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# The Rationale for Patent Pools and their Effect on Competition

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# Summary

Patent pools are contractual agreements where patent rights are transferred to a common holding company for the purpose of jointly licensing of patent portfolios. They have posed and still constitute one of the major challenges to competition policy. The arrangements have the ability to integrate complementary technology, reduce transaction costs and avoid infringement. At the same time, they constitute collaboration between horizontal competitors with the potential to reduce competition, facilitate cartel behavior and deter research and development. Due to their ability to shelter collusion and extend the grant of patent rights, competition authorities have traditionally been suspicious towards the use of patent pools and concerned of their potential negative effects.

The rationale for patent pools is founded in the conflict between competition law and IP law and the discussion of monopoly versus competition. Although monopoly can be valuable to ensuring appropriation of the value of long and expensive research and development, arguably competition can better foster cumulative innovation. This is especially true in progressive and cumulative industry where a patent usually only cover a small part integrated into the final product. Simultaneous competition and cooperation among horizontal competitors can therefore be essential in promoting R&D. Patent pools can under these circumstances prevent transactional failures of bargaining breakdown and holdups, and create efficiencies in the innovation process.

In recent years, the attitude of both US and EC competition policy towards patent pools has changed. The change reflected understanding of their effects and the importance of the new economy markets where patent pooling was becoming increasingly common. In 1995 the US Antitrust authorities recognized the procompetitive potential of patent pools and developed a method for analyzing the effects of patent pools. EC competition authorities have been more reluctant to deal specifically with patent pools. They have for a long time been aware of the potentially anticompetitive aspects of multiparty licensing, but recently also been more supportive of their potentially procompetitive benefits.

Patent pools can be expected to play an important role in the new economy. Based on the many complementary patents needed for production, recent patent pools have been established with the purpose to support a technology standard where they can promote the assembly of essential patents and rationalize licensing while avoiding anticompetitive concerns. The design of standards and patent pools constitute a new area of competition law and IP law that may require a modified competition policy.

# Abbreviations

EC	European Community
ECJ	European Court of Justice
EC Treaty	The Treaty Establishing the European Community
EU	European Union
FTC	Federal Trade Commission
IP	Intellectual Property
IPRs	Intellectual Property Rights
R&D	Research and Development
TTBE	Technology Transfer Block Exemption
US	United States of America

# 1 Introduction

## 1.1 Background

Competition policy has always played a significant role in European Community Law. The general objectives of competition law are to enhance efficiency and to protect small firms and consumers. The policy concerning intellectual property rights (IPRs) also plays an important role in the effort to increase efficiency. IPRs give incentives for innovation, which in turn stimulates welfare in society. Intellectual property law and competition law have traditionally been regarded to be in conflict with each other. The obvious tension between the two depends on the fact that an IPR provide a monopoly which competition law is trying to prevent. The problem is founded in the theories of what best is suited to promote innovation - competition or monopoly. Although both competition law and intellectual property law serve the same purpose - to promote innovation and economic welfare - there are still areas where the tension is prevalent.

Patent pools have posed and still constitute one of the major challenges to competition policy. Patent pools are institutions used primarily to avoid blocking of patent rights. They have the ability to integrate complementary technology, reduce transaction costs and avoid infringement. At the same time, they constitute collaboration between horizontal competitors with the potential to reduce competition, facilitate cartel behavior and deter research and development. The formation of patent pools has undoubtedly procompetitive benefits, but also serious anticompetitive risks. In the beginning they were often used to shelter collusion and to extend the grant of patent rights. Competition authorities have therefore traditionally been suspicious towards the use of patent pools and concerned of their potential negative effects.

The Commission has historically been hesitant to deal with patent pools in regulations, largely because of their unknown effects on competition. In the Christmas message of 1962,<sup>1</sup> the Commission explicitly refused to make generalizations about patent pools. Patent pools were at that time not very frequent and the structure and definition of patent pools had not yet been crystallized.<sup>2</sup> In its Eleventh Report on Competition Policy<sup>3</sup>, the Commission also expressed concern that technology pools may exclude

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<sup>1</sup> Notice on patent licensing agreements, JO 2922/62, (commonly known as the “Christmas Message”, partly because of its date and partly because of the good news that many exclusive licenses would not infringe Article 81 (1) and need not be brought to the attention of the Commission).

<sup>2</sup> Even in its Eleventh Report on Competition Policy (1983), points 92 to 94, the Commission used the term “patent pool” to include cross-licensing of patents between two firms.

<sup>3</sup> Eleventh Report on Competition Policy (1983), point 93.

third parties and discourage competition in research and development between the parties. There was a fear of naked cartels between competitors and the need to avoid blocking patents was not seen as a big problem. The history of the attitude in the EU, although much shorter, resemble the concerns in US policy. Patent pools have attracted the attention of the US antitrust authorities for over a century because of their potential use to restrict competition. For most of the 20th century, US courts and antitrust agencies were suspicious patent pooling went beyond what was required for efficient use and sharing of technology.

In the 1990's the perspective changed materially in both US and EC competition policy. The change reflected improved understanding of the issues and the importance of the new economy markets where patent pooling were becoming increasingly common. These changes in antitrust thinking were reflected in the 1995 US IP Licensing Guidelines.<sup>4</sup> The first significant change was the recognition of the procompetitive potential of patent pools under the conditions of the "new economy". The second significant change was the development of a methodology for analyzing when the pooling of IP was likely to be procompetitive and when it was not. The key concept here was the distinction between the pooling of essential and complementary patents, which was generally seen as procompetitive and the pooling of substitute patents, which was likely to be anticompetitive. Although EC competition policy has been more reluctant to deal specifically with patent pools, their procompetitive effects have been acknowledged in recent comfort letters.

Patent pools can be expected to play a major part in the dynamic competition of the new economy, where they can facilitate the rational design of new product standards. Based on the large number of complementary patents required for production, many of the recent patent pools have been established with the purpose of supporting a new standard. Due to their ability to promote efficient assembly of essential patents and rationalize licensing while avoiding competition problems, they have become important business tools. The design of standards and patent pools constitute a new area of competition law and IP law that may require a modified competition policy.

## 1.2 Purpose

A major challenge to competition policy is to create a policy environment that is encouraging to the use of patent pools, especially when they support a new product standard. A policy also has to be aware of and restrain the potential anticompetitive risks of patent pools. It is important a future policy

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<sup>4</sup> Antitrust Guidelines for the Licensing of Intellectual Property, issued by the US Department of Justice and the Federal Trade Commission, 1995. Available at <http://www.usdoj.gov/atr/public/guidelines/ipguide.htm>, hereinafter: US IP Licensing Guidelines .



stimulates new development of patent pools and makes clear how they should be designed without running afoul of competition laws. The main purpose of this master thesis is to provide the fundamental reasons for such a policy.

I will provide an analytical framework for patent pools and their effect on competition. The rationale for patent pools in general will be discovered, although the analysis will focus on patent pools that support a standard. Furthermore, I will try to discover the EC attitude towards such patent pools. Finally, I will, based on the economic rationale, the competitive effects and the recent attitude towards these kinds of patent pools distinguish some generally accepted competition conditions they should be required to meet. These general guiding principles should be considered in future Guidelines or a block exemption.

### **1.3 Method**

The long history of antitrust and patent pools in the US is instructive regarding the competition problems that can arise when patents are pooled. The thesis therefore includes a comparative element. The trend in EC competition policy can be seen in light of the development in the US and I have used US case law and doctrine to discover the rationale and competitive effects of patent pools.

The US IP Licensing Guidelines have been used as a framework for analyzing the procompetitive effects and anticompetitive risks of patent pools. I have also used some recent examples of patent pools reviewed by US Antitrust division in order to illustrate the connection between theory and practice. The reviews follow the analytical outline of the US IP Licensing Guidelines, which have become a model for analyzing subsequent patent pools even outside the US.

Law and economics have been used to analyze the economic rationale for patent pools. Economic theory is generally positive towards the use of patent pools and procompetitive benefits and efficiency enhancing effects undoubtedly justify the formation of patent pools. An overly permissive treatment of patent pools also pose serious anticompetitive risks. If not regulated and supervised they can easily be abused and used to shield cartels and other anticompetitive behavior. These positive and negative effects are analyzed on the basis of US doctrine and US cases.

In order to discover the EC attitude towards patent pools I have primarily examined regulations and case law. Although information has been sparse one can discern a more positive attitude towards patent pools, especially those established to support a technology standard. The trend is especially evident when looking at some of the recent comfort letters issued by the EC Commission.

I have then applied this framework and directed my analysis towards patent pools that support a technology standard. EC and US antitrust authorities have recently reviewed some of these patent pools. Based on these reviews, the analysis of economic rational and competitive effects, I have tried to distinguish some general guidelines patent pools should be required to meet.

## **1.4 Delimitations**

The intersection of competition law and intellectual property law is a huge and complicated field of study. I have tried to limit the background theory to what relates to patent pools. The theories behind the conflict between monopoly and competition and transaction costs are important to review in order to understand the nature and effect of patent pools.

The conflict between competition law and intellectual property law in the EC is only briefly reflected with the purpose to provide a background to the attitude towards patent pools. The thesis only deals with licensing agreements under Article 81 and not at all with the elements of Article 82 of the EC Treaty, namely, assessment of market power in the relevant market and abuse or affect on trade.

The focus of the thesis will be on patent pools and multiparty licensing, especially agreements that support a technology standard. Cross-licensing will only occur in some of the cases to illustrate competitive effects of pooling patents. Joint ventures and mergers can be seen as forms of patent pooling, but are also excluded from coverage. The thesis will only deal with horizontal agreements, although vertical restraints and effects will be mentioned without being discussed in detail.

Most of the recent patent pools have been, and presumably many of the future patent pools will be, established to support a technology standard. Standard setting as discussed here is the specification of a technical solution supported by the pooling of complementary IP required for that technical solution, and is not to be confused with “industrial standard setting”, which in most cases does not involve patent pools. Due to the expected future importance of this field of use I have concentrated the guidelines and conclusions on this specific area.

## **1.5 Outline**

I will first distinguish and explain the nature of patent pools in chapter two. In chapter three, I will discover the rationale for patent pools found in economic and legal theories. Chapter four examines the procompetitive effects and anticompetitive risks of patent pools, based on US Case law and doctrine. At the end of this chapter I will also give examples of recent patent pools reviewed and cleared by the US Antitrust Division. In chapter five, I will provide a framework to analyze patent pools in an EC context. Little

has been written about patent pools in EC doctrine, but a trend in attitude can be found in case law and recent examples. In the sixth chapter, I will provide some general guidelines for patent pools. The last chapter concludes the rationale for patent pools and the recent development. In my conclusions, I will also try to predict the future development and what the future action towards patent pooling should be.

## 2 Distinguishing Patent Pools

### 2.1 What is a Patent Pool?

Before proceeding with a discussion of patent pools, it is important to define exactly what is meant by talking about patent pools. The term “*pool*” has been used to describe the many different arrangements in which patent holders in some way coordinate their patents. Patent pools are private contractual agreements where patent owners transfer their patent rights to a common holding company for the purpose of jointly licensing their patent portfolios.<sup>5</sup> These pooling arrangements can vary dramatically, ranging from giant companies holding hundreds of patents involving disparate technologies, to cross-licensing of related patents by two patent owners. Although the contractual provisions governing a pool differ between technologies and prevalent patents, all patent pools generally share two common characteristics:<sup>6</sup>

Consolidation of patent rights into a central, independent entity which issues licenses to the pooled patents; and

Methods to evaluate the patents and to divide the royalties generated through licensing revenues.

