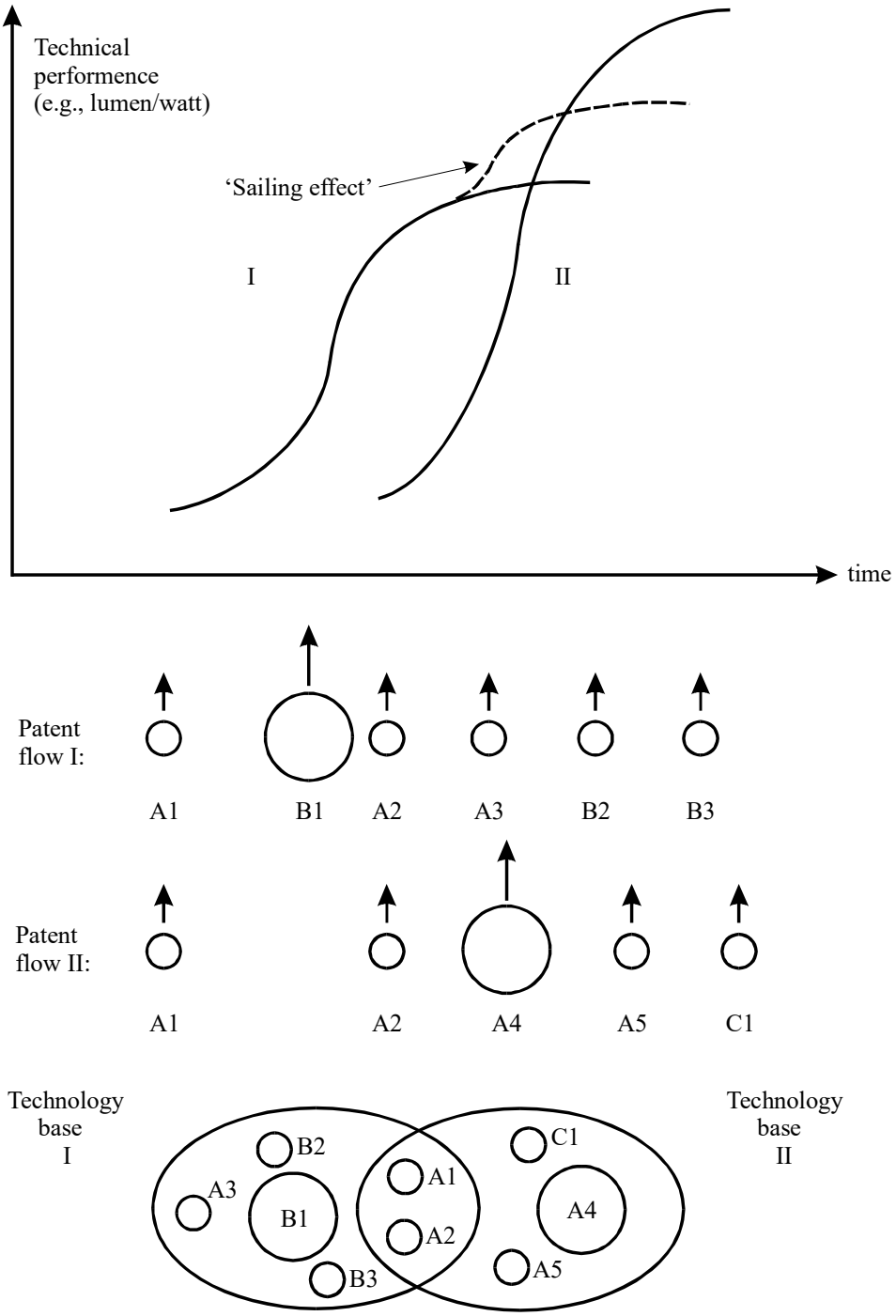


Figure 7.4 Patenting strategies in the case of competing product generations



Legend: A1, B2 etc = Company A's first patent in the area, Company B's second patent in the area etc.

I, II = Two technical performance curves, corresponding to technology base I and II, represented by two overlapping sets of technologies, being partly protected in technology space by two patent flows over time. The <sailing effect= refers to improvements in old technical performance in response to threats from new technologies.

Circles denote scope of patents

Arrows denote patent granting dates

R&D investment strategies

Naturally, patenting behaviours or strategies are linked to the R&D strategies of the competing companies. For a single product generation, R&D strategies typically shift along the PLC from emphasizing product R&D to process R&D and application developments. In connection with a product generation shift involving a technology transition, general R&D investment strategies and responses are:

1) Investing in improvements of the old technology in the existing product generation (yielding the "sailing effect")
2) Investing in a new product generation based on some version of the new technology.
3) Investing in a hybrid generation, based in parts on both the old and the new technology, as a "gap filler".
4) Introducing the new technology in an evolutionary manner in the existing generation (e.g. piece-meal replacement of transistors with integrated circuits).
5) Abandoning the emerging technology and jumping to the next major new technology. (This is a risky strategy.)
6) Doing nothing (wait and see).

When and how to enter the new technology (if at all) and when and how to exit the old technology are thus crucial timing decisions for technology management. It is also easy to fall behind because of a failure to build up patent positions in the emerging technology, as mentioned. Thus there are not only races for product, process and application patent for a particular type or generation of a product, but for several competing products and technologies. The old saying that in patenting the winner takes all refers to a single patent race, while in a typical technology-based business there is a multitude of patent races. It should finally be noted that since patenting is a reflection of R&D strategies, at least to some

extent, patent information is useful to outsiders in tracking down these strategies. R&D strategies can then be somewhat disguised by patent flooding or decoy patenting (see further Chapter 9).

7.4.2 Patent strategies in Japan

Several of the patenting behaviours and strategies described above were found in the Japanese corporations, mainly through interviews and case studies. In summary they were:

1. Patent blanketing (patent invasion of new technologies), flooding, fencing and surrounding.
2. Building of patent portfolios and patent networks.
3. Early-stage patenting, and continuous patenting, also of minor advances and variations (“Patent everything as soon as possible”).
4. Increased emphasis on the quality of patents (e.g. search for “strategic patents”).
5. Patenting also for licensing out, including accessing new technologies through cross licensing.
6. Building of patent power for deterrence, retaliation and bargaining.
7. Increased patenting in USA.
8. Use of patents for stimulation of R&D personnel.
9. Development and maintenance of a patent culture.

Several of these behaviours and strategies have also been acknowledged by patent offices, and some of them have occasionally been reported in the literature (see e.g. Rahn 1994). The rational aspects of these strategies should not be overplayed. Effective as many of them are, they have nevertheless evolved over time as historical products, rather than as a result of a few rational strategic decisions, as will be described below.

7.4.2.1 Evolution of strategy

For a long time, Japanese companies have emphasized the quantity of patents (see Chapter 5), although well aware that the technological and economic importance of individual patents differs widely. There is also a general feeling that many Japanese patents are of minor technical and economic importance,[12] while Western patents are often more significant on an average. This may have been true in the past and is still true as far as Japanese patents in Japan are concerned. Although it may still be true as well in several technologies for Japanese patents in the USA and Europe, there are numerous studies indicating the relatively high quality of Japanese patents in many industrial sectors.[13] The strategy of extensive patenting of minor improvements in Japanese companies evolved in connection with the catch-up process in the post-war era (see Chapter 5). A careful study of patent information was necessary in order to trace useful technologies and suitable licensors as well as to control the risk of infringing on patents of others when imitating and modifying products and processes. However, improvements were gradually made on imported technologies, aided by quality circles and suggestion systems. The urge both to improve the technology of others and to invent around the patents of others spurred small inventions, which were then readily patented. A patent was perceived among R&D personnel as a precious sign of world technical leadership. Patenting thus gained a prestigious value, probably more so in Japan than in the West. Methods such as patent mapping and patent reviews or audits (see Chapter 9) were designed and developed over the years in order to cope with the patents of others and to build a patent position of one's own. Patent analysis in this way provided a "navigational map" for both reaching and advancing the technological frontier.[14]

---

[12] It is important to distinguish between technical and economic aspects when talking about the level, importance, quality or "size" of an invention, technical advance or innovation. Although there may be a positive correlation between a high level of invention (i.e. technical quality) and its economic importance, the correlation may be weak and there may be many economically important but technically minor inventions, as well as many economically unimportant but technically major inventions.

[13] A commonly used indicator of patent quality is citation rate, despite its many flaws (see e.g. Mogee (1991), Trajtenberg 1990, Narin 1993 and Narin et al. (1984), and Carpenter et al. (1981) for a seminal work.). As shown in Chapter 5, the quality of Japanese patents is indeed high in many industrial sectors, using this indicator. Similar results are presented in Fame and Narin (1990). See also Section 5.8.1 for the distinction between technical, economic and legal qualities of a patent.

[14] Information gathered through personal communication with Mr. S. Saba,

Historical conditions in connection with a long process of catching up and competing with the West, including strong domestic competition at the same time, have given rise to different patenting behaviours (i.e. patent “flooding” or patent “blanketing” and patent “fencing”). As these behaviours have become functional for businesses, they have been more consciously refined and used, thereby gaining the status of conscious strategies. These behaviours and strategies in turn have become more and more relevant for technologically leading and innovative companies as new products and processes involve an expanding range of expensive technologies, forcing even leading companies now and then to play catch-up in some technologies. No one can afford to take (much less sustain) the lead on a broad range of technological frontiers. The IP management capabilities that Japanese industry built up during their catch-up phase also paid off in the subsequent phase of industrial development, giving Japanese industry a competitive advantage over many Western companies.

7.4.2.2 Strategic patents

The recognition in Japanese industry of the importance of achieving a high quality of patents has increased in recent years. This is due in part to the fact that Japan reached and advanced many technological frontiers herself in the 1980s, which led to patenting in new fields. The lawsuits from the USA and concomitant legal challenging of patents have also contributed to this recognition. The direct costs of patenting have also grown considerably, and since they are the same for both major and minor patents, any cost-cutting effort naturally aims at screening out (economically) minor patents. Finally, the adoption of a multi-claim system in Japan broadened the possibilities to increase the quality of a patent application.

