

# Patent Strategies and the Progress of Science and Useful Arts

Term Paper  
6.901 Inventions and Patents

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by

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## **Introduction**

A few hundred years ago some wise men decided to officially support innovations in their country by stating that "congress shall have the power to promote the progress of science and useful arts" in Article I, Section 8 of the United States constitution. They created the patent system, which means, giving a monopoly for a limited time to the inventor. This system encourages people to create businesses and develop new technologies, methods, or arts, because they must not be afraid that someone else is stealing their ideas and harvest the crops of their intellectual seed.

Individuals and companies developed desired goals and strategies how to use the patent system to maximize the individual benefits. This paper will discuss the role of goals and strategies in the patent system and their impact on large cooperations and the individual inventor in a small company. At the end I will present an idea, how the major weaknesses can be changed.

## **Patent strategies**

Companies which develop a patent strategy have several goals in mind. These goals are protection of their products and services, generating cash by selling or licensing patent rights, obtaining a monopoly for future exploitation, protecting their research and development investments, and creating bargaining chips to be prepared for attacks by competitors.[1] I want to discuss the reasons for these goals and the impact on the overall progress of science and and useful arts, before I present and discuss the different strategies companies use.

### ***Protecting your products and markets***

To have a patent on a technology means to have a monopoly for a limited time and a specific area. Therefore it is possible to protect your products or services and make sure, that you defend your market share and income to get continuous revenues. Protection of inventions and your differentiation from competitors' products allows you to charge higher prices and invest in research and development. Without protection you would have to compete on operation efficiency and less on product features and innovation. In the

short-term perspective, it seems to be good for customers, because prices would decline. But in the long-term perspective, the investment in inventions wouldn't pay off and people would stop introducing new products. They would wait and copy ideas from other companies. Therefore this goal promotes the progress of science and useful arts, because companies need to differentiate from others to compete. They are encouraged to develop new products or services, because their ideas will be protected by the patent law.

### ***Additional revenue source***

The second goal is to generate a source of revenue by selling or licensing your patents. If you developed a technology, which doesn't fit in your business strategy, you could sell it and get a return on your investment. Licensing a patent is a good strategy, when your production capabilities are too low or your financial situation is too weak to invest more money into new production facilities. Having other companies in the same market using your patent and paying royalties to you, your technology can conquer the whole market faster and you can earn extra money without investing any. A good example for this strategy is the Pilkington glass company.[2] They licensed their new technology to other glass companies, because they couldn't meet the demand of the market. Getting all improvements and inventions that are made by their license takers, they made sure to have a technological competitive advantage, when their patent rights expired. Several companies have specialized on developing new technologies, patenting them, and selling or licensing their patents. They are not concerned about manufacturing or selling the products to the end customer, but in pure research. This leads to a lot of patents that will never be used in real products and promotes progress in science in a theoretical way.

### ***Monopoly for future exploitation***

Sometimes, you develop an idea or technology which can't be used at the time of the invention, because other technologies are not mature enough but needed for a product, the market is not ready to adopt the technology, or laws and regulations must be changed to introduce or sell a new product. In this case you can file a patent to protect your business for the future. If the circumstances change and you are able to launch your

product, you will have a legitimate monopoly from your old patent. This example shows that a patent is only a right to exclude others from doing something, but not to make or sell anything you want. An example is the global school district project protected by the Sonenreich patent.[3] The idea behind the patent is to connect classrooms globally using the internet, webcams and communication software. This makes it possible to bring education to people all over the world. The idea will create more and more value when the internet bandwidth increases and internet is available in more places.

### ***Protect R&D investment***

The fourth goal, protecting your research and development investments is an insurance for your capital investments. Especially in the pharmaceutical industry where research expenses easily exceed several millions of dollar, a patent investment of \$20,000 doesn't affect your total expenses dramatically, but gives you a security that your investment and business opportunities from the new research results will be protected.[1] The patent system motivates to invest, because the results can only be used by your company.

### ***Be prepared for litigation***

For big companies, e.g. in the semiconductor industry, it is important to have patents as bargaining chips. Since they use the same technologies and materials to produce their chips and it is hard to prove, which methods they use to get the desired results, they tend to have a broad patent portfolio. In case that they are sued for patent infringement, they are able to react and find patents in their portfolio, which are violated by their attacker. Then they can trade in patents against patents and cross-license them. Of course, this should not mean that you patent as much as you can, because you can only trade in valuable patents against other valuable patents. Especially broad patents are important when narrow patents depend on these. But companies tend to patent even small improvements to get more patents and impress others by their huge patent portfolio.

### ***Summary***

In general the five presented goals of patents encourage to invent and create new businesses. Patents give an insurance to earn the money you spent on development by

giving you a monopoly for a limited time and protecting you against competition. Companies, which only sell or license their intellectual property, may file a number of patents without knowing, whether there will be any applications. A lot of patents are more or less useless for the progress of science and a burden for the patent office, because all applications need time to be handled. Another source of useless patent applications may come from companies, which file everything they can imagine just to have a big portfolio, which they could trade in. This could be counterproductive for the industry, because people spend a lot of time on preparing these applications and other companies must invest a lot of time to study them to avoid infringement.