Several methods are used to allocate the stream of royalties. In some pools, independent arbiters usually assess the relative value of the patents in the pool and then allocate shares relating to the value of a patent. In other pools, each patent holder is allocated an equal share of the royalty stream.

Beside the royalty and licensing fees the pool agreements may, as seen in some of the older US cases, include other types of restrictions on pool members or on licensees of the pool. For example, entry into the pool or access to its patents can be limited to those willing to agree to certain restrictions on how the patented inventions can be practised, the location where the patents can be practised, or the types of products that can be made using the patents.<sup>7</sup> Sometimes they directly regulate the sale of products made using the licensed patents, such as restrictions on the price, territory of sale, or customers to which the products can be sold.<sup>8</sup> Pools can also differ in the restrictions they place on the pool members' ability to license their patents outside the pool. Sometimes outside licensing is precluded, by requiring an assignment of all rights under the patent.<sup>9</sup> Sometimes the patent owner is merely limited in its ability to license by a requirement that the patent owner receive consent of other pool members. Sometimes the patent

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<sup>5</sup> Merges, Contracting into Liability Rules, *ibid.* at 1340.

<sup>6</sup> *Ibid.* at 1347.

<sup>7</sup> See e.g., *Hartford-Empire Co. v. United States*, 323 U.S. 386 (1945).

<sup>8</sup> See e.g., *United States v. Line Material Co.*, 333 U.S. 287 (1948).

<sup>9</sup> See e.g., *Hartford-Empire Co. v. United States*, 323 U.S. 386 (1945).

owner has unrestricted freedom to license its patent outside the pool. Patent pools can also vary in scope and in variety of patents included. Some pools are limited to patents covering a single commercial product. Others contain many diverse patents relating to different products in different markets.<sup>10</sup> Sometimes a pool includes only patents existing when the pooling agreement among the patent owners is initiated; other pools oblige the pool members or licensees to add future patents to the pool.<sup>11</sup> Patent pools can therefore greatly differ from each other and their competitive effects are depending on how the agreements are designed.

## **2.2 Related Terms**

When assessing the effect of the pool on competition it is important to understand the relationship between the various patents in a pool. Patents can be classified as competing or non-competing.

### **2.2.1 Competing Patents**

Competing patents are patents that are viewed as substitutes for each other in the marketplace.<sup>12</sup> They can result either when a new invention provides a market substitute for a patented product or when a patented product is “invented around” and the original patent is not infringed.<sup>13</sup> Thus, if there are three separate patents covering processes for manufacturing pens and each of these processes is viewed by a pen manufacturer as a distinct alternative, the three patents would be competing with one another. Seen in economic terms, if patents are competing, the acquisition of rights under one patent by an individual would eliminate or reduce any demand by that individual for rights under the other.

### **2.2.2 Non-competing Patents**

Non-competing patents can be complementary, blocking, or totally unrelated.

#### **2.2.2.1 Complementary Patents**

Complementary patents are patents that cover technologies which complement each other by the use of one making use of the other more valuable.<sup>14</sup> They result when inventors independently patent different

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<sup>10</sup> Compare *United States v. Line Material Co.*, 333 U.S. 287 (1948) with *Standard Oil Co. v. United States*, 283 U.S. 163 (1931).

<sup>11</sup> Compare *United States v. Line Material Co.*, 333 U.S. 287 (1948) with *Hartford-Empire Co. v. United States*, 323 U.S. 386 (1945).

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> Carlson, *Patent Pools and the Antitrust Dilemma*, *Yale J. of Reg.* 359, at 364 (1999).

components of a larger invention. For example, patents that cover the manufacture of pen refills and patents that cover the manufacture of the outside pen structure can be viewed as complementary. The patents are not substitutes for each other because they perform totally different functions. For complementary patents, access to one patent increases, rather than decreases, demand for the other. In the absence of cooperation, the effect can be that a product is blocked and prevented from development.<sup>15</sup>

As will be seen, the relationship between patents in a pool — such as whether they are substitutes or complements — have a significant effect upon the competitive aspects of the pool and is therefore central to any discussion of patent pools and competition policy.

#### **2.2.2.2 Blocking Patents**

It is unlawful to practice an invention claimed in a granted, unexpired patent. Theoretically, a patent grants its holder a right to develop all technologies underlying the claims of the patent. The discovery of an improvement or variation of a patented invention can be rewarded a patent if the discovery meets the standards of patentability. However, while the discovery is entitled a patent, it does not automatically give the right to practice it commercially. If practicing of the discovery infringes the patent on the invention improved upon, one cannot practice the patent unless receiving a license under that basic patent. In such case, the “dominant” patent blocks the practicing of the “subserving” patent. Likewise, the dominant patent cannot be developed in the area of the subserving patent without permission.<sup>16</sup> Blocking can also occur if a potential licensee individually negotiates with each patent holder and the final licensor uses its position to bargain unfairly, knowing that the potential licensee requires the final license to operate the technology. Known as a holdout problem, this situation would give the licensor the power to raise prices unreasonably, requiring the potential licensee to either accept the higher price or lose the benefit of all previously obtained licenses.

Blocking patents are not competing even if they are directed to carrying out the same function because they cannot be substituted for each other.

### **2.3 Cross-Licensing Arrangements**

Cross-licensing arrangements provide an alternative for carrying out the goals of patent pools. They are simply an agreement between two companies that grants each the right to practice the other’s patents. In contrast to patent pools, cross-licensing arrangements do not have a central entity for holding the patents. Instead, cross-licenses are negotiated when each of two companies has patents that may interfere with the other’s

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<sup>15</sup> Carlson, *ibid.* at 365.

<sup>16</sup> Carlson, *ibid.* at 363.

products or processes. Rather than blocking each other and going to Court or ceasing production, the two enter into a cross-license arrangement. When cross-licenses are royalty-free, each firm is then free to compete, both in designing its products without fear of infringement and in pricing its products without the burden of a per-unit royalty due to the other. Thus, cross-licenses can be procompetitive and provide a solution to the complements problem.<sup>17</sup>

However, the arrangements are not always royalty-free and without restrictions. Cross-licenses may involve fixed fees or royalties and various field-of-use restrictions or geographic restrictions. This is mainly because patentees do not want open competition over what otherwise would be of monopoly control.<sup>18</sup>

Although cross-licensing agreements and patent pools differ in procedure they are largely equivalent for the purpose of analyzing their competitive effects.<sup>19</sup> The FTC also treats cross-licensing agreements and patent pools similar in the IP Licensing Guidelines.<sup>20</sup>

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<sup>17</sup> See section 3.3.2; Shapiro, Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting, paper 2001 available at <http://haas.berkeley.edu/~shapiro/thicket.pdf> , at 9.

<sup>18</sup> Priest, Cartels and Patent License Arrangements, 20 J.L. & ECON. (1977) 309, at 357 ("[S]ince the cross-licensing makes each firm a competitor of the other, the two must agree to restrain sales to avoid competing away the patent rents.").

<sup>19</sup> Priest, *ibid.* at 359 n.188.

<sup>20</sup> US IP Licensing Guidelines, *ibid.* § 5.5.

# 3 Rationale for Patent Pools

## 3.1 Introduction

The economic rationale for patent pools is based in the conflicting incentives of monopoly and competition. Although horizontal concentration can be valuable in enabling appropriation of the value of long and expensive research and development, competition can better foster cumulative innovation. The primary purpose of patent rights is to stimulate innovation and further development. Whether concentration or competition is the best path for innovation depends on the types of industry and market for the innovation. In the progressive and cumulative industry a patent usually only covers a small part of the integrated final product.

Society rewards innovation by offering an intellectual property right to the inventor. Just as important as making sure innovation is used in the most efficient way is encouraging the spread of knowledge and stimulating further development. One way to achieve this is by horizontal cooperation in the form of procompetitive patent pools. The effect of patent pools can clearly be seen in progressive and cumulative industry where they can stimulate competition and enhance innovation.

## 3.2 Monopoly versus Competition


The question of whether monopoly or competition is preferable for encouraging innovation is parallel to the policy conflict between intellectual property and competition law. The main source of conflict usually mentioned in the academic and policy literature is whether competition law would take away what IPR law is providing.<sup>21</sup> However, this is only an apparent force of conflict because they both aim to promote consumer welfare and innovation. In order to achieve these goals one has to find the right balance between market power and competition. Although horizontal concentration may be useful for appropriating the value of a long and expensive research and development process, a role for competition has to be preserved.

Competition is good for a variety of reasons. Basic economic theory teaches that firms in a competitive market will produce more and charge lower prices than monopolists. Monopolists can not only raise prices above competitive market level, but also reduce their output below the level that consumers would be willing to purchase at a competitive price. Furthermore, monopoly inherently reduces consumer choice and as will be

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<sup>21</sup> Coates & Finnegan, Intellectual Property, chapter 8, paragraph 8.10, in Faull & Nikpay, The EC Law of Competition, 1999.



shown, monopolists may have less incentive to innovate than competitive firms 

### 3.2.1 Concentration versus Competition

The rationale for patent pools can be found in competition law and innovation markets theory. Integration between horizontal competitors and the formation of patent pools raises the question of what type of industry structure is best suited for innovation; monopoly or competition? Innovation markets theory will actually support certain market transactions that aggregate patent rights, in particular procompetitive patent pools. I will first sort out the economic/patent perspective and give a background on the theory of concentration versus competition and then try to establish the need for competition and patent pools in cumulative innovation.

#### 3.2.1.1 Economic and Patent Perspective

The arguments that address the relationship between market structure and competition tend to divide into two categories: those that embrace the virtues of concentration and those that extol the role of competition. The former view, often associated with the work of economist Joseph Schumpeter, holds that monopolies and market power are provide greater incentives for innovation than competition.<sup>22</sup> In this view, monopoly profits give firms security, and therefore freedom to innovate, in a manner not available to firms in a competitive market. The Schumpeterian perspective is challenged by Kenneth Arrow, who argues that competition is essential to innovation.<sup>23</sup>

This debate in general economic theory has a parallel in patent literature. Edmund Kitch has argued that broad, monopoly- conferring patent rights are necessary for two reasons: first, to provide incentives for development by allowing the firm that owns the patent right to fully appropriate the benefits of such development; second, to allow the patentee to coordinate development efforts, thereby reducing duplicative investment in development.<sup>24</sup> By contrast, other patent theorists, including Robert Merges and Richard Nelson, have argued that although coordination of research by a single patentee may slightly reduce duplication, swift progress in innovation requires competition.<sup>25</sup>

In contrast to patent law and general economic theory, antitrust law has traditionally had little concern for innovation. In the past, antitrust law has

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<sup>22</sup> See generally Schumpeter, *Capitalism, Socialism and Democracy* 81-106 (1942).

<sup>23</sup> See generally Arrow, *Economic Welfare and the Allocation of Resources to Innovation*, in *Essays in the Theory of Risk-Bearing* 144-165 (1971).

<sup>24</sup> Kitch, *The Nature and Function of the Patent System*, 20 *J.L. & Econ.* 265, 276 (1977).