Efforts have been made in Japan to focus more on the quality of patents and to increasingly obtain what are called “strategic patents”. Broadly speaking, a strategic patent is a patent of decisive importance for someone wanting to commercialize a technology in a product area.[15] In other words, a strategic patent creates inhibitive costs for anyone wanting to invent around it (see Section 7.4.1 above).

---

[15] Some also use the terms ‘essential patent’, ‘basic patent’, ‘generic patent’ or ‘inevitable patent’. However, certain such terms are also used in other senses; see the Glossary in the Appendix.

Hitachi is a case in point here, as shown in Table 7.3. The clear definition of “strategic patent” and the clear, quantified objectives for acquiring such patents are noteworthy. Such patents can be acquired through one’s own R&D or through external acquisition. If successful over a number of years, such a patent strategy can lead to the build-up of substantial patent power for Hitachi with the possibility to block hundreds of product areas and companies.

Table 7.3 Example from Hitachi of patent policy and objectives

("The third term campaign to increase strategic patents" as of 1992)

1. Contents

Action policy	• Enhancing quality of patents (Integrating business and patent strategies)
Basic measures	• Specify rivals and acquire five cases of strategic patents for each major product item's technology. • Strengthen activities to acquire basic patents that capture in advance the future needs of society markets.
Specific examples of measures	1. To establish patents on a sales point that allows the company to defeat others 2. PAS[1)] and special R&D project aimed at acquiring leading-edge patents

2. Level of Strategic Patent* and Number of Cases Annually Certified (Summary)*

Level	Corporate Target	Salient Points of Certification
Gold	25 cases	Basic invention top level in the world
Silver	75 cases	Basic invention top level in Japan
Copper	200 cases	Inventions that can be aggressively used as a sales point for Hitachi's mainstay products

* Strategic patents mean basic and inevitable patents that must be used by our company and others in major products of the present and future.

Note:

1) PAS = Patent strategy system.

Source: Documentation provided by Hitachi.

The process scheme for creating strategic patents at Toshiba is shown in Figure 7.4. Here one may observe how product planning and technology analysis feeds into R&D and strategic patenting.

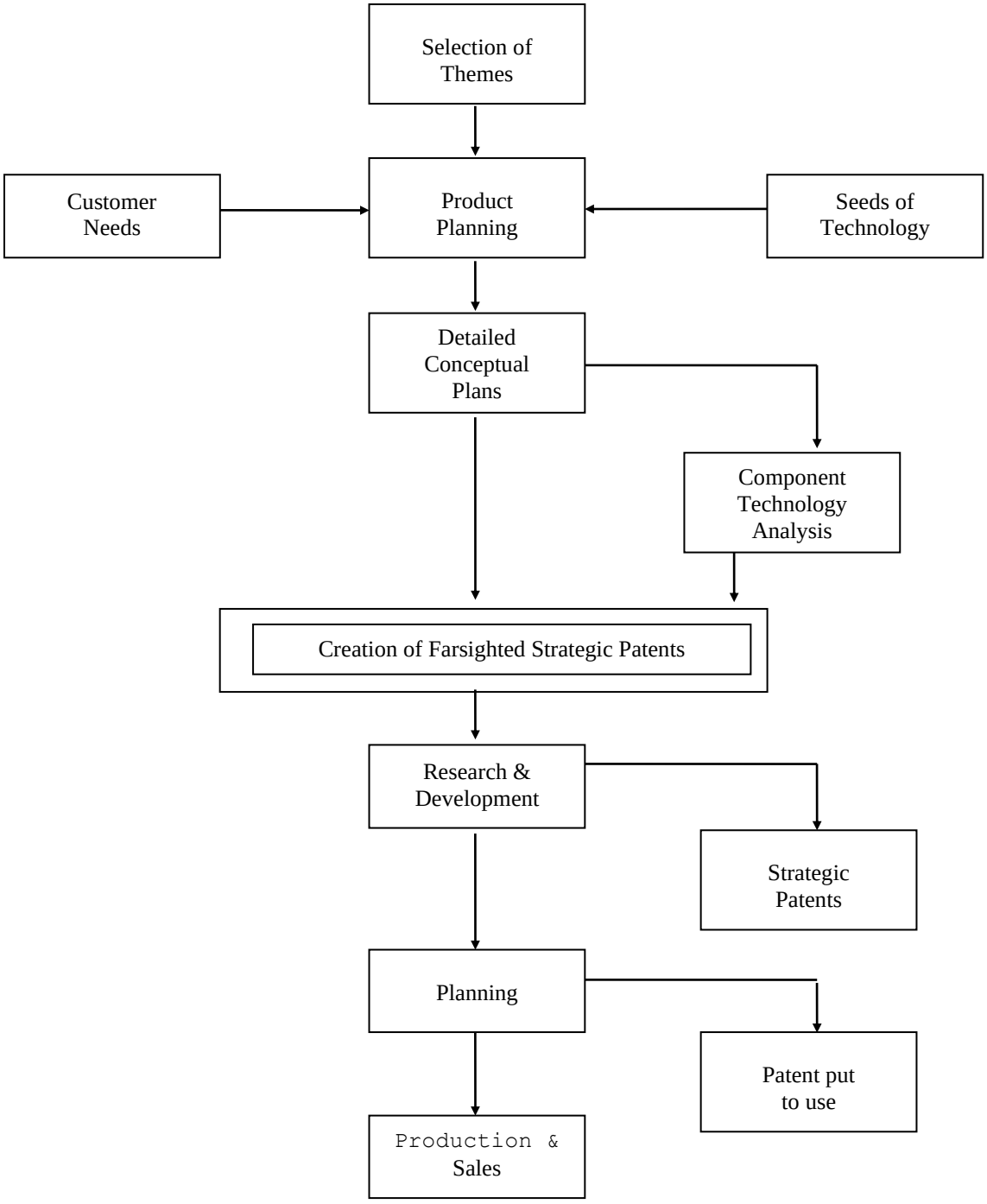
Canon has a policy that a strategic patent[16] should be acquired before commercialization starts in a new business area. The acquisition can occur either through Canon's own efforts or through licensing in. If this cannot be ensured, the area is not entered. In addition, Canon wants to be the sole innovator in at least one respect. This latter policy of Canon is not typical for Japanese companies. Many companies rely upon the possibility of obtaining a license from a strategic patent holder. For example, Canon invested heavily in the commercialization of the ferroelectric liquid crystal (FLC) technology for flat panel displays, while many other companies were watching by and large, relying upon getting a license from Canon should FLC prove viable in the end. Relying upon the possibility that a license will be obtainable from someone who succeeds in a field is not an uncommon strategy among large companies. The current and possible future technological interdependencies among large companies account for this type of delicate and risky trust.

A certain industrial and nationalistic codex also comes into play, especially regarding licensing on foreign markets, but its importance should not be overplayed. In the early 1990s many leading-edge companies in Japan had an "open licensing policy", meaning that every technology is in principle available for others to license if the terms are "right". Hitachi, for instance, declared in the early 1990s that it had an open policy, making all patents available for licensing. NEC claimed they seldom refused to sell a license and perceived no risk in creating a new competitor with a single license. However, the mid-1990s) some of these companies questioned and modified this open licensing policy, thereby taking a step towards more selective licensing. Still, the technological interdependence between products and between companies force clusters of companies to license fairly openly among themselves to avoid retaliation.

[16] Naturally it is often not clear at once whether a patent is strategic or not, and the perception of a patent being strategic may have to be revised in light of later technological developments.

Figure 7.5 Strategic patent searching at Toshiba

Source: Documentation provided by Toshiba.



Licensing policies may of course differ among companies. In general, since the Betamax-VHS systems battle between Sony and JVC Matsushita in the late 1970s and 1980s, there has become a recognition of the importance in some cases of building groups or families of companies through liberal licensing in order to support a new product or business system.[17] This may be part of a business strategy to combine the promotion of buyer diffusion (i.e. market penetration) with the control of seller diffusion, i.e. the spread of the technology among competing and/or cooperating producers.

Licensing policies may also be declared open on other grounds: for image-building, for cross-licensing, for royalties etc. In general, the decision to license out or not is a matter of pricing. The cost of negotiating a single license agreement is increasing, however, which induces companies to enter more broad-based license agreements, perhaps also more multilaterally than bilaterally (see Table 5.12). This may stimulate new patterns of cooperation and competition, such as systems competition, i.e. competition between families of cooperating companies, linked to different technical systems.

The search for strategic patents in a new technology creates a race among companies. There is also a second race for the surrounding patents taking place in order to fence in any conceivably strategic patent. These surrounding patents are often linked to production processes or to different applications and may be identified through a systematic application analysis.[18] The surrounding patents may then be used by competitors when bargaining about the original strategic patent. In the extreme case, the strategic patent may not be able to be used without infringing a surrounding patent. To avoid this situation, the strategic patent holder is also compelled to search for surrounding patents. However failure to pursue follow-up patenting in this and other situations has been common among Western firms, large as well

---

[17] The Betamax-VHS battle has been widely reported; see e.g. Rosenbloom and Cusumano (1987), Grindley (1995) and Granstrand (1984). It now qualifies as a classic case of the importance of strategic licensing. Oddly enough and is far less well known is that the technological interdependence was such that had Sony won the battle, JVC would still have been rather well off through collection of royalties from Sony.

[18] An alleged case of this is described in Spero (1990), in which Mitsubishi was accused of having fenced in a strategic patent held by a small US firm, with the purpose of acquiring it through cross-licensing. (The article represents the small firm's view of the case.)