## **Patent Strategies**

In the third chapter of this paper, I will discuss the patent strategies and tactics mentioned in [1], which are used to reach the overall goals of companies' patent goals. I will describe how and when they are used, how they affect big and small companies, and if they promote progress of science and useful art. After discussing them, I will summarize the impact of these strategies in general. The first three strategies, inventing around your patents, the picket fence strategy, and the toll gate strategy try to protect your business and limit the business of your competitors. To hide development plans and ideas and to surprise your competitors, the submarine strategy is used. The counter attack strategy and the the stealth counter attack strategy are used to limit the range of competitors patents and to get rid of key patents, that prevent you from making or selling your products. At the end of this part, the cut your exposure strategy and the bargaining chip strategy are discussed. They are used to avoid the danger of penalties for infringement.

### ***Protect your business***

To stay independent and have a broad range of potential applications for your technologies, it is recommended to patent around your patents.[1] This could be hard, because you used all your ideas in the first patent and generating new ones is hard since you thought about potential applications over and over again. Patenting around your own patents, especially your key technology patents, increases the value of your first patent

and protects your future business. This strategy can be used by small and big companies, but for smaller companies, it might be harder to file more patents due to limitations in money and human resources to invent and file the patents. This strategy fits pretty well in the concept of promoting progress in science, because people think more deeply about potential applications, make use of their technologies and limit their potential. A drawback of having one company with a lot of patents around a technology could be, that this company isn't able to implement all interesting and valuable applications due to a lack of resources. But nevertheless, it encourages to invent.

### ***Limit your competitor's business***

The picket fence strategy is used to make use of competitors key technologies and limit their business opportunities. You simply don't patent around your own technology, but around your competitor's.[1] Then you are able to cross-license your patents with theirs. You will not be allowed to sell your applications, if you need your competitor's key technology patent, and your competitor won't be able to sell applications, that are patented by your patents. In this case both parties profit from sharing their patents. For big technology companies this is a useful tool to make business in markets, where they don't own the key technology. Small companies with a small patent portfolio are possibly not able to survive, when someone else invents around their technology. They barely develop around competitor's patents, because they don't have the money to pay the royalties for using the patent. This strategy encourages to work with other companies, that both companies benefit from the patent situation. Customers will profit from competition, more innovations and lower prices.

### ***Toll Gate Strategy***

The third strategy to protect your business by limiting you competitor is the toll gate strategy. You focus and invent not only around the patent of one competitor, but around the patents of the whole industry. First of all you analyze your industry and then you make assumptions about future developments. In the end you file broad patents, that work like toll gates and prevent competitors to enter future markets easily without asking

your for permission and paying toll fees. This strategy is relevant for big companies to protect future business, but smaller ones are occupied by realizing their short-term projects and can't focus on large, long-term projects. Toll gates prevent small companies to develop in this area, because the fees set by bigger companies might be too high. Therefore this strategy encourages invention by looking into the future, but also suppresses others from finding applications in this area, because of the toll fees as an entry barrier.

### ***Hide your development***

Patents can hide like a submarine and surprise your competitors, when they want to launch a product. The submarine strategy also hides your development plans and ideas of new markets, you intend to target. Companies hand in their patent application and keep it pending as long as possible. They slow the patent process down and once other applications in the same area appear, their patent will show up and can be used to prevent competitors to sell their products, because these products might infringe your patent. The research and development investment of your competitor will become worthless within one second, if they can't get an agreement to license your patent to be able to sell their products. To reduce the power of this strategy changes were made in the 1995 patent amendment.[1] Now a patent is valid 20 years from the date of application and not 17 years from the date of filing. Also a list of patent applications is published so that other companies can guess, what you are inventing or patenting. The submarine strategy is an offensive weapon to attack new inventions of competitors, let them spend money in research you have already done, and hide your own strategy. It can be perfectly used by big companies but isn't applicable for small ones, because they have to prove to outside investors, that their intellectual property is protected by patents. Otherwise they can't raise money to develop their business, because the risk of having a competitor entering the market is very high. Since the current research results are not public and competitors may invest money to develop similar tools, this strategy doesn't promote progress in science at all, but it is a legitimate process and a lot of patents are nowadays hidden just because the patent office can't keep up with the number of new applications and it takes a

long time to check the applications.

### ***Limit competitors***

If some patents of your competitors prevent you from entering a market, you will try to use the counter attack or the stealth counter attack strategy. Using these strategies, you try to limit or restrict these patents. Points of attack are improperly issued patents or fatal weaknesses within patents. The stealth counter attack means not to fight in a courthouse, but simply applying for a re-examination in the patent office, which is less expensive and will give you the opportunity to attack the patent otherwise, if you are not successful. Like every trial or litigation the big companies are in a better position than the small ones, because they have the resources to spend time in the court, whereas for small companies time and manpower are crucial. These strategies can lead to progress in science since they limit patents and encourage to invent in the, again, unprotected area of research. On the other hand they encourage applicants to take care when they prepare their application. But they are bad for small companies, because they will always lose time and money even if they are right and their patents are valid.