<sup>25</sup> Merges & Nelson, *On the Complex Economics of Patent Scope*, 90 *Colum. L. Rev.* 839, 843-44 (1990) (noting that "[w]ithout extensively reducing the pioneer's incentives, the law should attempt at the margin to favor a competitive environment for improvements, rather than an environment dominated by the pioneer firm").

generally focused on competition in goods markets, and not on the relationship between competition and innovation.<sup>26</sup> In recent years, however, antitrust law has begun to focus on innovation and what market structure might provide the appropriate conditions for innovation.<sup>27</sup>

### **3.2.1.2 Background Theory**

Monopoly theorists favor concentration as a means of promoting innovation. The basic rationale of monopoly theory is manifested in both Schumpeter's general thesis on innovation and Kitch's more patent-specific prospect argument. According to the Schumpeterian view monopolies foster innovation, particularly risky innovation, because they can appropriate fully (or at least more fully than competitive markets) the surplus generated by such investment. If there are major barriers to entry then there will be firms with the resources and incentives to make innovations that will generate large short run profits.<sup>28</sup> Relatedly, the possibility of a monopoly should attract capital investment and reduce the risk of loss. Schumpeter also argues that because monopolies are always susceptible to challenges by new technology, those monopolies that become complacent about innovation are likely to be replaced by new monopolies.<sup>29</sup>

While Schumpeter's work does not focus on intellectual property, the prospect theory put forward by Kitch suggests a mechanism by which intellectual property can create the monopoly conditions Schumpeter argues are necessary for innovation, at least in the context of R&D. As Kitch notes, broad patents, granted early in the development process, should give the patentee control over future development.<sup>30</sup> Kitch's argument about the need for monopoly rights very much follows Schumpeter's. According to Kitch, absent patent protection of nascent invention, no one would invest in subsequent development of the invention for "fear that the fruits of the investment [would] produce unpatentable information appropriable by competitors."<sup>31</sup> Kitch also argues that granting broad property rights on nascent invention will allow the rightsholder to coordinate subsequent development efficiently. That because all potential developers will have to start out from the existing patent right before they begin such development. The rightsholder will then be able to eliminate duplicative investments in development and facilitate the exchange of information among developers.

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<sup>26</sup> Hay, *Innovations in Antitrust Enforcement*, 64 *Antitrust L.J.* 7, 8 (1995) ("Traditional merger analysis has generally featured static analysis of price and output because that is where the anticompetitive consequences of the conduct under scrutiny are expected to occur.").

<sup>27</sup> US IP Licensing Guidelines, *ibid.* §3.2.3.

<sup>28</sup> Schumpeter, *ibid.*; see also Peepkorn & Mehta, *The Economics of Competition*, chapter 1, paragraph 1.122, in Faull & Nikpay, *The EC Law of Competition*, 1999.

<sup>29</sup> Schumpeter, *ibid.* at 83 (arguing that the pursuit of market power is a creative force that "incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one").

<sup>30</sup> Kitch, *ibid.* at 276.

<sup>31</sup> *Id.*

In contrast with Shumpeterian theorists, advocates of competition argue that innovation incentives often are smaller under monopolistic conditions than under competitive conditions. For example, as Arrow has emphasized, if a new or superior product would cannibalize the market for the monopolist's existing product, the monopolist will have no incentive to create that product.<sup>32</sup> By contrast, in competitive markets, there is no impediment to the creation of new products, particularly if these new products, once created, can be the subject of intellectual property protection. Moreover, although competition may lead to some duplicative investment, at least some of the redundancy may be more apparent than real. As Merges and Nelson have argued, because the different possible goals of improvement are often unknown at the time such improvement starts, "racing" among competitors may yield results that would not have emerged if work on improvement had been restricted to a single party (or even to a few parties).<sup>33</sup> Even if one assumes that a clear improvement or development goal can be established at the outset, and that all research is directed to the pursuit of that goal, innovators may take different approaches to reach the same goal. These different approaches may prove to have independent social value.

Additional support for the competition argument can be found in investigating organizational behavior. To the extent that a firm with monopoly power is relatively large, the firm's hierarchical structure and culture may be inimical to innovation, or at least inimical to radical innovation. Elements of firm size, industry concentration and market power can affect the rate of innovation and studies have shown that the average small firm had a higher innovation rate than the large firm.<sup>34</sup>

While concentration may increase the dominant firm's ability to innovate, the lack of competition may weaken its incentives, and may deprive the market of smaller firms who may have other innovations to offer.

### **3.2.1.3 Innovation Markets Theory**

As noted earlier, US antitrust law has, in recent years, begun to consider the question of innovation. In particular, Arrow's work has influenced the innovation markets approach to antitrust enforcement, an approach adopted by the US Antitrust Division of the Department of Justice and the Federal Trade Commission (FTC).<sup>35</sup> As defined in the Licensing Guidelines, an innovation market consists of the research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development. Close substitutes are those R&D efforts,

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<sup>32</sup> Arrow, *ibid.*

<sup>33</sup> Merges & Nelson, *ibid.* at 873-74 (discussing limitations of race and common pool models).

<sup>34</sup> Peeperkorn & Mehta, *ibid.* paragraph 1.123 (referring to a report by Zoltan J. Arcs and David B. Andretsch).

<sup>35</sup> Gilbert & Sunshine, *Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets*, 63 *Antitrust L.J.* 569 (1995) (noting influence of Arrow's theory on why a monopolist has less incentive to invest in innovation than firms in a competitive industry); *Licensing Guidelines*, *ibid.* §3.2.3.

technologies, and goods that significantly constrain the exercise of market power with respect to the relevant research and development, for example by limiting the ability and incentive of a hypothetical monopolist to retard the pace of research and development.<sup>36</sup>

As indicated in the guidelines, innovation markets analysis can be applied to horizontal mergers, joint ventures that fall short of a merger, or various types of intellectual property licensing.<sup>37</sup> If a particular merger, joint venture, or licensing agreement unduly limits the number of competitors in a particular innovation market and yields no offsetting efficiencies in terms of the use of R&D to promote innovation, restrictions may be placed on the transaction.

The innovation markets analysis has been controversial among antitrust scholars. Some of the controversy has revolved, however, around questions that are not central to the analysis in this thesis. For example, one issue is whether innovation markets can be defined with any degree of accuracy.<sup>38</sup> Putting these questions to one side, however, there is the fundamental question of whether innovation is in fact hindered by concentration, or, in other words, benefited by competition.

#### **3.2.1.4 Conclusion**

In the abstract, it is very difficult to resolve the competing arguments regarding whether concentration or competition is the best incentive to innovation. Although empirical studies have suggested that there is a negative correlation between high levels of concentration and expenditure on R&D, other studies indicate that this effect may depend on the particular industry under consideration.<sup>39</sup> Thus, even proponents of competition in innovation note that analysis of the issue should be industry-specific.<sup>40</sup> The fact that appropriability varies from industry to industry also significantly complicates the simple economic model of patents. It is easy to say that the patent laws give a monopoly to the patentee. Today most patents cover a product or part of a product which are only a small segment of a product market. It is therefore possible to have a competitive industry composed of several patent holders, if each one of them holds a patent on one of several possible products in the market. Only where an innovation creates an entirely new market, or significantly advances an old one, is the patent

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<sup>36</sup> *Id.*

<sup>37</sup> *Id.* (discussing licensing and joint ventures)

<sup>38</sup> Gilbert & Sunshine, *ibid.* at 596 ("[i]n many market circumstances there is so much serendipity in research and development that it is impossible to predict the sources of innovation with reasonable certainty").

<sup>39</sup> Levin et al., R&D Appropriability, Opportunity, and Market Structure: New Evidence on Some Schumpeterian Hypotheses, 75 *Am. Econ. Rev.* 20 (1985); see also Peeperkorn & Mehta, *ibid.* paragraph 1.123.

<sup>40</sup> Gilbert & Sunshine, *ibid.* at 580 ("Whatever relationship exists at a general economywide level between industry structure and R&D is likely masked by differences across industries in technological opportunities, demand, and the appropriability of inventions.").

likely to confer an economic monopoly. In the next part, I will therefore focus on competition versus concentration in the industry of cumulative innovation.

### **3.2.2 Cumulative Innovation: The Role of Competition**

The standard idea of invention is what Merges and Nelson call discrete invention.<sup>41</sup> It assumes that the invention is created through the inventor's insight and hard work. The original invention is unique but it does not point the way to wide ranging subsequent technical advances. Many inventions of social and economic value fit this model, and although the inhibitor of the patent can make great profit, the patent is not a serious obstacle to inventive work by other firms.<sup>42</sup> Because the discrete inventions tend not to incorporate many interrelated components or to be included as an integral component of a larger product or system, they do not encourage development of several ancillary products.

However, in a number of technologies the standard idea of invention is inappropriate. In industries producing products comprised of several different components, technical innovation is cumulative. The innovation is according to Merges and Nelson cumulative "in the sense that today's advances build on and interact with many other features of existing technology".<sup>43</sup> Over time the technology is improved and complemented by different inventors adding new features that enhance and further develop the product.

To find the rationale for patent pools, one has to see what effects the monopoly rights granted by a broad patent might have on cumulative technologies. What are the consequences of "pioneer" patents and how does it effect the subsequent development of the technology? The risk in cumulative invention is that a pioneer patent can preclude other inventions from being practiced because they might infringe the original patent. This usually leads to control over a large area by the original patent holder or to a situation in which no one can or will advance the technology in the absence of a license from someone else. Merges and Nelson give historical evidence of these effects.<sup>44</sup> In a variety of industries that relied on cumulative innovation, patents on initial invention could not be licensed effectively and therefore hindered subsequent development. The exact nature of the failure to license differed by industry. In the field of incandescent lighting, Thomas Edison's broad patent covering the use of carbon filament as a source of light slowed down the development of the industry because Edison's company itself did not improve on the patent, and it used the patent to shut

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<sup>41</sup> Merges & Nelson, *ibid.* at 880 (discussing the different models of innovation in disparate technologies).

<sup>42</sup> *Id.* (as example of discrete inventions they mention Gillette's safety razor, the ball point pen and many new pharmaceuticals).

<sup>43</sup> *Ibid.* at 881.

<sup>44</sup> *Ibid.* at 884-897.

down competitors who had designed improved products. In the case of the Wright brothers' broad patent on a stabilizing and steering system, the patent holders sought to license their patent but could not, even over a period of ten years, work out licensing agreements. Merges and Nelson believe the Wright patent significantly reduced the pace of development in the United States by absorbing the energies and diverting the efforts of competitors.<sup>45</sup> Eventually, United States' entry into World War I and the consequent pressure by the Army and Navy (who were the prime buyers of aircraft) brought about a cross-licensing scheme in the industry.

As a contrast, Merges and Nelson consider technology that developed without patent blockages. In the field of semiconductors and computers there have been opportunities for patent holders to take control over a wide range of technology. Instead the pioneer patents were freely licensed and many companies contributed to the advance of technology. One example is the parallel patents of the integrated circuit (by Texas Instruments) and the planar process for producing them cheaply (by Fairchild Instruments). The US Department of Defense, which provided a big market for semiconductors, favored cross-licensing and wanted the technologies to become available throughout the industry. Another recent example of cumulative technology developing without strong patents is electronic computers.<sup>46</sup> As a result of frequent cross licensing, the pace of technical advance has been rapid in that area.

### **3.2.2.1 The Need for Patent Pools**

In a variety of situations innovation markets analysis can be used to evaluate market transactions, particularly transactions between horizontal competitors, for their impact on competition. In the field of cumulative innovation, competition and cooperation among horizontal competitors has proven to be of importance in promoting R&D. Under these circumstances patent pools can enhance overall R&D by creating efficiencies in the innovation process. Properly designed cross-licensing and patent pool arrangements can therefore promote innovation markets.