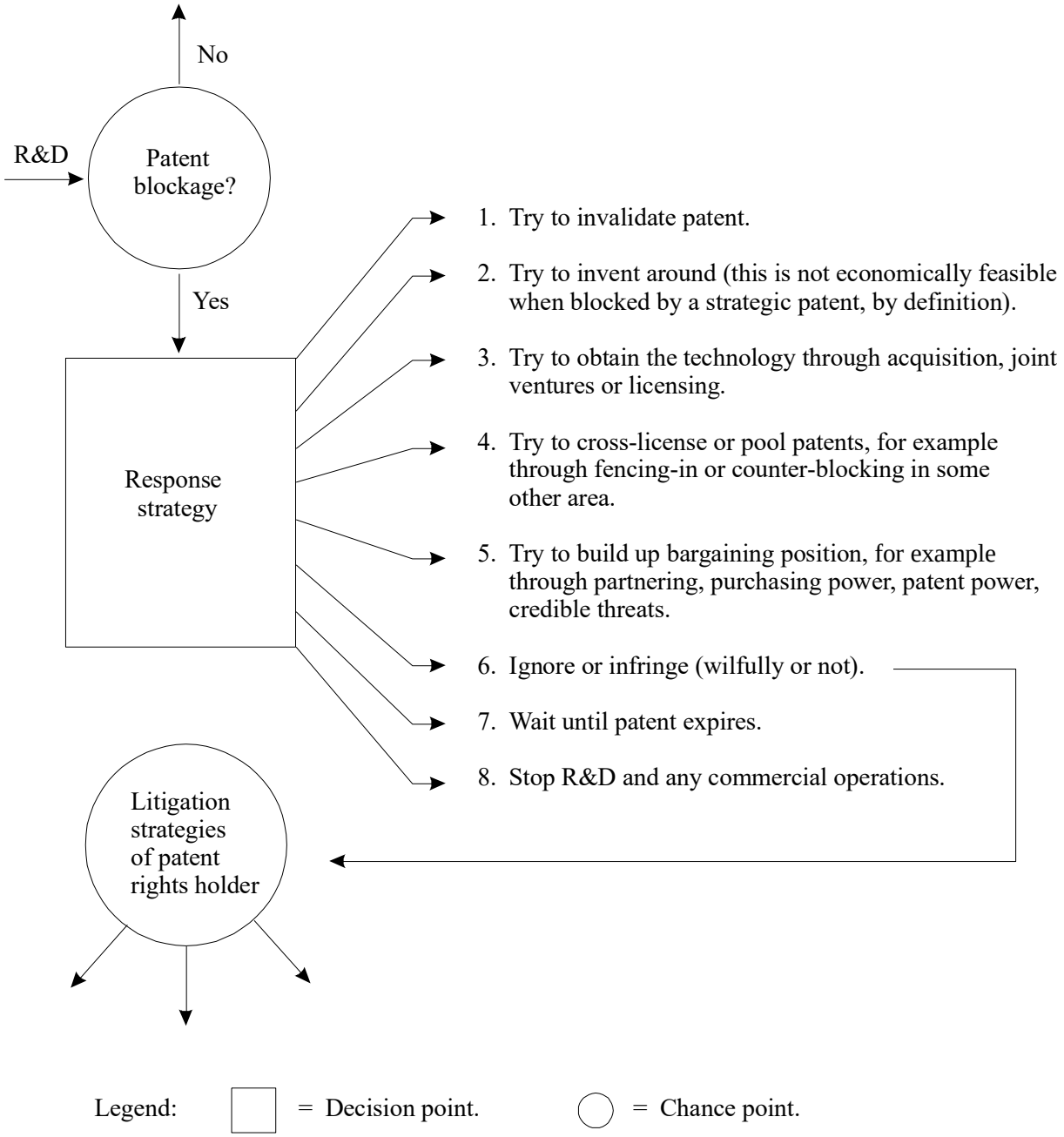
as small. The traditional engineering attitude has been to apply for a patent only in the case of inventions with high technical qualities. Technically minor inventions, to which category many application patents and surrounding patents belong, have been down-played and patenting has often been ignored. There has also been a belief, not least among inventors and small firms, that a single good patent is sufficient to protect a new business. Firms may also lack resources and management attention concerning patenting. Circumstances like these have resulted in the ignorance of follow-up patenting and failure to build-up patent portfolios over time.

The outcome of this second patent race determines, in principle, the distribution of bargaining power among the competing companies and their prospects for cross-licensing. To obtain surrounding patents is thus a case of fencing out or fencing in, depending upon whether the surrounding patent holder is the holder of the strategic patent or not. This is a stereotypical example but it illustrates the interdependence of patents. For instance, it should be noted that the two patent races do not necessarily follow upon each other neatly in time. An old patent may become one of the surrounding patents to a strategic patent over time. Since many companies start to explore a new field early and take out patents with parallel R&D approaches, the interdependencies among companies and patents might become quite complicated. Such interdependence is likely to become more important in the future as the number of technologies related to a product increases.

7.4.3 General response strategies when confronting a blocking or strategic patent

When confronting a blocking patent, a number of strategic responses are possible, as shown in Figure 7.6.

Figure 7.6 Response strategies when confronting a blocking patent



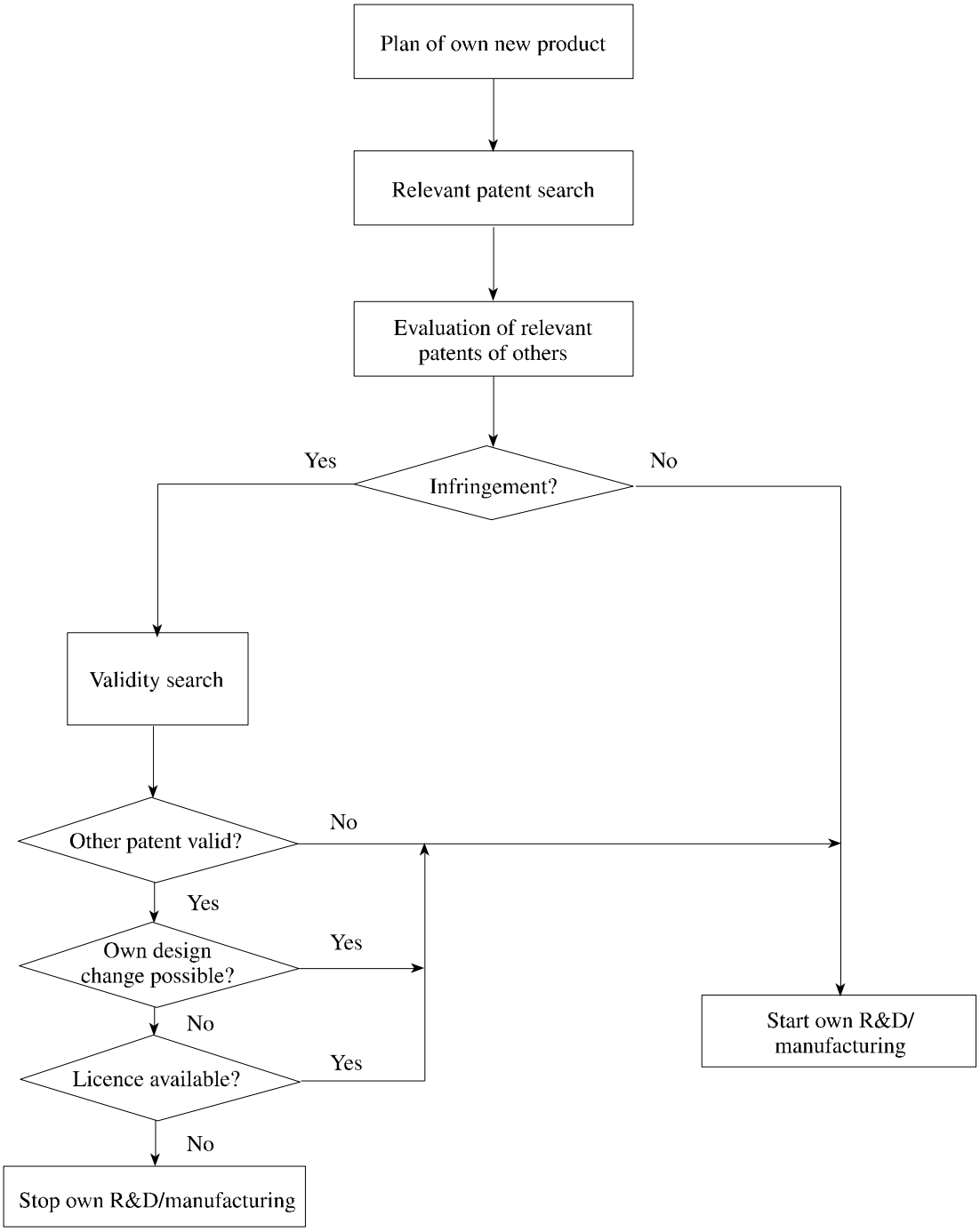
Similar response strategies apply when confronting blockages in a patent blanket or a patent fence etc. For example, when entering a new business a patent map may show a jungle of patents, in which case a company like Toshiba has allowed its IP department the right to stop any further R&D in that area. Such patent clearance procedures become important as patents and technological interdependencies proliferate.[1] Needless to say, it is also important to pursue them early in the R&D process[2], as well as it is important to make R&D management responsive to patent clearance. Figure 7.7. shows a typical patent clearance procedure in Toshiba. In relation to the validity search, one should note that such a search cannot be made conclusive in principle, unless a patent is litigated. Ultimately it is the courts who decide on validity, which introduces a chance element into patent clearance – as well as in patent enforcement, as is dealt with next.

[1] For a good illustration of the legal complexities involved, see Merges (1994).

[2] Patent clearance was unfortunately performed too late in the standardization work of the GSM system for mobile communications, as described in Chapter 6.

Figure 7.7 Typical patent clearance procedure in Toshiba

Source: Documentation provided by Toshiba.