### ***Dealing with litigation***

The last two strategies are used to reduce the risk of infringement and penalties. The first one is the cut your exposure strategy, where you ask an outside attorney to write a document, stating that your product isn't an infringement of a competitor's patent. This will reduce the liability exposure, because you show that you are not willfully violate a patent. This strategy will encourage you to introduce new products without fearing high penalties. The bargaining chip strategy is a second approach to react on competitors claims on patent infringement. When you are sued, you just react by finding patents in your portfolio, which are violated by this competitor, and try to cross-license your patent portfolios without risking high payments. Having patents to trade in, you need to invent and therefore, this strategy promotes progress in science. A drawback of this strategy is, that useless patents are filed just to increase the total number of patents in a company portfolio. For small companies it is hard to handle a big patent portfolio and to make the

investment in a large number of individual patents. They are one more time in a worse situation than big cooperations.

## **Suggestions and ideas**

Having presented and discussed different strategies companies are using, I want to show, how some strategies prevent the progress of science and useful arts. This prevention includes keeping the patent office busy by filing useless or never used patents, preventing others from making business or developments even though patents are not used for own business, or hiding inventions as long as possible. I also want to present my idea how to change the system to reduce these possible problems.

First of all the submarine strategy is counterproductive to make progress in science. Holding back and slowing down the patent process to hide your ideas and then surprising competitors is legal, but creates damage for the society. Other companies have to spend money on research to get the same results, that are already available, but not yet published. And then, when they come up with a product, they can't sell it and all their investment is worthless because their competitor let his submarine pop up. The changes in the Patent Amendment of 1995 were a good step to improve the system and reduce the abuse of hiding research results during the application process. Today the application process is slow down, because the patent office has just too much work to do. That creates an artificial submarine. Therefore the number of useless patent applications must be reduced or the number of employees increased to reduce the time of the patent application process.

Two other strategies that not really provide impact on the progress in science are the toll gate strategy and the bargaining chip strategy. The toll gate prevents others from inventing in a different area because entry in this area is made more difficult due to the toll gate patent. Single inventors might not research in that area. If the company, which owns the patent, doesn't pursue its research in that direction, the patent will just block invention. Also the bargaining chips strategy isn't good for the whole system. People and companies create a lot of patents to trade in in case of litigation, but a lot of these patents

have no additional use in creating new products. I guess, their claims are also more and more specific, that their use is very limited. But still they are a burden for the patent office and they keep it pretty busy.

To prevent companies from filing patents as a toll gate or their bargaining strategy, I suggest the following strategy for the patent office. It will change the patent application by adding another step. After two years the patent holder must prove that his patented idea is used in an application or product or at least bring evidence, that they are developing something, where they use their idea, or that it is not possible to make products with this idea right now but in the future. Otherwise the patent owner has to pay an additional fee, which can be interpreted as fine for filing useless patents. To give the burden of proving that a patent is used to the patent owner, this additional fee is added to the application fee and the patent owner will be reimbursed, when he has proven the use of the technology in his business. It will also be possible to bring reasons for usage with your application to waive the extra fee. This is one advantage of the American patent system, that you can publish your ideas and file a patent application within one year. That gives the inventor the opportunity to find markets and customers for his invention. If there are reasons that you already use the new idea, you won't have to pay the extra charge. If you don't apply to get your money back because your patent is useless, you won't have to do anything and your patent will expire automatically after two years.

What will happen, if the patent office will implement this idea? First of all, there will be additional work for the inventor and the examiners to check the applications for patent use. But on the other hand, the position of the small inventor will be improved. He barely uses the toll gate or bargaining chip strategy. Additionally he usually applies for patents related to his products, which means he won't have to pay the additional fee. It shouldn't be hard for him to prove the usage and therefore, there wouldn't be any work to do at a later stage. The use of the toll gate strategy should be less interesting, because you have to invest additional work in the future to prove that you're anticipation of future applications or technologies are then used, and you have the risk that you loose the additional fee. If companies filed and couldn't find applications or just didn't look for them, the specific area protected by their patent would be open for research again.

Therefore someone else can contribute to make progress in science. The bargaining chip strategy will be influenced, too, because it is more expensive to file a huge number of additional patents that might not be useful. Also the extra work of proving that your idea is used might prevent people from filing everything and nothing. Ideally, this extra fee for patent usage would reduce the number of patent applications for the patent office and thus, reduce the time of the examination process. Also a new source of revenue for the patent office would be generated.

Finally, I want to conclude, that the different goals and strategies of using patents do mostly provide value and contribute to the progress of science and useful arts. Bigger issues in today's american patent system are that almost everything is patentable and the patent process takes too long.

## **References**

- [1] Glazier, "Patent Strategies for Business", Third Edition, p. 1-3 and 31-41
- [2] Barbour, Baruch and Jakobsen, "Pilkington Float Glass", Harvard Business School case 9-672-069 Rev. 2/82
- [3] Sonenreich et al., October 26, 1999, United States Patent 5,974,446