The typical function of a patent pool is that those companies in an industry that agree to assign or license their individual patents become members of the pool.<sup>47</sup> Depending on the characteristics of the pool, members may give one another royalty-free licensing of all the patents or they may pay, or receive, a set fee per patent claim. As for those who cannot contribute patented technology, they may be able to secure a license to the patents in the pool by paying a licensing fee. If a patent does not effectuate a broad monopoly but is kept narrow and is aggregated through procompetitive

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<sup>45</sup> Ibid. at 891.

<sup>46</sup> Ibid. at 894.

<sup>47</sup> Merges, Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations, 84 Cal. L. Rev. 1293, 1340-42 (1996). Available at <http://www.law.berkeley.edu/institutes/bclt/pubs/merges>, hereinafter Merges, Contracting into Liability Rules .

patent pools, innovation markets analysis can, for the most part, encourage market transactions. However, there might be situations in which innovation markets analysis can have restrictive implications. For example, to the extent that patent pools include patents that could be the basis for competition, include invalid patents, or impose restrictive terms on access, such pools do not promote innovation and should be the basis for antitrust scrutiny.

### **3.3 Intellectual Property Rights and Transaction Costs**

The economic merits of IPRs have been of debate for a long time. In the beginning the primary question was whether IPRs could be justified. At that time individual property rights could roughly be applied to the economic markets. A patent, for example, was seen as a property right over a single product with its own economic market. The rationale of IPRs could then be conducted in terms of economic theory. A patent was a legally granted monopoly which effects could be debated in general economic cost-benefit terms. The issue was whether the cost of monopoly outweighed the benefits of the inducements to innovation.

The use of product markets has in recent intellectual property theory been extended to markets for information. The notion of information as a commodity was developed by Kenneth Arrow in 1962.<sup>48</sup> According to Arrow, legal protection is needed to be able to sell and exchange information on the open market.<sup>49</sup> A patent is in Arrow's view a mechanism to encourage disclosure of information. To achieve the optimal allocation, information should, from a welfare point of view, be available free of charge. This would insure optimal utilization of the information, but in order to provide incentive for investment in research inventive activity has to be supported by property rights.<sup>50</sup> Arrow gave rise to a new theory, one that acknowledged the need to gather information and IPRs from different sources to be able to produce a product.<sup>51</sup> In this new theory IPRs serve a transactional function and create a market of their own.

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<sup>48</sup> See Arrow, *ibid.*

<sup>49</sup> Arrow, *ibid.* at 151.

<sup>50</sup> Arrow, *ibid.* at 153.

<sup>51</sup> Merges, *Institutions for Intellectual Property Transactions: The Case of Patent Pools*, August, 1999 Revision, at 5. Available at <http://www.law.berkeley.edu/institutes/bclt/pubs/merges>, [hereinafter Merges, *Institutions for Intellectual Property Transactions*].

### 3.3.1 Anticommons Theory

The idea of the transactional function of IPRs has recently been advanced by the “Anticommons theory” associated with Heller and Eisenberg.<sup>52</sup> They have analyzed interactions between property rights and transactions and reached the conclusion that too many owners holding rights of exclusion can preclude effective exploitation of economic resources.

By Heller’s definition, in a commons, multiple owners are each endowed with the privilege to use a given resource, and no one has the right to exclude another. When too many owners hold such privileges of use, the resource is prone to overuse – a tragedy of the commons.<sup>53</sup> Depleted fisheries and overgrazed fields are examples of this familiar tragedy. In an anticommons, multiple owners are each endowed with the right to exclude others from a scarce resource, and no one has an effective privilege of use. Heller proposes the case of empty retail stores but street kiosks full of goods in front of them in post-communist Moscow as a typical example of the tragedy of underuse. Theoretically this would not happen in a world of costless transactions, “because people could trade their initial endowments until resources were put to their highest-valued uses”.<sup>54</sup> According to Heller, close-knit communities may in practice develop informal norms and institutions to manage resources and avoid tragedy. Often, however, efficient bargains fail because transaction costs and strategic behaviors defeat informal negotiations, and communities of owners are not close-knit.<sup>55</sup> Heller’s solution to solve the tragedy of misuse and to make good use of the resources is to bundle numerous rights.

Heller and Eisenberg have also applied the anticommons theory in a critique of patents in biotechnology.<sup>56</sup> The tragedy of anticommons refers to the complications that arise when a user needs access to multiple patented inputs to be able to produce a single product. Each patent right allows its inhibitor to stall the development of a product by adding to the cost and stifling innovation.<sup>57</sup> According to Merges this emphasis on obstacles to bundling rights and transactional costs of anticommons theory is a break with past IPR theory.<sup>58</sup> Merges believes the focus on transactions is an attempt not only to make IPR theory more applicable to the features of the commercial world, but also to do the same for general economic theory of property rights.<sup>59</sup> The difference from traditional theory of property rights,

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<sup>52</sup> Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 *Harv. L. Rev.* 621 (1998); see also Heller & Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 *Science*, 698 (1998).

<sup>53</sup> Heller, *ibid.* 623-624.

<sup>54</sup> Heller *ibid.* at 674; see also Coase, *The Problem of Social Cost*, 3 *J.L. & Econ.* 1, 2- 8 (1960).

<sup>55</sup> Heller, *id.*

<sup>56</sup> Heller & Eisenberg, *ibid.*

<sup>57</sup> Heller & Eisenberg, *ibid.* at 699.

<sup>58</sup> Merges, *Institutions for Intellectual Property Transactions*, *ibid.* at 7.

<sup>59</sup> *Id.*



which was primarily concerned with the initial grant of rights to individual owners, is that the newer transactional theories worry about what the owners will do with their property right after it has been granted.

### 3.3.2 The Economic Theory of Complements

As noted above, transactional failures and holdup problems are especially apparent in cumulative innovation where multiple blocking patents and strong patent rights can have the effect of stifling innovation. Due to the great number of patents being issued it is likely a single product will infringe on many patents. In order to produce a product, the company needs to obtain licenses from several different right holders. This problem can lead to what Shapiro refers to as a “patent thicket”.<sup>60</sup> In order to commercialize new technology a company has to break through this dense web of overlapping intellectual property rights.

Shapiro uses Cournot’s analysis of the “complements problem” to explain this problem of blocking patents and hold-ups.<sup>61</sup> The economic theory of complements was originally studied by Cournot in 1838 and he used the example of a manufacturer producing brass.<sup>62</sup> In order to produce brass the manufacturer had to get copper and zinc, each from different monopolists. Cournot found that the resulting price of brass was higher than if one firm would have access to both copper and zinc and sold it to a competitive brass industry or made the brass itself. At the same time the combined profits of the producers were also lower in the presence of complementary monopolies. So, the result of the separate rights to copper and zinc was negative to both consumers and producers. The same theory can be applied to the situation of multiple companies controlling blocking patents for a specific product.<sup>63</sup> Cournot’s solution to eliminate the inefficiencies of complementary monopolies is for the copper and zinc suppliers to cooperate and offer their goods for a single, package price to the brass industry. The two monopolist suppliers will then find it in their joint interests to offer a package price that is less than these two components sold for when priced separately.<sup>64</sup>

### 3.3.3 The Need for Patent Pools

In order to cure the transactional failures of bargaining breakdown and holdups, the right holders would benefit from bargaining to achieve a bundle of rights. When the multiple patent rights are bundled into a patent

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<sup>60</sup> Shapiro, *ibid.* at 1 (*patent thicket*: an overlapping set of patent rights requiring that those seeking to commercialize new technology obtain licenses from multiple patentees).

<sup>61</sup> Shapiro, *ibid.* 4-6.

<sup>62</sup> *Id.*

<sup>63</sup> Shapiro, *ibid.* at 5.

<sup>64</sup> *Id.*

pool, or in some situations a simple cross-licensing arrangement, transaction costs will be reduced and each of the parties can produce the final product.

This is supported by the basic theory of complements, which suggests companies to enter patent pools to clear blocking positions. If there are two patent holders capable of manufacturing a product, a royalty-free cross-license would be ideal from a competition point of view. But any cross-license would be superior to a situation of non-cooperation, since neither could make the product without infringing the other's patents.<sup>65</sup> Alternatively, they can also enable others to manufacture products through a patent pool, in which the blocking patents are licensed in a package.

Merges has found that multiple private right holders bargained with each other in forming collective rights organizations in a number of industries.<sup>66</sup> In many cases the resulting arrangements started as simple bilateral contracts between parties that had, or expected to have, repeated interactions with each other. Some such contracts developed into free-standing administrative entities responsible for wide-scale licensing of large bundles of members' intellectual property rights. This voluntary exchange among disparate right holders is an optimistic transactional theory. One of the major issues is the cost of integrating multiple rights and Merges describes situations where right holders establish formal and informal mechanisms -"institutions"- to bring these costs down. This "repeat-play" feature can be compared to the close-knit communities discussed by Heller.<sup>67</sup> One example of an IPR-based collective rights organization is a patent pool where multiple patent holders can aggregate their patents.<sup>68</sup> In a typical pool all patents are made available to each member and standard licenses are offered to those who are not members of the pool. A patent pool can therefore provide the mechanism of combining the different patent rights into bundles, overcoming the tragedy of the anticommons. Based on economic principles, all parties get better off bargaining and the institution of a patent pool lowers the average costs of transactions enough to make the exchange of patents worthwhile.

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<sup>65</sup> Id.

<sup>66</sup> Merges, *Contracting into Liability Rules*, *ibid.*

<sup>67</sup> See section: Anticommons theory.

<sup>68</sup> Merges, *Institutions for Intellectual Property Transactions*, *ibid.* at 10.

# 4 Patent Pools and Competition Policy

## 4.1 Procompetitive Effects of Patent Pools

### 4.1.1 Clearing Blocking Patents

One of the primary justifications for pooling patents is to clear blocking patents.<sup>69</sup> This can be justified by the economic theories of complements and “tragedy of the anticommons”. When the patent holders have the right to prevent each other from practicing or selling an invention, development of technology can be suppressed. A cooperative agreement, such as a patent pool, can clear these blocking positions and encourage development.

#### Case Law

The problem of blocking patents has since long been recognized in US case law as a reason to allow patent pools. In the case *Standard Oil Company v. United States*<sup>70</sup> the Court reversed a district court finding that Standard of Indiana and others had created an illegal patent pool to combine patents related to gasoline cracking, a key process in the refining of crude oil into gasoline. The focus of this analysis was on whether the cross-licensing of blocking patents violated the antitrust laws.

The Court found that the licensing agreement did not restrict the freedom of the defendants individually to issue licenses under their own patents and did not impose any restrictions upon the quantity of gasoline to be produced or upon the price, terms, or conditions of sale, or upon the territory in which sales may be made.<sup>71</sup> The Court disagreed with the complaint by the Department of Justice that the cross-licensing agreement, which provided for joint setting and division of royalties, eliminated competition and tended to raise prices. Instead, the Court focused on the benefits of a cross-licensing arrangement for blocking patents. The Court concluded that none of the patents involved in the pool was fundamental,<sup>72</sup> but that each of the defendants had developed a cracking technology that arguably infringed other defendants’ patents.<sup>73</sup> Most of the patents in the *Standard Oil* pooling arrangement were improvements upon other inventions. The basic inventions could block the use of the improvements, but the improvements did not prevent the use of the basic inventions. That is, the patents were one-way blocking.

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<sup>69</sup> US IP Licensing Guidelines, *ibid.* § 5.5.

<sup>70</sup> *Standard Oil Company v. United States*, 283 U.S. 163 (1931).