7.4.4 Litigation strategies

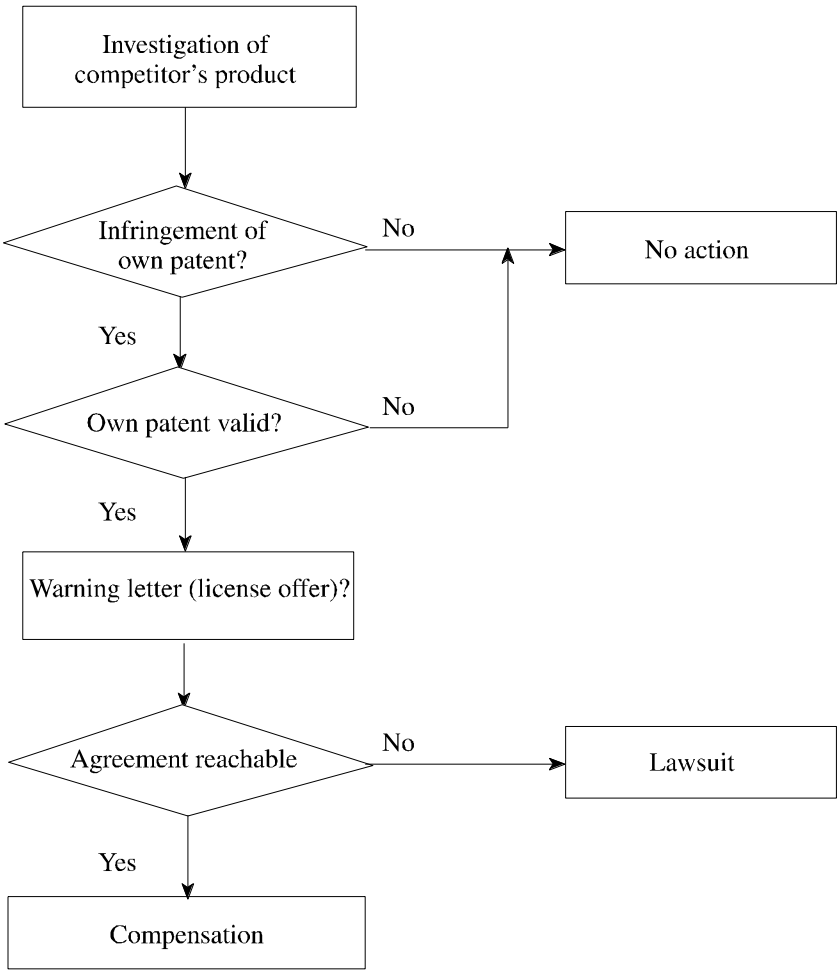
Figure 7.8 shows the patent enforcement procedure in Toshiba in response to detection of possible infringement. Infringement monitoring in a large international corporation such as Toshiba with a large, diversified product and patent portfolio may in fact be difficult, especially if products go into the production processes of customers. To pay off, infringement monitoring costs must not exceed expected benefits from patent enforcement, involving probabilities of deterrence, detection, favourable settlements by courts or otherwise, and damages or licensing payments. If this is not the case, patenting may not pay off either.

If infringement occurs or there are substantial grounds for suspicion, various strategies for legal enforcement of patent rights could be employed. Litigation strategies can be characterized in general terms, such as offensive/defensive, just like patent strategies but it is difficult to make a structured list of legal strategies that pre-empts all available possibilities in various legal systems. Before choosing an offensive litigation strategy one should also assess the risks of retaliation, which in addition to risks of counter-litigation include risks of losing some business.

Litigation processes also contain many stages and contingencies, from the filing of complaints to the ultimate appeals. Formal decision analysis using decision trees with subjective probabilities may be a useful tool for analysing such decisions as well as patent strategy decisions in general. Parts of the full decision tree structure are indicated in Figures 7.6–7.9. However it must be kept in mind that sometimes reality is not easily cast into structured frameworks such as these.

Figure 7.8 Typical patent enforcement procedure in Toshiba

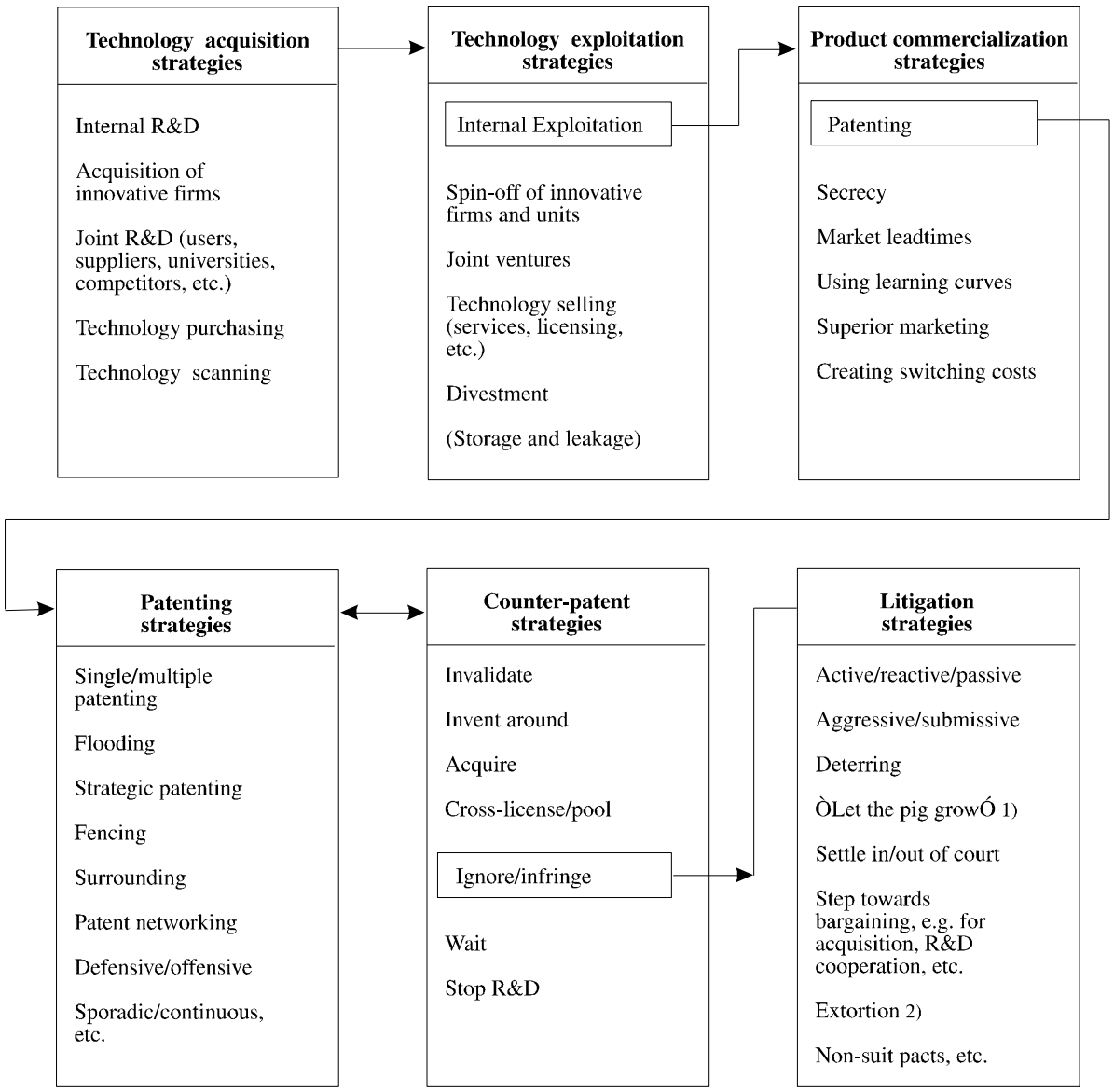
Source: Documentation provided by Toshiba.



7.4.5 Summary of technology and patent strategies

Figure 7.9 summarizes the various strategies outlined in Chapter 4 and dealt with in Chapters 6 and 7 regarding sourcing and exploitation of new technologies and patenting. The next section will give an additional summary of technology scanning and secrecy-related strategies. Trademark strategies will also be discussed in connection with ‘superior marketing’ as still another strategy in product commercialization. Thus, different IP strategies are linked to different product commercialization strategies. Moreover the various strategies are mostly complementary. A product business is also typically comprised of several elements that could be promoted or protected by different IPRs. Altogether these conditions surrounding a business prompts the concept of multi-protection, i.e. to use not only a portfolio of patents but a portfolio of IPRs as described in Section 7.7 below.

Figure 7.9 Summary of technology and patent strategies



Notes:
1) Refers to postponed filing of complaints in order to increase bargaining power. This strategy may backfire in court. (See Chapter 6.)
2) Litigation used as a primary business idea for collecting damages or royalties, exercised by some inventors or patent brokers or lawyers, possibly acting on behalf of inventors on a commission basis (e.g. getting 30-50 per cent of any collectable damages). This strategy may also backfire in court.

7.5 Secrecy strategies

7.5.1 General secrecy strategies

Part of a company's technology can at least temporarily be protected by secrecy rather than by patents. Company secrets are also protected by law, giving rise to unregistered rights. However the legal protection of secrets is generally weak.[3] Thus, if secrecy protection as an alternative to patent protection is to be effective, it is very much up to the company itself (which is in fact true regarding patent protection as well).

There are a number of general means or secrecy measures for preventing other companies from finding out about a company's technical developments. These means serve to counteract the available legal, semi-legal and illegal means for technology scanning open to the competition to find out about the company's technologies.[4] Figure 7.9 summarizes these general secrecy and scanning or intelligence strategies. Table 7.4 then summarizes the importance attached to these measures and countermeasures by the Japanese corporations. As seen, the implementation of an internal secrecy policy ranks highest in importance. Such a policy could address any of the other secrecy issues in the table. The control of publishing by researchers and employees is of special concern. Learning from patent disclosures or other publications ranks as the most important means for intelligence gathering, while the avoidance of patenting ranks significantly lower as a secrecy measure. This is again an indication that patenting provides net informational benefits to industrial society as a whole. This also suggests that publishing through patent documentation is one promising way of increasing control over publications. (An interesting approach or philosophy in this context was voiced by Dr. Yamaji, former CEO of Canon; see Chapter 8.)

---

[3] The protection of trade secrets also varies between countries. In Japan, trade secret protection by law has traditionally been weak, while secrecy protection in practice has been relatively effective in industry, due to e.g. low interfirm mobility of personnel and high employee loyalty.

[4] Note that in order for a piece of information to be protected by trade secret law, at least in the USA, it is necessary (but not sufficient) that the information holder can show that secrecy efforts have been made. A case in point is when Motorola was denied trade secret protection when a number of key people left to go to the competitor Fairchild in 1988 on the grounds that Motorola had not done enough to protect its trade secrets (see Adler et al. 1992, p. 27).

Employee loyalty to companies in Japan has traditionally been very high. The interfirm mobility of people has also traditionally been very low, with widespread lifetime (or rather long-time) employment among large companies (although things are changing). In contrast to the West, e.g. in Silicon Valley, hire-overs of key employees among Japanese companies are not a primary IP concern, at least not yet, although some hire-overs occur and create attention and irritation. The fragmentation of proprietary information in the company for secrecy purposes, thereby lowering the risk e.g. that somebody who has "the full picture" of an R&D project, makes defection less consequential.[5] This, of course, does not allow for open internal communication, which in turn is important for R&D productivity and innovativeness in the company. However, fragmentation may not always be possible either. Sometimes, in large as well as in small companies, there are a few key individuals whose outstanding competence is critical to the company, which makes the company vulnerable to their loss through defection, hire-overs or even death.[6] In this situation, loyalty (and health!) is very valuable to the company.[7]

In this context one may also note that detrimental secrecy barriers are often erected by individuals or small groups for personal reasons such as striving for fame, prestige, power and/or rewards. Company reward schemes for inventions and patenting can strengthen this tendency and thus counteract their purpose to stimulate innovativeness, which typically

---

[5] The various legal, economic and managerial issues involved in balancing the IP interests of employers and employees have, of course, been subjected to much debate. A practical overview of the issues from a managerial and legal perspective is given in Spanner (1984) and Swais (1996). Trade secrets may also be traded by employees among firms. For interesting works, see von Hippel (1988a,b).

[6] Companies may be vulnerable in another sense as well. Key inventors in a company may be tracked down by outsiders, using patent information. The monitoring of their subsequent work as reflected in patent applications may then give useful hints of promising R&D directions and strategies. See further Chapter 9.

[7] An interesting scheme for the fragmentation of information for the purpose of preserving a trade secret is the one allegedly used by the Benedictine monks for protecting the recipe to their liqueur. Only the abbot knew the whole secret, while two monks knew different halves of it. When the abbot died, one of these two monks was promoted to abbot, thus being informed by the other monk, while informing a new monk replacing him in turn. One can note that such a scheme for preserving a trade secret with minimal risk of leakage is probably optimal in some sense, although there is a risk that the two monks would defect together and start up their own business. (This last point was made by Prof. M. Scherer.) One can also question whether such long-lived secrets benefit consumers in the long run.

requires rich internal communications and collaboration among several individuals and groups in the company.

Finally, the total costs and benefits of an extensive secrecy or information security system have to be considered. High R&D costs give high incentives for technology scanning. At the same time an extensive system of internal and external secrecy barriers or layers of "firewalls" is also costly, both in terms of direct costs and in terms of the innate detrimental effects.[8]

[8] Charles Kettering, the legendary R&D manager of General Motors, is quoted as having once said: "When you lock the doors of the laboratory you lock out more than you lock in."

Figure 7.10 Technology scanning and secrecy strategies in general

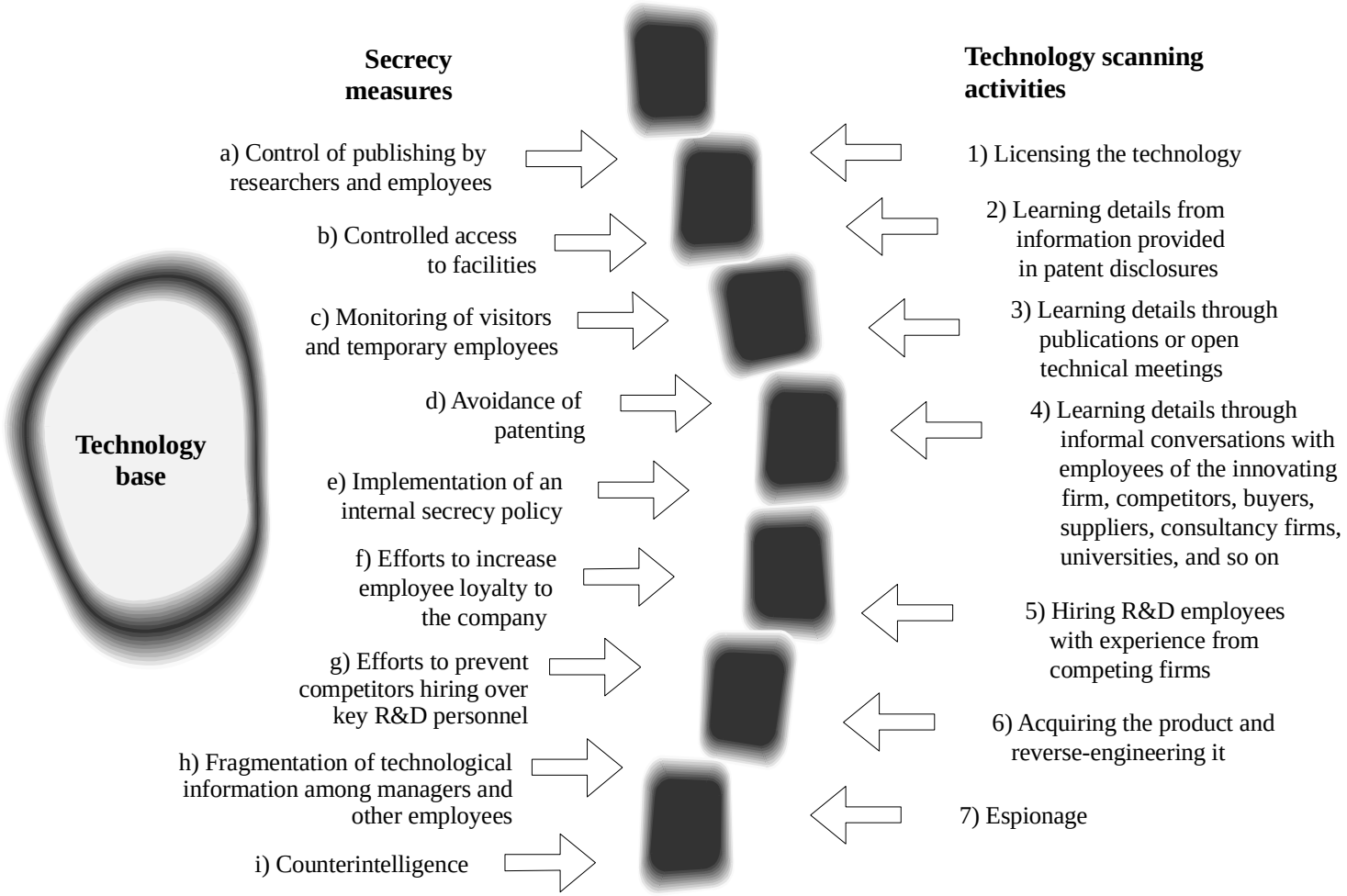


Table 7.4 Importance of secrecy and technology scanning strategies in large Japanese corporations[1)]

(Scale: No importance = 0, 1, 2, 3, 4 = Of major importance; Tend = Tendency 1987-1992: Decreasing = -1, 0,+1=Increasing)

(Code) Question	Chemical (n=9) Tend.	Electrical (n=10) Tend.	Mechanical (n=5) Tend.	Total (n=24) Tend.
(F10) How important on an average are the following means for preventing other companies from finding out about your company's technical developments?				
a) Control of publishing by researchers and employees	3.11(0.38)	2.50(0.60)	3.20(1.00)	2.88(0.61)
b) Controlled access to facilities	2.88(0.29)	2.50(0.50)	2.80(0.80)	2.70(0.50)
c) Monitoring of visitors and temporary employees	2.44(0.25)	2.10(0.10)	1.60(0.20)	2.13(0.17)
d) Avoidance of patenting	1.78(-0.13)	1.60(0.00)	1.20(-0.20)	1.58(-0.09)
e) Implementation of an internal secrecy policy	3.00(0.38)	3.00(0.60)	3.20(0.80)	3.04(0.57)
f) Efforts to increase employee loyalty to the company	2.11(0.00)	2.40(0.30)	2.60(0.20)	2.33(0.17)
g) Efforts to prevent competitors hiring over key R&D personnel	2.22(0.25)	1.50(0.20)	2.00(0.20)	1.88(0.22)
h) Fragmentation of technological information among managers and other employees	1.78(0.00)	0.90(-0.10)	1.80(0.00)	1.42(-0.04)
i) Counterintelligence	1.56(0.25)	1.40(0.10)	1.20(-0.20)	1.42(0.09)
(F11) How important on an average are the following means for finding out about your competitors' technical development?				
1) Licensing the technology	2.38(0.13)	2.50(0.30)	1.60(0.20)	2.26(0.22)
2) Learning details from information provided in patent disclosures	3.56(0.50)	2.90(0.30)	3.00(1.00)	3.17(0.52)
3) Learning details through publications or open technical meetings	3.33(0.50)	3.00(0.30)	2.80(0.80)	3.08(0.48)
4) Learning details through informal conversations with employees of the innovating firm, competitors, buyers, suppliers, consultancy firms, universities etc.	2.78(0.00)	2.40(0.20)	1.60(-0.20)	2.38(0.04)
5) Hiring R&D employees with experience from competing firms	1.78(0.00)	1.10(0.10)	1.00(0.00)	1.33(0.05)
6) Acquiring the product and reverse-engineering it	2.67(0.13)	2.00(0.10)	2.60(0.40)	2.38(0.17)

Note:
1) The highest and lowest values for each industry and question are overlined and underlined respectively.