<sup>71</sup> *Id.* at 170.

<sup>72</sup> *Id.* at 167.

<sup>73</sup> *Id.* at 167-168.

The matter of blocking patents was also up for question in *Baker-Cammack Hosiery Mills, Inc. v. Davis Co.*,<sup>74</sup> where the Court of Appeals held that a combination of patents related to elastic top self-supporting hosiery and methods for producing it did not violate the antitrust laws, noting that the licenses at issue did not include anti-competitive restrictions.<sup>75</sup> The court inquired whether the patents were substitutes or complements, noting that stockings may be made either according to the Davis or the Getaz method, some mills using one and some the other. The patents were held complementary rather than competitive and even though it was possible to make hosiery that embodied only one of the patents, there was a demand for products that used all of the licensed patents.

A similar conclusion was made in *Carpet Seaming Tape Licensing Corp. v. Best Seam*.<sup>76</sup> The appellant Carpet Seaming had acquired several patents that covered hot-melt adhesives to join carpet seams. A lower court found that the combination was unlawful. The appellate court reversed the finding, noting that the lower court ignored the possibility that one of the patents may have blocked the others.

#### **4.1.2 Reducing Transaction Costs**

According to Merges, the basic economic rationale of patent pools is that they significantly reduce the transaction costs of exchanging rights.<sup>77</sup> A typical patent pool gathers several patent rights and makes them available to each member of the pool and offers a “package license” to all interested parties. In addition, it distributes a share of the licensing fees as payments to individual patent holders. This institution creates a mechanism that lowers the average cost of transactions to make continuous exchange worthwhile.<sup>78</sup> Pooling can therefore be a highly efficient way for patent owners to respond to a demand by a significant number of licensees for access to a large number of different patents. Without a pool, securing such licenses would require individual negotiations between numerous patent owners and numerous licensees. By permitting the licensees to negotiate with a single entity the number of transactions can be diminished and transaction costs be reduced.

Although patent pools can regularize transactions and thereby reduce transaction costs, that does not eliminate all sources of transaction costs in exchanging patents.<sup>79</sup> There can be lengthy negotiations over valuation of certain patents and continuing costs on operating the pool. In spite of the initially high costs of negotiating a pooling agreement, the frequency of

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<sup>74</sup> *Baker-Cammack Hosiery Mills, Inc. v. Davis Co.*, 181 F.2d 550 (1950).

<sup>75</sup> *Id.* at 569.

<sup>76</sup> *Carpet Seaming Tape Licensing Corp. v. Best Seam*, 616 F.2d 1133 (9th Cir. 1980).

<sup>77</sup> Merges, *Institutions for Intellectual Property Transactions*, *ibid.* at 17; Also stated in US IP Licensing Guidelines, *ibid.* § 5.5.

<sup>78</sup> Merges, *Institutions for Intellectual Property Transactions*, *ibid.* at 11.

<sup>79</sup> Merges, *Institutions for Intellectual Property Transactions*, *ibid.* at 26.

patent pools shows they are desirable institutions, which can reduce transaction costs in total.<sup>80</sup>

### 4.1.3 Avoid Costly Infringement Litigation

When firms work in similar research or manufacturing areas, they sometimes become involved in patent conflicts including mutual patent infringement claims or conflicting claims in patent interference. The outcomes of these disputes are often difficult to predict, and the costs associated with resolving the dispute through litigation tend to be high. In addition, there are costs associated with developing a product while such a dispute is ongoing, because an adverse decision may disable a firm to profit from its investment. To limit all of these costs and provide greater predictability, firms involved in patent conflicts sometimes resort to some form of pooling of the patents in dispute, under which each has the right to use the patents involved. Rather than risk the time, cost and uncertainty of patent litigation, a patent pool or a cross-licensing arrangement can be an attractive option. This solution can be especially beneficial for smaller firms or independent inventors that do not have the resources to litigate an infringement trial.<sup>81</sup> If there were no option of settlement for smaller firms it would be difficult to compete with larger firms.

A settlement into a patent pool can also have the effect of granting immunity of patents and provide additional options of using a technology. The idea of a patent right is to encourage investment in research and development. By providing the economic incentive of a legal right to use and exclude others from using the invention, innovation is stimulated. However, the exclusive patent right also brings certain economic costs. Competitors are precluded from using the best technology available on the market and the use of a different, less efficient technology will increase costs and decrease output.

In this context, grants of immunity from pooling patents can bring economic benefits. Immunity from using other patented technology provides additional options for a firm. If the firm is able to use the most efficient technology its output will increase and the added competition will lower prices. The access to technology can also give incentive to improve or expand the invention and thereby bring new, better products and more choices to the consumers.

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<sup>80</sup> Merges, Institutions for Intellectual Property Transactions, *ibid.* at 27 (The initial negotiation costs are “a product of (1) differing assessments of the technological merits of the contributions of the members of the pool; (2) private information held by each member concerning the precise characteristics of the technology and the details of the patent position (all relevant prior art, etc.), and (3) strategic bargaining possibilities created by the negotiations over the potentially large “pooling surplus” that may result from the creation of the pool”).

<sup>81</sup> Carlson, *ibid.* at 380.

## Case Law

US case law is frequent with examples where patent pools have been formed, at least partial, in response to conflicting patent claims.<sup>82</sup> The patent pool at issue in the previously reviewed *Standard Oil*<sup>83</sup> resolved patent conflicts among Indiana and three other patent owners, two of whom, like Indiana, were vertically integrated in that they used the cracking patents for producing gasoline. The US government challenged the pool, alleging that the pool eliminated competition between the patent owners in the independent licensing of their patents and thereby increased the manufacturing costs of cracked gasoline. The Supreme Court dismissed the complaint and recognized that settling conflicting patent claims by pooling possibly could be economically beneficial, explaining “an interchange of patent rights and a division of royalties . . . is frequently necessary if technical advancement is not to be blocked by threatened litigation”.<sup>84</sup> The Court also stressed the benefits that could derive from the pool granting access to any licensee that sought a license, noting “if the available advantages of the patents are open on reasonable terms to all manufacturers . . . such interchange may promote rather than restrain competition”.<sup>85</sup>

The formation of the *Hartford-Empire* pool was preceded by intense interference litigation and it combined patented technologies related to the manufacture of glassware.<sup>86</sup> The pool is one of the largest patent pools in the US history of antitrust and intellectual property. By 1938 the pool controlled more than six hundred patents that covered products and processes used to manufacture 94 percent of the glassware in the United States. The patents combined in the *Hartford-Empire* pool had been the property of several firms, including Hartford-Fairmont, Empire, Corning, Thatcher, Ball, and Owens. The pool issued licenses under the patents to glass manufacturers with terms that limited the types of products that the licensees could produce and, in some cases, limited the quantities that could be produced with the licensed technologies.

Although the Supreme Court found an antitrust violation, it recognized that, like in *Standard Oil*, the pool served the benefit of resolving outstanding patent conflicts. However, the Court found this not conclusive because domination of the industry rather than settling of competing claims were the primary purpose of the pool.

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<sup>82</sup> See, e.g., *Standard Oil Co. v. United States*, 283 U.S. 163 (1931); *Hartford-Empire Co. v. United States*, 323 U.S. 386 (1945).

<sup>83</sup> 283 U.S. 163 (1931).

<sup>84</sup> *Standard Oil Company v. United States*, 283 U.S. 163 (1931) at 171.

<sup>85</sup> *Id.*

<sup>86</sup> *Hartford-Empire Co. v. United States*, 323 U.S. 386 (1945).

#### 4.1.4 Integrating Complementary Technology and Promoting Network Effects

Generally, IPRs can be perceived as being antithetical to cooperation. This is due to the fact that competition in markets characterized by intellectual property has a tendency to drift toward single-firm dominance and even monopoly for two reasons. First, in order to encourage initial investments, the law provides IPRs that prevent competition within the scope of the intellectual property for a period of time. Second, products and services based on intellectual property frequently exhibit "network effects", i.e., each individual's demand for a particular company's product or service is positively related to its widespread use by others.<sup>87</sup> This can, for example, be seen in the field of communications (e.g. telephone, fax, and e-mail) and "network computing" (e.g. computer languages, microprocessor instruction sets and operating systems), where the technology becomes more valuable to users as more people use it. Network effects can therefore encourage companies to promote industry cooperation and interoperability in certain markets and technologies. Thus, when products or standards are compatible, problems created by network effects can under certain circumstances be solved.<sup>88</sup> A dominant standard will also not necessarily have to be limited to one firm's product.

An open and publicly defined standard for a technology in a certain market may also bring policy advantages. One major advantage is the increase in innovation and competition that result from a standard where multiple companies can compete to provide implementations or complements to the standard.<sup>89</sup> A technology standard is also desirable for consumers. When different products and technologies are compatible a wider selection is offered, competition is induced and prices decline.<sup>90</sup>

The nature of a patent right is perceived as withholding a monopoly power. However, when products and IPRs are highly competitive, it is very unlikely that a single company will own all the technology and IPR pieces of the puzzle which are essential for implementing a new technology standard. This reflects the situation of markets in the "New Economy".<sup>91</sup>

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<sup>87</sup> Lemley & McGowan, Legal Implications of Network Economic Effects, 86 CAL. L. REV. 479, 532-533 (1998).

<sup>88</sup> Lemley & McGowan, *ibid.* at 523.

<sup>89</sup> Lemley & McGowan, *ibid.* 532-533.

<sup>90</sup> See e.g. Samuelson, Intellectual Property and the Digital Economy: Why the Anti-Circumvention Regulations Need to be Revised, 14 Berkeley Tech. L.J. 519, at 565 (1999) (quoting Carl Shapiro & Hal Varian, Information Rules 98 (1998), ("The more liberal you make the terms under which consumers can have access to your product, the more valuable it is to them. A product that can be shared with friends, loaned out and rented, repeatedly accessed, or sold in a resale market is obviously more valuable to a potential user than one that can be accessed only once, under controlled conditions, by only a single party").

<sup>91</sup> Pitofsky, Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy, Berkeley Tech. L.J. 535, at 536 (2001), ("The essential feature that is new about the "New Economy" is its increased dependence on products and services that are the embodiment of ideas").

The new economy industries are characterized by very high rates of innovation, quick and frequent entry and exit, economies of scale in consumption (due to network effects) and instability of market shares.<sup>92</sup> The new economy is often associated with information technology industries such as computer hardware, computer software and Internet-based businesses built upon that technology. But there are other industries emerged in the last quarter of the century that also have characteristics of the new economy. Communications networks and biotechnology are among them. These industries are dependent on assets of R&D and IP, compatibility between components and are usually characterized by very high initial costs and technical complexity. The value of a monopoly is therefore not that high and as a result, in these situations, companies have economic incentives to cross-license or pool their IPRs and technological pieces of the puzzle as well as to define and promote a new and significant standard.

An example where patent pooling can be valuable in promoting network effects can be seen in the case of network computing, where the cost of developing software or hardware for a particular standard can economically prohibit development of multiple platforms. Development will then be focused on a single platform or within a specific standard, which has the effect of making that platform/standard attractive to consumers and/or developers.<sup>93</sup> Moreover, developers and sophisticated consumers of enterprise computing products increasingly appear to recognize and disfavor the dangers of a single platform environment that is controlled by one company.<sup>94</sup> This lock-in effect can outweigh the immediate benefits gained by focusing development efforts on a single platform.