7.5.2 Secrecy and prophylaxis as alternatives to patents

In the companies studied, it was commonplace to file a patent application as early as possible in the R&D process and to build up "patent power" in technologies of interest by systematically analyzing patenting possibilities.[1] This patent power was then used in conjunction with speed to market. This was also important in fast moving areas, which was in contrast with the expression "technology moves so fast that it renders patents useless" that was sometimes used in Western companies as an argument against patenting.[2] Only rarely did a company resort to secrecy as an alternative to patent protection. Typical cases where secrecy protection (or no patent protection) was considered were (assuming a low risk of being blocked by patents of others):

1) One is convinced of having a substantial technological lead and that it will take a long time for competitors to catch up even if they overcome the secrecy barrier. This is seldom the case, however.

2) The competitor's cost and time for overcoming the secrecy barrier, e.g. by reverse engineering, are substantial. This may be the case for production technologies which leave no traces in the marketed product that can be used by competitors for their reverse engineering.

3) Infringement monitoring is difficult (costly) and/or of little value because of low enforceability in courts, high legal costs or low damages. This may be country-specific, however.

---

[1] Note that in patent races "the winner gets all" in the sense that all patent rights for a specific invention are given to at most one applicant. However, the need for many patents to support a business and the possibilities to license patents among companies means that there are multiple patent races and a market is not necessarily lost if some patent race is lost.

[2] This argument was used e.g. in the computer industry (e.g. by Digital Equipment) in its early stage. As an industry matures in some sense and technology slows down, the argument gets less valid.

4) The possibilities to invent around are numerous and cheap, while costly to block efficiently with patents. This may be the case in certain new technologies.

These cases do not exclude each other. Altogether they contain factors to consider when assessing whether to use patent protection or not.

Sometimes, but fairly seldom in Japan, prophylactic publishing is used, whereby technical information is disclosed to prevent competitors from fulfilling the novelty requirement for obtaining patent rights. This possibility may also be used in the following obscure way, at least in Japan. The company files a patent application and then withdraws it (well in advance to be sure of timely bureaucratic functioning) before 18 months have lapsed, at which time the patent application would be published. If a competitor files a similar patent application later on, the company may oppose it and point to the earlier withdrawn application as evidence for invalidating the competitor's patent. This opposition information is then publicly disclosed and the period of secrecy that the company has enjoyed ends. Obviously, the event of public disclosure must be taken into account when using this mode of protection. Thus this trick of filing an application for patent protection, only to have it withdrawn or pending, is a curious but legal possibility for obtaining a combination of secrecy and prophylactic protection.

7.6 Trademark strategies

7.6.1 Trademarks in general

Trademarks have increased in general importance, as described in Chapters 1, 4 and 5. This is for various reasons. One simple reason is that trademark protection, in contrast to other registered IPRs, can be perpetuated permanently and thereby accumulates value if managed

properly through advertising, etc. Another reason is that information overflow makes buyers increasingly influenced by brands and trademarks in their purchasing behaviour.[3]

Trademark values, although very difficult to assess, can also become extremely high, as shown in Table 1.3. Many business situations ask for the valuation of trademarks, e.g. mergers and acquisitions of companies, licensing in and out of trademarks, claiming damages in case of trademark infringement, or for accounting purposes. There are four general approaches to valuation: (1) cost-based (e.g. based on accumulation of advertising costs, etc.); (2) income-based (based upon influences on purchasing behaviour or influences on sourcing costs on input markets, e.g. costs for recruiting graduate engineers); (3) based on market valuations and comparisons of similar trademarks; and (4) indirect valuation methods, based on other indicators or indices assumed to be correlated with trademark values. Factors such as brand awareness, brand loyalty, reputation, and brand coverage go into the calculation.

As with any reputation-based value, trademark values are vulnerable to bad publicity and customer dissatisfaction, but they are surprisingly resilient in the long run, once they have gained strength.[4] A special threat to a trademark is so-called dilution. This happens when a trademark becomes so successful that it is incorporated into everyday language and loses the distinctiveness that is required for legal protection.[5] Some companies can go to great lengths in order to prevent this. A registered trademark can also lose its legal protection if it is not used at all.

As shown in Table 1.3, the list of the 8 most highly valued trademarks or brands in the world did not contain any Japanese trademarks up til 1995. However the efforts that go into

---

[3] In common terminology, a trademark is the legally protected part of a brand. A brand name refers to the vocal characteristic of a brand, while a brand mark refers to the visual characteristic. Here the term ‘trademark’ will be used in a broad sense.

[4] Examples of the temporary dipping of trademark values and company good will can be found in connection with disasters, scandals, or occasionally deficient products (like Intel’s early Pentium processor). Note in this context Intel’s innovative use of trademark protection for industrial components, not visible to consumers, by the phrase ‘Intel inside’ linked to a logo.

[5] An example is the risk of diluting the Xerox name, by using it in everyday phrases like “to xerox” something or to take a “xerox copy”. Initially, ‘Xerox’ as a term carried no meaning to customers.

the building of trademark values in Japan are substantial and strategically managed. Just as several Japanese companies have been on the list of 10 top patentors in the USA for many years, several of them are likely to be on the list of 10 top valued trademarks in the years to come. The perpetuation of trademarks also favours old ones in such listings, everything else equal. (Coca-Cola started in the 1890s.) However it is possible to build strong trademarks in a fairly short time. This is also true for industrial as well as consumer products, as shown by Intel, starting in the 1970s.

Just as with bodies of knowledge, and technologies in particular, trademarks offer economies of scale, scope and speed. Economies of scale, static as well as dynamic, can be reaped both in expanding sales in an area for which trademark protection already exists and in extending the trademark to a new area, at least under some circumstances.[6] Economies of scope may arise when one trademark is combined with others. A common case is when a company's trademark or image is combined with the trademark or image of one of its products. Trademarks from different companies may also be combined (double branding or co-branding). More generally we can talk about building image value by several agents and at several levels—national image (NI) (e.g. for product quality or for tourist industry), corporate image (CI), business image (BI), and personal image (PI) (e.g. of a rock star or a Nobel Prize winner). Image values of course apply to other entities as well—cities, teams, professions, characters, etc. Some of these entities have protected names, some of which can be licensed. Certain subjects also have positive image values, such as ecology, medicine and technology (especially hi-tech), although it is usually not possible to protect them by exclusive rights.

These different images can be combined in many ways and create economies of scope. Diseconomies of scope can also arise if some images are negative in themselves (the "rotten apple" effect). The possibilities to combine different trade names and images can obviously become numerous. A company can also build several trademarks over time. Economies of speed may finally accrue when a well-reputed trademark helps to speed up the market

[6] Successful trademark extension is not guaranteed, and there is a body of literature on how to go about it; see e.g. Aaker (1991).

penetration for a new product. An unknown, perhaps new, company with a new product can then gain speed advantages by letting a well-known company market the new product on an OEM basis.

One can note some similarities between trademark strategies and patent strategies in this context. First, a trademark can be given a broad coverage just as a patent can be given a broad coverage or scope.[7] Second, a trademark can be made strategic in the sense that it is unavoidable to customers and the public at large, not by forces of nature as with patents, but by corporate forces and ingenuity. Every person is exposed to many different sights and sounds every day, and we are influenced by all sorts of habits and compelling circumstances that could be used by cunning advertisers, much more in fact than we are currently used to or want. However, 'overadvertising' may occur in the sense that consumers start to react negatively to being bombarded with certain messages, in which case the value of a brand may decline. Reverse cases may also occur, i.e. no advertising may make an already prestigious brand even more prestigious. Third, certain areas (like computers) are already crowded with trademarks. Flooding or blanketing attractive areas of terminology with trademarks is also possible to some extent, although, in contrast to patents, limited by the requirement that a trademark must be commercially used. Moreover, three- and four letter-words (like Sony) are being used up as trademarks. All in all, it is getting harder to get good trademarks, which further increases the value of established ones. Fourth, surrounding one's strategic patent with own-application patents is somewhat similar to having a corporate brand (like Sony) being surrounded by business brands (like Walkman, Discman, Handycam). Finally, a "network" of all sorts of brand names, packaging designs, logos, company uniforms, designs, informative marks and other symbols, can be built, which altogether constitute what is sometimes subsumed under the labels of corporate identity and corporate aesthetics.

---

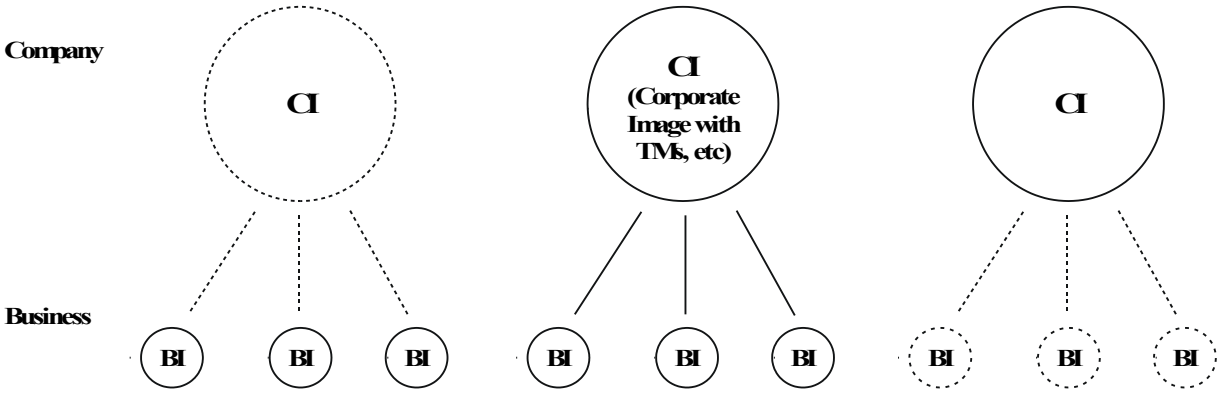
[7] The dimensions of coverage or scope of a trademark pertain to geographical coverage, product area coverage and "psychological coverage", where the latter refers to the type of values with which the trademark is associated (security, quality, health, low price etc.). The psychological coverage is built up, e.g. through advertising trying to "load" the trademark with various values.