Patent pools can be regarded as an effort by competitors in a particular market to ensure expansion of a certain technical standard by providing a single license for the essential, or blocking, patents for implementing and practicing the standard. Further, patent pooling may encourage innovation because participants in a standard setting process may benefit from the royalty from the patent pool if the innovative technological standard is adopted and expanded, thereby increasing the number of licensees of the patent pool. Once a platform is accepted and proliferated, competitors are encouraged to compete on that platform by innovating on top of the platform, such as by adding new functionality, more implementations, and new applications or extensions for the platform. Licensees of the patent pools are thereby able to practice the technological standard without fear of infringing any of the essential patents owned by any of the pool members. Moreover, patent pool licenses typically require the licensees to offer the licensors and other licensees reasonable royalty based licenses to any essential patents owned by the licensee (“grant back clause”).

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<sup>92</sup> Pitofsky, *ibid.* at 541.

<sup>93</sup> Lemley & McGowan, *ibid.* at 491.

<sup>94</sup> *Id.* at 493-494.



In sum, patent pools typically serve to offer immunity and create safe harbors for those interested in using, modifying, or building upon the platform. In this manner, patent pools acts as an efficient contractual safe harbor mechanism for promoting network effects and proliferating new technology standards.

## 4.2 Anticompetitive Risks of Patent Pools

### 4.2.1 Negative Effects of Pooling Blocking Patents

While patent pools do have notably pro-competitive benefits, overly permissive treatment can present anticompetitive risks. Even blocking patents, which are one of the primary reasons for pooling arrangements, pose the risk of harming consumers if allowed to be pooled without restrictions.

The position that pools of blocking patents are procompetitive has expressly been adopted in the 1995 US IP Licensing Guidelines.<sup>95</sup> The Guidelines allow the pooling of blocking patents under the theory that such pools "do not adversely affect competition."<sup>96</sup> According to the Guidelines, blocked patents cannot be used without infringing another patent, and they are not substitutable assets. The patentees, then, are "not in a horizontal relationship with respect to those patents."<sup>97</sup> The Guidelines state that even when the patentees are horizontal competitors in the relevant goods market, the evaluating agency would be unlikely to challenge a pooling or cross-licensing arrangement involving these patents, because the patents could not otherwise be lawfully utilized.

The rationale behind the argument of "blocking patents" is based on the fact that a holder of an improvement patent cannot market the invention without some form of permission from the original inventor. If the improver is prevented from marketing, the consumer has no choice but to purchase the unimproved version. The solution to pool the patents is therefore depending on the assumptions that the improver does not market the invention absent authorization and that the bargaining process between the parties is perfect.

However, these suppositions might not hold outside a perfect market. First, patents which are blocked in a legal sense are not necessarily blocked as a matter of fact. Firms may openly market a blocked product, maybe because infringement suits are not brought when estimated to be too costly in proportion to expected damages, or at least until legal action is initiated.<sup>98</sup>

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<sup>95</sup> US IP Licensing Guidelines, *ibid.* §5.5 example 10.

<sup>96</sup> *Id.*

<sup>97</sup> *Id.*

<sup>98</sup> Most infringed patents are not worth defending in court, as they earn their holders no profits above competitive levels. See Hearings on Global and Innovation-Based

Production may also continue while litigation is pending and no interim measures have been granted.<sup>99</sup> Thus, products blocked by valid patents may be sold at competitive prices and legal claims are not always litigated. Second, the bargaining process between the patentees can be rife with dissension. Patents are extremely hard to value and it can be difficult to determine the respective contributions of the patentees to the production of the technology.<sup>100</sup>

In sum, when patents are blocked in a legal and a factual sense, patent pools serve their purpose. But, if the patentees are not really blocked and patents of competitively priced products are allowed to be controlled by a single entity, there is a risk of restoring monopoly prices. When the patented goods can be sold at competitive prices, the patent holders have incentives to restore monopoly benefits. A patent pool will then provide a means for reintroducing monopoly prices to a competitive market.

#### **4.2.2 Reducing Competition**

Settlements resulting in cross-licensing or pooling of patents can be an efficient means to avoid litigation and, according to the US IP Licensing Guidelines, they are generally favored by the courts.<sup>101</sup> When the settlements, however, involve horizontal competitors the antitrust agencies have to “consider whether the effect of the settlement is to diminish competition among entities that would have been actual or likely potential competitors in a relevant market in the absence of the cross-license”.<sup>102</sup> By bringing horizontal competitors into collusion, patent pools can be harmful to the market. The collusion can have the effect of a horizontal merger of firms which allows them to set royalty rates for their patents. A patent pool can therefore eliminate competition and allow firms to restore monopoly prices to an otherwise competitive market.

According to the US IP Licensing Guidelines, a patent pool does not have to be open to all those who would like to join.<sup>103</sup> However, exclusion from a pooling arrangement may, under some circumstances, be harmful to competition.<sup>104</sup> By evaluating the arrangement’s exclusion of competitors

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Competition before the Federal Trade Commission 49 (1995), statement of F.M. Scherer, Professor, Harvard Univ., at 7. [Hereinafter FTC Testimony].

<sup>99</sup> The Standard Oil litigation over blocking patents covering processes related to petroleum cracking, for example, lasted fifteen years, during which time the respective parties continued to use their processes. See McGee, Patent Exploitation: Some Economic and Legal Problems, 9 J.L. & Econ. 135 (1966), at 153.

<sup>100</sup> Merges, Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents, 62 TENN. L. REV. 75, 75 (1994) hereinafter Merges, Intellectual Property Rights and Bargaining Breakdown .

<sup>101</sup> US IP Licensing Guidelines, *ibid.* §5.5.

<sup>102</sup> *Id.*

<sup>103</sup> *Id.*

<sup>104</sup> *Id.* (“In general, exclusion from a pooling or cross-licensing arrangement among competing technologies is unlikely to have anti-competitive effects unless (1) excluded

related to development and exploitation of the pooled technology, the antitrust agencies have to assess the effect on the relevant market.<sup>105</sup>

Patentees have strong incentives to settle when they fear that their patents will be invalidated through litigation. These settlements, often effectuated by patent pools or cross-licensing arrangements, may have the adverse effect to preserve invalid patents.<sup>106</sup> Once a patent is included in a pool, other members will lose their incentive to challenge its validity. Licensees may also be deterred to question a suspect patent in a pool, due to higher litigation costs opposing a large entity or because of their long relationship with the pool.<sup>107</sup>

### **Example: Summit Technology, Inc. and VisX, Inc.**

In 1998, the FTC challenged a patent pool for both eliminating competition and sheltering invalid patents. The pool was formed by Summit Technology, Inc. and VisX, Inc., which manufactured and marketed lasers to perform a new, and increasingly popular, vision correcting eye surgery, photorefractive keratectomy.<sup>108</sup> The patent pool, Pillar Point Partners, containing twenty-five patents relating to this technique was originally established to avoid litigation between the two members, Summit and VisX.<sup>109</sup> VisX's patents were depending on a patent interference proceeding in the Patent and Trademark Office and were in the risk of being invalidated.<sup>110</sup> Summit and VisX argued that they had pooled their patents in order to reduce the uncertainty and costs of litigation that might have followed.<sup>111</sup> Because they were the only two suppliers of this technique, the creation of the pool effectively neutralized the most proper plaintiffs for challenging the validity of the patents and eventually the FTC brought suit.

The FTC was of the opinion that the patent pool eliminated competition. Instead of competing with each other, the firms placed their competing patents in a patent pool and shared the revenues of royalties every time a Summit or VisX laser was used. The FTC followed the principles employed by the Justice Department, namely to permit the assembly of complementary or essential patents, but not rival patents, into a pool. According to the FTC, the two companies agreed not to license their patents

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firms cannot effectively compete in the relevant market for the good incorporating the licensed technologies and (2) the pool participants collectively possess market power in the relevant market.”).

<sup>105</sup> Id.

<sup>106</sup> Carlson, *ibid.* at 386.

<sup>107</sup> Id. at 387.

<sup>108</sup> Federal Trade Commission, Analysis of Proposed Consent Order to Aid Public Comment: Summit Technology, Inc. Available at <http://www.ftc.gov/os/1998/9808/d09286ana.htm>. [Hereinafter Summit Technology Analysis].

<sup>109</sup> Summit Technology Analysis, *ibid.*

<sup>110</sup> VisX was accused of fraud and inequitable conduct. They had allegedly fabricated, back-dated, and falsified its scientific records in order to earn an earlier priority date for its patents.

<sup>111</sup> Summit Technology Analysis, *ibid.*

independently. Even though the companies in this case argued that they did indeed have mutually blocking patents making their pool pro-competitive, the FTC rejected this defense and ordered the pool to be dissolved and compelled the firms to cross-license their patents royalty-free. In August 1998 the two companies settled with the FTC and agreed to lift any restrictions on each other regarding the licensing of their patents; ultimately, their patent pool was dissolved.<sup>112</sup>

### 4.2.3 Facilitating Cartel Behavior

A cartel is a group of actual and/or potential competitors who agree to reduce their output in order to raise prices, share or divide markets and capture more profits for themselves.<sup>113</sup> Because they set prices above the competitive level and thus produce excess profits, each member has an incentive to “cheat” or divert from the cartel by expanding its output to capture a larger percentage of the profits. If all members cheat, though, output will increase back to the competitive level, and prices will fall. Cartels are therefore inherently unstable. The only way to run a cartel effectively over the long run is to employ some sort of control mechanism to prevent members from diverting. The problem with such mechanisms is that they must be secret, since cartels generally are illegal.<sup>114</sup> By pooling patents and offer licenses to competitors, a patent pool can provide a control mechanism to enforce a cartel.<sup>115</sup>

A pooling arrangement can therefore be used to coordinate output restraints and set collective prices.<sup>116</sup> These actions may, according to the US IP Guidelines “be deemed unlawful if they do not contribute to an efficiency-enhancing integration of economic activity among the participants”.<sup>117</sup>

Horizontal agreements between competitors are, both in EC competition law and US antitrust law, classified in two broad categories; “per se” and “non-per se” illegal.<sup>118</sup> Under the “per se” category, agreements are considered as illegal in themselves, without regard to proof of market power or effect. While “per se” offences are invariably harmful to competition, “non-per se” cooperation does not necessarily have to be anti-competitive. Their effects on competition are instead assessed on a case-by-case basis where the nature of the agreement and market conditions are considered.

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<sup>112</sup> For a description of the settlement, see the August 21, 1998 press release. Available at <http://www.ftc.gov/opa/1998/9808/sumvisx.htm>. Despite this settlement, the FTC continued to pursue VisX for inequitable conduct and fraud. However, an administrative law judge subsequently dismissed this complaint; see the June 4, 1999 press release. Available at <http://www.ftc.gov/opa/1999/9906/visx.htm>.

<sup>113</sup> Diaz et al., Horizontal Agreements, chapter 6, paragraph 6.07, in Faull & Nikpay, *The EC Law of Competition*, 1999.

<sup>114</sup> *Id.*

<sup>115</sup> This thesis will not deal with vertical restrictions in detail. This section will only reflect some of the anti-competitive risks of pooling arrangements related to cartels.

<sup>116</sup> US IP Guidelines, *ibid.* § 5.5.

<sup>117</sup> *Id.* (Vertical restraints will not be discussed any further in this thesis.)

<sup>118</sup> Diaz et al., *ibid.* at paragraph 6.02.

## Case Law

When pooling arrangements have been mechanisms to accomplish naked price fixing or market division, they have according to US case law been regarded as per se unlawful.

In *United States v. Line Material*<sup>119</sup> the Southern States Equipment Corporation held a dominant patent on a particular type of circuit protection device. Their patent blocked a subservient patent issued a few months later to the Line Material Company. The patent held by Line Material improved on the basic patent held by Southern, and the Court recognized that a cross-license between Southern and Line Material would be necessary for either company to exploit the technology inherent in both patents.<sup>120</sup> Southern and Line entered into a cross-licensing agreement whereby Southern made Line the exclusive licensor of Southern's dominant patent. The agreement gave Line the power to fix prices for devices that embodied both patents. The Court held that this power to fix prices under both patents was anti-competitive. "By the patentees' agreement the dominant ... and the subservient ... patents were combined to fix prices. In the absence of patent or other statutory authorization, a contract to fix or maintain prices in interstate commerce has long been recognized as illegal per se under the Sherman Act".<sup>121</sup>

In *United States v. New Wrinkle, Inc.*<sup>122</sup> the allegation was that patent licenses were used to orchestrate the fixing of downstream prices. In this case, the product was wrinkle finishes, defined as enamels, varnishes and paints that produce a hard wrinkled surface on metal or other material. Two companies held conflicting patent rights on processes to produce wrinkle finishes. They agreed to assign their patents to the New Wrinkle Company, which they created for this purpose.

New Wrinkle granted licenses to all of the major manufacturers of wrinkle finishes. These licenses specified the minimum prices, discounts, and terms at which wrinkle finish products could be sold, including products sold by the original patentees. In addition, the contracts provided for a royalty to be paid to New Wrinkle. The Court held that both the combination of patents and the license terms were anti-competitive: "two or more patentees in the same patent field may [not] legally combine their valid patent monopolies to secure mutual benefits for themselves through contractual agreements, between themselves and other licensees, for control of the sale price of the patented devices".<sup>123</sup> As for the license terms, the Court held that the terms, alone, were anticompetitive.

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<sup>119</sup> 333 U. S. 287 (1948).

<sup>120</sup> *Id.* at 291 ("Only when both patents could be lawfully used by a single maker could the public or the patentees obtain the full benefit of the efficiency and economy of the inventions").

<sup>121</sup> *Id.* at 307.

<sup>122</sup> *United States v. New Wrinkle, Inc.*, 342 U.S. 371 (1952).

<sup>123</sup> *Id.* at 379.

#### 4.2.4 Deters or Discourages Research and Development

Another feature of patent pools that might signal anticompetitive effects would be a grantback arrangement requiring that their members assign their future related patents that are deemed essential to the pool.<sup>124</sup> If pool members were forced to share their successful R&D, incentives to free-ride might diminish innovation.

Absent a pool, firms have an economic incentive to invest in R&D because the discovery of patentable inventions can provide them with an advantage over competitors in the marketplace. However, depending upon its provisions, a pool in which competitors agree to pool future patents can dull this incentive.<sup>125</sup> If your competitors are guaranteed access to any patent you discover and you are guaranteed access to any patent your competitors discover there may be reduced incentive for you to invest in discovering new inventions. You may not get the economic advantage over your competitors that otherwise would be generated from obtaining a patent.

Grantback clauses in licensing agreements may also be used to suppress upcoming competition.<sup>126</sup> Grantbacks allow licensing of patents, without having to worry about if licensees may develop an improved process and start to compete. Such licenses may therefore be an effective way of preventing serious competition, since they allow the dominant patent holder to “capture” potential competitors and take advantage of their ideas. On top of that, because licensees no longer have the exclusive right to their improvements, they may be less willing to invest in research and development of such improvements.

The rationale for such a grantback provision is that the pool may be “held up” in the future by innovations brought about by their members or licensees.<sup>127</sup> The duty to disclose any patent applications that is relevant to the pool addresses the concern that an existing innovation will in the future confront the pool. There is also a concern of innovations that can be but are not yet made, or whose current existence can be effectively concealed by the members. By preserving the right to use any improvements made, the pool can ensure it stays current in the field of technology. Grantback provisions may also help to avoid blocking patents, by ensuring that the pool always has the “dominant rights”.

In apparent response to the position that pooling arrangements may deter or discourage research and development, the US IP Licensing Guidelines also state that “such an arrangement can have pro-competitive benefits, for example, by exploiting economies of scale and integrating complementary capabilities of the pool members, (including the clearing of blocking

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<sup>124</sup> US IP Guidelines, *ibid.* § 5.5.

<sup>125</sup> *Id.*

<sup>126</sup> US IP Guidelines, *ibid.* § 5.6.

<sup>127</sup> *Id.*

positions), and is likely to cause competitive problems only when the arrangement includes a large fraction of the potential research and development in an innovation market”.<sup>128</sup>

In sum, an agreement may have an effect on innovation incentives. By agreeing to cross-license all future as well as present patents, the agreement could reduce R&D incentives by allowing each firm to free-ride on discoveries made by others. However, these effects would have to be balanced against the pro-competitive benefits from sharing present technology and know-how.

## 4.3 Recent Patent Pools

### 4.3.1 MPEG-2

#### 4.3.1.1 Background

Moving Picture Experts Group (MPEG) technology allows for the transmission and storage of digital video and audio signals.<sup>129</sup> Because the digital signals are compressed, the transmission uses less bandwidth than analog transmissions. The first generation of this technology, MPEG-1, proved useful for storage on Video CDs but was not suitable for satellite transmissions because its data stream supported only one video stream.<sup>130</sup> In contrast, the next generation, MPEG-2 technology, not only featured an improved picture but also allowed multiple channels in a single data stream. The MPEG-2 protocol and its future development are vitally important to the information age. MPEG-2 is the basic transmission syntax for digital television (DTV).<sup>131</sup> The MPEG-4 will be the foundation for Internet transmission of audio and video works. The MPEG-7 will be “the content representation standard for information searches.”<sup>132</sup> Audio and video information, in one form or another, will flow according to MPEG standards.

Originally, nine companies<sup>133</sup> owned the rights of 27 patents deemed essential for the MPEG-2 technology.<sup>134</sup> Under the pooling agreement, the patent holders all license their MPEG-2 patents to a central administrative entity known as MPEG LA (Licensing Administrator), based in Denver. MPEG LA is essentially a licensing agent; it administers the pool on behalf of the members and licenses the group’s patent portfolio to third parties who

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<sup>128</sup> Id.

<sup>129</sup> See generally MPEG-LA Home Page, <http://www.mpegla.com>, [hereinafter, MPEG Home Page].

<sup>130</sup> MPEG Home Page, *ibid.*

<sup>131</sup> Id.

<sup>132</sup> Id.

<sup>133</sup> Columbia University, Fujitsu, General Instrument, Matsushita, Mitsubishi, Lucent, Philips, Scientific-Atlanta and Sony.

<sup>134</sup> MPEG Home Page, *ibid.*

will manufacture products to meet the MPEG-2 standard. Like many pools, the MPEG group has grown: it now includes 23 patent holders and more than 550 patents of which 123 are essential.<sup>135</sup> The pool now also includes a number of patents owned by European-based companies such as France Telecom, Philips, Robert Bosch GmbH and Thomson Licensing SA.<sup>136</sup> A large number of patents have been filed within the EU and the success of the patent pool has contributed to the worldwide utility of the MPEG-2 standard.

The patent pool offers a package license conferring all “essential” patents in the MPEG-2 portfolio. An “essential” patent is “any Patent claiming an apparatus and/or method necessary for compliance with the MPEG-2 Standard under the laws of the country which issued or published the Patent”.<sup>137</sup> The essential patents are selected by an independent administrator and new patents are being added all the time as they are being granted by patent offices around the world.<sup>138</sup> Additional patents, not included in the portfolio, are available for specific implementations.<sup>139</sup>

All interested licensees are offered a standardized five-year license.<sup>140</sup> The license includes a grantback provision, requiring licensees who patent improvements on the technology to grant the patent rights back to MPEG LA. Additionally, royalties are designed to be allocated based on each licensor's proportionate share of the total number of patents. The royalties are not subject to change if patents are added under the five-year period, although the royalty rate may increase by up to 25% in a license renewal.<sup>141</sup>

#### **4.3.1.2 Review of MPEG-2**

Given the “essential” nature of each patent, no individual entity could use the MPEG-2 technology without infringing on the rights of multiple patent holders. Therefore, a proposal suggesting the creation of a patent pool, named MPEG LA, in which the necessary patents could be cross-licensed, was sent to the United States Department of Justice Antitrust Division.<sup>142</sup> A business review letter was requested from the US Antitrust Division to determine the Division's intentions of pursuing antitrust enforcement against the proposed pool.<sup>143</sup> Although some minimal anticompetitive features were

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<sup>135</sup> See MPEG Home Page, *ibid.*

<sup>136</sup> *Id.*

<sup>137</sup> *Id.*

<sup>138</sup> From the beginning the administrator solicited over 8000 patent abstracts, studied over 1000 patents owned by more than 100 companies and inventors, and eventually selected 27 essential patents.

<sup>139</sup> MPEG Home Page, *ibid.*

<sup>140</sup> *Id.*

<sup>141</sup> *Id.*

<sup>142</sup> See generally, Letter from Joel I. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to Garrard R. Beene, Esq., partner, Sullivan & Cromwell (June 26, 1997). Available at <http://www.usdoj.gov/atr/public/busreview/1170.htm>, [hereinafter MPEG-2 Review Letter].

<sup>143</sup> MPEG-2 Review Letter, *ibid.* at 1, (essentially, a business review letter is an advisory opinion as to the legality of a proposed business arrangement from an antitrust standpoint).



found in the MPEG LA patent pool, overall it was seen as procompetitive because of its economic benefits and dissemination of technology. The response therefore concluded that the creation of the proposed patent pool was overall procompetitive.

*Procompetitive Factors*

The MPEG-2 proposed patent pool has the procompetitive feature of a patent pool in its clearing of blocking problems. The proposed MPEG-2 patent pool would alleviate these problems by offering all essential licenses as a package, having a predetermined price regardless of the would-be licensee's identity.<sup>144</sup> Thus, all the essential patents for the MPEG-2 technology could be licensed without the problem of blocking. Furthermore, the licensor is obligated to offer the license “on fair and reasonable terms.”<sup>145</sup> Since the availability of a comprehensive license for the MPEG-2 technology avoids the blocking problem, this factor indicates that the proposed patent pool is procompetitive.

The MPEG-2 patent pool also reduces infringement of the patent rights of others. One method by which this is accomplished is by offering cross-licenses to all members, such that the members mutually agree to license one another.<sup>146</sup> Additionally, the MPEG LA pool offers a comprehensive license of all essential patents for non-members of the pool. Thus, all parties can employ the MPEG-2 technology without the worry of litigation costs due to infringement suits. The avoided losses include both the monetary costs of litigation and the time delay in product development pending final outcome of the litigation process, each of which leave fewer resources available for furthering innovation. The cross-licensing of patents within the pool eliminates this concern for the pool members, and the availability of a comprehensive license solves the problem for non-members of the patent pool. Hence, the procompetitive factor of avoiding costly infringement litigation is present.

The reduction of transaction costs is also procompetitive. Having the patent pool available allows a third party the option of going to a single entity, MPEG LA, with whom that party can secure all the necessary licenses to use the MPEG-2 technology. The other alternative would be to approach the holders of each of the essential patent holders and negotiate with them individually. Because the “one-stop shopping” approach reduces the transaction costs of the separate negotiations, the consumer is provided with procompetitive benefits.

A final procompetitive feature of the MPEG-2 patent pool is that it has the effect of integrating complementary technologies. As determined by an independent expert, each of the included patents is “essential” to the

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<sup>144</sup> Id. at 11.