7.6.2 Trademark strategies in Japan

Some types of branding behaviour or strategies commonly found in Japan are:

1. General upgrading in the building and enforcing of trademarks (also for industrial products, not only for consumer products)
2. Long-term upgrading of the national image in contrast to the earlier downplaying of 'made in Japan' (which played badly in the West during the 1950s)
3. Conscious building of corporate image, broad branding and joint CI/BI (Corporate Image/Business Image) (see Figure 7.11)
4. "Strategic Branding" (building brands inevitable to the customer and the public, who cannot avoid being exposed to them)
5. Mixing OEM with branded sales
6. Use of technology for prestige (use of 'technology image')
7. Combining patents, trademarks, designs, copyrights, etc. into "multi-protection" (see below)

Figure 7.11 Building separate corporate and business images (CIs, BIs) versus joint CI/BI-building[1)]



Note:
1) BIs could correspond to different business or product areas, as well as to different market segments (e.g. segmented along quality or price dimensions) in a business area.

The building of joint CI/BI is noteworthy. This choice of strategy partly results from the diversified character of Japanese companies, which made it natural to distinguish both the company and its various businesses. The auto industry provides an illustration, simplified here. In Europe it has been more common to place emphasis on CI-building (i.e. only using the company names, e.g. Volvo, BMW, Mercedes-Benz) while in the USA it has been more common to emphasize BI-building (e.g. GM's use of car brands like Pontiac and Cadillac). Concentration on CI/BI-building in Japan has thus produced the combinations: Toyota-Corolla and Toyota-Camry. Broad branding is also used in Japan and this practice also emanates to some extent from the diversified character of Japanese companies. Compare e.g. the narrow Coca-Cola brand with the Yamaha brand, which covers musical instruments as well as various motor vehicles.

Trademark management at Sony

Sony provides a good illustration of trademark management, having been top-ranked in Japan as a best-practice company in this regard. The tradition in Sony of emphasizing and creatively deploying trademarks goes back to the founders, especially Mr. Morita (see e.g. Morita 1986). At an early point (and early for Japan) he wanted to build up a strong Sony corporate image, refusing even to supply on an OEM basis at times.[8] In 1995 Sony had about 10,000 trademarks registered in the world. The use of these is centrally controlled from the corporate IP department at headquarters in Tokyo. There is a special CI committee attached to top management. There is also a corporate enforcement group for trademark and design enforcement worldwide. There are many infringers on Sony's trademarks, partly because Sony has been shifting production to emerging countries with cheaper labour. Enforcement with the intention to wipe out counterfeit products on the market and locate their suppliers is considered very important. In 1995 about 700 infringement cases (about 500 in Asia) were

[8] The name Sony is derived from a combination of the Latin word for sound (sonus) and the word "sunny", and began to be used in 1958. The company, which started after World War II, was earlier called Tokyo - Tsushin - Koio.

handled by this group, costing about 5 MUSD annually to handle and yielding only 10-20 per cent back in damages.[9] Enforcement is difficult, especially in China. The pressure from the USA to enforce IPRs is also considered helpful. Sony gets many proposals to license trademarks to third parties, but the basic policy is not to license out the corporate trademark. A product brand can be licensed out, however, e.g. the product brand Walkman for shoes. (Cross-licensing is much less common for trademarks than for patents, but is becoming increasingly popular.)

The building of joint CI/BI (e.g. Sony Walkman) is consciously managed and coordinated corporate-wide across the more than 150 subsidiaries. There are numerous possible combinations of Sony trademarks and logos and numerous external as well as internal proposals for using them. Therefore, a main role of the CI committee is to review and judge different combinations and to formulate criteria and policies for them. [10] Thus there is also a need to enforce trademarks internally.[11]

Enforcement of trademarks, logos, designs and copyrights on the Internet is also a rapidly increasing concern, as is the use of Internet in general for CI/BI-building. This concern also involves trademark clearance, the same as for patents. The information supply to the Internet is rapidly growing and includes many protected informative marks. At the same time it is easy to electronically duplicate, quote or deform e.g. trademarks.

As Sony's businesses change and diversify, they will start to combine in new ways, which basically complicates the "hierarchical" CI/BI-building process. The traditional grouping of businesses is also becoming increasingly obsolete through diversification and

---

[9] Thus the share of detected TM infringements was about 7 per cent, which can be compared to about 9 per cent for patents, although with large industry variations (see Table 5.11c).

[10] For example, a proposal from Sony America to use 'Sony University' for training services of non-Sony people (e.g. dealers) was turned down because the CI committee thought it would be deceptive, leading the general public to think Sony would go into the university business and leading students to think they would get jobs at Sony.

[11] As an example there are eight different internal manuals for advertising, language guidelines, communications, etc.

rapidly moving technologies (e.g. for the Internet or in the convergence of communications, computers, publishing and entertainment). Moreover, acquisitions, joint ventures and other tie-ups link Sony trademarks to other brands and trademarks (e.g. Columbia). A single CI such as Sony may then become insufficient, and traditional CI/BI combinations may become less effective or attractive. Further, parallel brands for similar products may be used. Entering a new business area as a late-comer may also make certain CI/CI combinations (and possibly also some BI/BI combinations) attractive, thereby using double branding in a tie-up with another company already established in the area. Partnering becomes increasingly common in industrial convergence, such as the one between computers, communications, and media, and thus calls for the redesign of trademark strategies. All in all, these are some considerations for future trademark strategies, not only for Sony, due to the changing nature of businesses and technologies.

7.7 Multi-protection and total IP strategies

During the 1980s a trend towards dealing with IP in a more comprehensive way emerged in Japanese "best-practice" companies. This was reflected both in how policies and strategies were formulated and in how IP-related activities became organized in the company (see Chapter 8).

As discussed in Chapter 4, there are many types of intellectual property or assets in a company – patents, trade secrets, trademarks etc. There are also many ways to create these assets jointly in connection with a particular business. These different ways are mostly complementary and raise the total asset value when used in combination. This is in line with the IC view of the firm, described in Chapter 4. Thus it is justified to talk about the importance of creating **multi-protection systems** and **total IP strategies**.[12] This idea seems quite natural and acceptable to people in industry. Nevertheless, patent matters dominate when dealing with IP. This is often reflected by work specialization, as well as by

[12] This does not necessarily imply that IP activities should be centralized. However, in a decentralized IP organization, the need for comprehensive IP policies and strategies is even more emphasized. The term 'multi-protection system' has been suggested by Dr. A. Mifune.

terminology, in a manner that is deceptive. The governmental organizations are called ‘Patent Offices’, consultancy firms are often called ‘Patent Bureaus’, experts are called ‘Patent Attorneys’, associations are called patent associations, company departments are called ‘Patent Department’ with a ‘Patent Manager’ and company policies are called ‘Patent Policies’. In such circumstances it is easy to pursue an unbalanced approach to IP matters, perhaps placing too much emphasis on patents and too little on trademarks, trade secrets, copyrights, and designs, and above all to neglect complementarities among different IP elements.

If IP matters should be treated more comprehensively, how much more comprehensively? And if IP matters are important, what is the proper role of IP management in technology management, business management and corporate management? The question of how to “size” and position IP management in the company is highly relevant. Intellectual resources, including general competence as well as technology, are pervasive throughout the whole corporation, but pervasiveness in itself is not an argument for putting IP management in the centre of the whole company organization. There are many pervasive activities in a company that should from time to time be placed at the centre of attention by means of organization, campaigns, culture building, management policies, management fads, etc. We will return to these issues in Chapter 8.

Multi-protection is not only practised among leading Japanese companies. In fact, leading US companies have developed such practices long ago. Coca-Cola, for example, has skilfully built up and maintained multi-protection. The recipe for the Coca-Cola soft drink is a well-protected trade secret, as is well known.[13] A patent has a limited lifetime, while a secret can possibly last forever, at least in theory. This is especially important for products with long lifetimes, which in turn may result from slow-moving customer preferences or slow-moving product technology. The machinery for the process technology, including the distribution process (e.g. vending machines), has been systematically analyzed and protected by patents. The unconventional Coca-Cola bottle has design protection and the Coca-Cola name and logo

[13] Note that conventional food recipes are not protectable by patents, although early patent-like protection in Venice during the 15th-century Renaissance, as well as in Sybaris in ancient Greece, originally gave protection to recipes of famous chefs. This is not to say that the Coca-Cola recipe is not patentable (at least as a medicine in principle), or that Coca-Cola’s preference for keeping it a trade secret is due to uncertainty about patentability.

have trademark protection.[14] The IPRs are strongly and systematically developed and promoted by R&D and marketing activities etc. and enforced by infringement monitoring and legal action. It is not an accident that Coca-Cola has maintained one of the most highly valued trademarks in the world (see Chapter 1), although its value was not initially clear to the company.[15]

Selecting and securing property rights for various elements constituting a business is not enough for multi-protection. The rights have to be enforced and infringers have to be deterred. IBM, for example, has pursued a very hard-nosed enforcement and litigation policy over the years through frequent litigation and the pursuit of the legal process to fruition, despite the legal costs and the prospect of losing (see Mody 1990). Thus IBM has apparently considered it more important to win a war than to win every battle.[16] In this way IBM has kept competitors and inventors wary about infringement. IBM has also sustained its IPR-consciousness, which has been combined with a licensing policy, sometimes a quite generous one (although partly due to antitrust decrees).[17]

Japanese companies, on the other hand, have traditionally avoided litigation and court settlements.[18] This is well known, even to the extent that some inventors and companies accuse Japanese companies of infringement in order to have them settle for a license rather than risk going to court. However things are changing and many Japanese companies are becoming more litigious, at least when they are attacked. For example, when Motorola sued Hitachi in 1989 for infringing upon a number of Motorola's patents, Hitachi counter-sued Motorola for infringing upon Hitachi's patents. As a result, the court in effect stopped the sales of the corresponding products of both Motorola and Hitachi, a court decision that apparently hurt Motorola more than Hitachi (see Anawalt and Enayati 1996, p. 342). This also

---

[14] The bottle has received US trademark protection as well, which was the first example of a 3-dimensional trademark.

[15] According to Prof. F.M. Scherer the early development of the Coca-Cola image was quite accidental, and only after some time did the company realize what a valuable asset they had and took aggressive steps to protect it.

[16] Note that although "hot" patent wars may break out now and then, the common patent war is "cold", with on-going deterrence and negotiations.

[17] For further readings about IBM in these respects, see Mody (1990) and Grindley and Teece (1997).

[18] This has been true for many US companies too.

illustrates the retaliatory power of large patent portfolios as well as the vulnerability of being a large, diversified hi-tech litigator.

A business can be broken down into various constituent elements and product technologies that could be covered by various IPRs, resulting in an IPR package or multi-protection system for the business. In principle, this corresponds to an analysis of the elements in Table 7.5.

Table 7.5 Analyzing the business element - IP connections

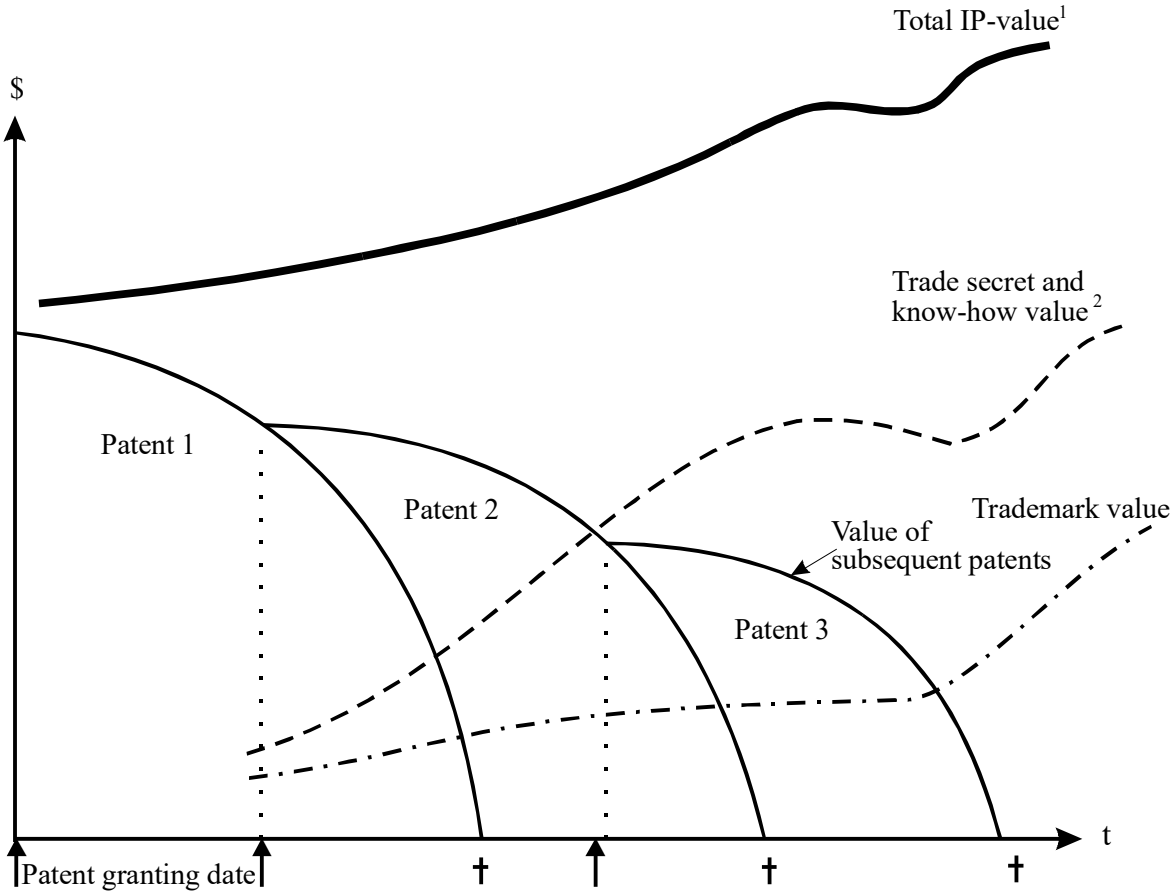
	Business element/component	IP type (example)
1	Business idea	Trade secret
2	Business plan	Trade secret
3	Product technology (equipment, materials, ancillary products)	Patents, utility models
4	Production/process technology	Trade secret plus a know-how license
5	Component technology	Maskwork protection
6	Systems configuration	Open information, prophylactic publishing
7	Software	Patents, copyright, trade secret
8	Auxiliary services	Trademark, trade secret
9	Distribution technology	Patents, utility models, trade secret
10	Marketing concepts	Copyright, open PR information
11	Packaging design	Designs
12	Company and business names, logos,	Trademarks
	slogans and symbols (“company	Copyright
	aesthetics”)	Designs

Different IP types sometimes substitute for each other at the business component level. The typical example being that patent protection and secrecy protection substitute for each other for a particular invention. In general, however, the different IP types can and should be used to complement or reinforce one another. Altogether, the different business elements or components in Table 7.5 form a business system in a product area. A business system with its business components thus encompasses products and their components and technology bases, together with the other elements in Table 7.5. This concept thereby focuses on the total set of intellectual resources or intellectual capital needed to conduct a business.

At the level of a business system the various IPRs should be complementary as a rule, forming effective multi-protection as a means for commercialization and enhancement of the business. Figure 7.12 illustrates how the value of a total IPR portfolio is built up in principle (although not all possible IPRs are illustrated), disregarding the difficulties to assign meaningful values to individual IPRs, values which moreover may not be additive as a rule.

For a multi-business corporation there is a need to coordinate IP protection across businesses (i.e. regarding company logos, trademarks and licensing). Multi-protection in a multi-business corporation then necessitates the formulation of company-wide IP policies. Such policies become more necessary if the IP organization is decentralized.

Figure 7.12 Total value of an IP portfolio



Legend

Patent granting date.

† Patent expiration date.

Total IP value.
Patent value.
Trade secret and know-how value.
Trademark value.

Note:

1) The total IP value is not necessarily the sum of the values of various individual IPRs since the latter may not meaningfully be added.

2) Cumulating through R&D, external technology and know-how acquisition, plus training and learning (experience) in personnel in general. While the stock of know-how may cumulate (although not necessarily so, due to e.g. hire-overs of personnel and spin-offs) the value of the stock may fluctuate, e.g. due to obsolescence and new substituting technologies, and also due to new valuation methods.

7.8 Summary and conclusions

This chapter started by describing a classification of various advantages and disadvantages of patents from a company point of view and the importance attached to them by the corporations surveyed. There are many types of perceived advantages of patents. Four main categories of advantages can be distinguished, which in order of perceived importance were (1) provision of protection, (2) bargaining power, (3) internal advantages and (4) image improvement. Several of the advantages of patents increasingly accrue as they become part of a patent portfolio and a patent arms race in the company, something that was recurrently emphasized in interviews. There was also a certain shift from defensive to more offensive motives behind patenting, although it is difficult to draw a sharp line in between. The perceived advantages of patenting by far exceeded the perceived main disadvantages concerning disclosure of information and direct costs for filing.

Since most Japanese corporations had a corporate-wide patent policy in contrast to many Western corporations, the chapter thus elaborated on the rationale and content of an IP policy in general. As IP has gained increasing strategic importance and top management attention, patent and IP policies evolve, often in stages similar to how the IP organization evolves, and become more comprehensive, strategic and integrated with business and technology management.

Continuing the elaboration of various generic technology strategies and commercialization strategies in Chapter 6, Chapter 7 described various generic patent strategies, counter-patent strategies and litigation strategies as well as other IP strategies in general, such as secrecy, scanning (counter-secrecy) strategies and trademark strategies. Figures 7.9-11 summarized these typologies of generic strategies or strategic options.

Patent strategies can be classified in various ways, such as pertaining to legal aspects of individual patents, pertaining to when, where, why and how to patent, or pertaining to patent portfolio composition in statistical terms. The chapter presented in particular a classification

pertaining to the patenting pattern in technology space and in “life cycle time”, that is, over time in relation to the stages in the product life cycle and the technology life cycle.

Concerning IP strategies in Japan, a number of commonly used strategies were described, such as flooding, fencing and continuous patenting as well as CI/BI-building of trademarks. Such strategies have been developed in the past by leading companies in the West, and in the USA in particular, but have been adopted, refined and applied more systematically by Japanese corporations in a manner not unlike what has happened with several other management techniques originating in the West. In the Japanese corporations surveyed, there was an increased emphasis on quality rather than quantity of patents and on strategic patenting in particular. The chapter presented illustrations from the electrical corporations Canon, Hitachi and Toshiba regarding patents and from Sony regarding trademarks.

The use of what was called multi-protection and total IP strategies for a business system with all its product and service components rather than for an individual product was finally described and advocated. In this way, the value of the IPR portfolio is enhanced and the company’s intellectual capital leveraged.