<sup>145</sup> Id. at 15.

<sup>146</sup> US IP Guidelines, *ibid.* § 5.5.

technology and has no technical alternative.<sup>147</sup> Further, the essential patents complement each other because only when taken as a whole can the patents be used for the MPEG-2 technology. The pool is therefore a gathering of complementary, as opposed to competing, patents for the common goal of creating a complete product. The patent pool was also found to have the ability to promote the dissemination of technology. Furthermore, increased communication and sharing of information between members of the pool can prevent overlapping efforts. Hence, these factors weigh to the procompetitive nature of the patent pool.

#### *Anticompetitive Factors*

Compared with the procompetitive benefits of MPEG LA, its potentially anticompetitive effects are believed to be minimal. Concerning the potential effect of deterring research and development, the members have neither prohibited nor otherwise discouraged the development of rival technology. One potentially concerning feature of MPEG LA is its grantback provision. As noted above, a grantback provision can reduce the motivation to invest in R&D.<sup>148</sup> Nevertheless, in the MPEG LA patent pool, the grantback only extends to patents essential for the MPEG-2 technology, not to implementation of the standard or improvements to the essential patents themselves.<sup>149</sup> Since the MPEG-2 technology already was established, the US Antitrust Division also found it unlikely that this technology left any significant innovation that could be discouraged by the grantback provision.<sup>150</sup>

Despite the assertion that there is no significant innovation left to be discouraged, companies do have some incentive to continue research and development. Their efforts can lead to patents that, if incorporated into the MPEG LA patent pool, would automatically entitle the patent holder to a fixed share of the pool's income. Hence, through distributing the risks associated with R&D among the members of the pool, patent pooling actually enhances the attractiveness of pursuing new products because of the increased likelihood that these costs will be recovered.<sup>151</sup> Moreover, since the MPEG LA patent pool allows competition with the standard, another path of innovation is available. The MPEG LA patent pool's grantback clause was therefore not seen to generate an incentive to reduce R&D.

A patent pool may be anticompetitive if it facilitates cartel behavior, such as price fixing or output restraints. The MPEG LA patent pool has no such restraints. The collective license is offered on the same terms and conditions to all prospective licensees through a common licensing administrator.<sup>152</sup> In return, the patent holders are each compensated based on their total share of the patents, which are weighted equally.<sup>153</sup> This structure, which bases

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<sup>147</sup> MPEG-2 Review Letter, *ibid.* at 10.

<sup>148</sup> See section 4.2.4.

<sup>149</sup> MPEG-2 Review Letter, *ibid.* at 13.

<sup>150</sup> *Id.* at 14.

<sup>151</sup> Carlson, *ibid.* at 391.

<sup>152</sup> MPEG-2 Review Letter, *ibid.* at 4.

<sup>153</sup> *Id.* at 3.

compensation on the number of licenses issued as opposed to the licensing fee, reduces the concerns about price restraints. Furthermore, the licensing agreement contains no output restrictions, nor would such restrictions be in the best interests of the patent holders. Since the patent holders receive compensation for each license granted and each product sold, it is in their best interests to encourage the distribution of the MPEG-2 technology. Accordingly, anticompetitive price and output restraints were not found as a significant concern for the MPEG LA patent pool.

Anticompetitive concerns arise when competition is reduced and parties are excluded from the patent pool. This concern is especially alarming if the patent pool considered has market power and the excluded parties cannot compete effectively in the relevant market. In order to avoid exclusion of competitors the MPEG-2 pool has a mechanism for integrating related patents into the pool. The provision, called “Partial Termination”, allows individual members to “opt out” of the pool with respect to single licenses.<sup>154</sup> The purpose is to provide an MPEG-2 member with a bargaining leverage when negotiating for a license to a complementary patent held by a MPEG-2 licensee.<sup>155</sup> The scenario considered in the review letter is when a non-member licensee of the MPEG-2 collective license obtains an “MPEG-2 Related Patent”<sup>156</sup> and then refuses to license it to a member of the patent pool on “fair and reasonable terms” choosing instead to sue an MPEG LA member for infringement. In that scenario, the member can partially terminate the rights to her specific patent(s) that were licensed to the non-member. The result is a legal stalemate, with the non-member unable to use the MPEG-2 technology and the member unable to use the non-member's related patent without infringing on each other's rights. The US Antitrust Division determined that this scenario would be “exceedingly unlikely”, as any manufacture, use, or sale of a related patent by the member would almost surely fall within the standard of the MPEG-2 technology.<sup>157</sup> The Division was of the opinion that “the partial termination right may have procompetitive effects to the extent that it functions as a nonexclusive grantback requirement on licensees’ related patents”.<sup>158</sup> Since the related patent would be within this standard, the patent pool's grantback provision would require licensing, thereby avoiding the infringement that would otherwise occur. Thus, absent unusual circumstances that would warrant specific analysis, the US Antitrust Division found that there were no serious concerns regarding the described scenario.<sup>159</sup>

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<sup>154</sup> Id. at 15.

<sup>155</sup> Merges, Institutions for Intellectual Property Transactions, *ibid.* at 31.

<sup>156</sup> MPEG-2 Review Letter, *ibid.* at 8 (“MPEG-2 Related Patent” are defined by the MPEG LA agreement as “any Patent which is not an MPEG-2 Essential Patent but which has one or more claims directed to an apparatus or a method that may be used in the implementation of a product or a service designed in whole or in part to exploit the MPEG-2 Standard under the laws of the country which issued or published the Patent”).

<sup>157</sup> Id. at 15.

<sup>158</sup> Id. at 15.

<sup>159</sup> Id. at 13-15.

One potential drawback in the above-mentioned example is that the threat of partial termination may cause the non-member licensee to license the patent at a sub-competitive rate. This problem could discourage innovation by lessening the potential rewards. Since it is in the members' best interest for the MPEG-2 technology to grow so that they receive more royalty payments, they are disinclined to use their partial termination rights to stifle the development of the technology.<sup>160</sup> Thus, little anticompetitive concern was found relating to the members' partial termination powers.

### **4.3.2 Other Recent Patent Pools**

The structure of the MPEG-2 patent pool has worked as a "model" for other following patent pools. The US Department of Justice has in several cases conducted business reviews of proposed and established patent pools, using the IP Licensing guidelines. The pooling arrangements of two recent patent pools will be summarized below. Both have been reviewed and cleared by the Department of Justice.

#### **4.3.2.1 DVD-I**

The DVD-ROM and DVD-Video Formats I (DVD-I) was formed in 1998.<sup>161</sup> Under this patent pooling arrangement, Sony Corporation of Japan (Sony) and Pioneer Electronic Corporation of Japan (Pioneer) agreed to nonexclusively license all essential patents necessary for compliance with DVD Standard Specification to Koninklijke Philips Electronics, N.V. (Philips). Philips, in turn, agreed to grant licenses of the essential patents to "all interested parties ... to manufacture, have made, have manufactured components of, use and sell or otherwise dispose of" discs and players that conform to the Standard Specification. All three licensors can license their essential patents independently of the portfolio. The licensors retained a patent expert to review the designated patents and to make an independent judgement as to what patents are essential. The portfolio royalty rate is set at 3.5% of the net selling price for each player sold and \$0.05 for each disc sold. In addition, the portfolio license requires an initial payment of \$10,000, half of which is creditable against the per unit royalties. The allocation of the royalties is determined on a per-unit sold basis and not on the number of patents contributed to the pool. The portfolio license does require that the licensee must grant the licensors and fellow licensees a nondiscriminatory and reasonable license of any essential patents that they own or control to either the disc or player manufacturer in conformity with the Standard Specification.

The DVD-I patent pooling arrangement was created by two agreements:

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<sup>160</sup> Id. at 16.

<sup>161</sup> See generally Letter from Joel I. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to Gerrard R. Beeney, Esq. (Dec. 16, 1998). Available at <http://www.usdoj.gov/atr/public/busreview/2121.htm> [Sony Review Letter].

- (1) two separate but substantially identical licenses to Philips from Sony and Pioneer of the essential patents to enable Philips to grant a portfolio license to all interested third-parties without discrimination; and
- (2) the portfolio license.

#### **4.3.2.2 DVD-II**

The DVD-ROM and DVD-Video Formats II (DVD-II) was formed in 1999.<sup>162</sup> In this patent pool, Hitachi, Ltd., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corporation, Time Warner, Inc., and Victor Company of Japan, Ltd., agreed to license their present and future essential patents for compliance with the DVD-ROM and DVD-Video formats to Toshiba Corporation (Toshiba). Toshiba agreed to assemble the essential patents, including its own, in a portfolio and to license the portfolio to all makers of DVD products and to distribute the royalties from the licensing to the other licensors. All the companies are free to license their essential patents outside of the pool. Once a licensor has designated a patent as essential, an expert individual or panel will evaluate the patent to see if the patent is indeed essential. The expert will perform a comprehensive review of all patents in the pool every four years. In addition, a mechanism is in place for the expert to review any patent whose essentiality comes into question. The patent pool agreement states that the expert's determinations are conclusive and nonappealable. The patent pool is also open to any owner of an essential patent willing to license on the portfolio's terms and conditions. The royalty rate is 4% of the net sales price for each DVD players and \$0.075 for each DVD disc sold. The agreed upon formula for the allocation of the royalties from the portfolio considers (1) how often a licensor's essential patents are infringed, (2) the age of the patent, and (3) for patents essential to the disc standards, whether the patents related to optional or mandatory features of the standard. The licensees are required to grant back to the licensors, their affiliates and all other licensees of the portfolio, all essential patents on "fair, reasonable and non-discriminatory terms". Disputes between the licensors and the licensees are subject to arbitration.

This DVD-II patent pool is formed by four agreements as follows:

- (1) a license from each of the companies to Toshiba to enable Toshiba to license to parties who use the Standard Specification for DVD discs, DVD players and DVD decoders;
- (2) a sublicense from Toshiba to makers of DVD products involving the patents in the portfolio;
- (3) an agreement among the licensors concerning the retention and authority of experts to select and evaluate patents for the pool; and
- (4) the "Ground Rules for Royalty Allocation," which provides the formula to determine how the royalties from the patent pool will be distributed among the licensors.

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<sup>162</sup> See generally Letter from Joel I. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to Carey R. Ramos, Esq. (June 10, 1999). Available at <http://www.usdoj.gov/atr/public/busreview/2485.htm> [Toshiba Review Letter].

### **4.3.3 Common Attributes of Recent Patent Pools**

Although there are some differences, recent patent pools seem to have the following common attributes:

- All licensors of the patent pool grant non-exclusive licenses to the pool, e.g., the licensors are free to license their patent(s) outside of the patent pool;
- An independent patent expert evaluates which patents are deemed essential in the formation of the patent pool. There is also some mechanism for future review of the current patents in the pool as well as evaluation of any desired additions to the patent pool;
- The pool is licensed to any interested party in the technology in a nondiscriminatory manner;
- All royalty rates are reasonable and distributed based on an agreed upon formula; and
- All grant back provisions are limited to essential patents and require nonexclusive licenses with fair and reasonable terms. These provisions must be reasonable so as not to discourage further innovation.

# 5 EC Attitude Towards Patent Pools

## 5.1 EC Competition Policy vs. IPRs

Although IPRs slowly are becoming more harmonized throughout the EU, the granting of IPRs is still largely a matter of national jurisdiction. This makes the conflict of EC competition policy and IPRs even more difficult to settle. One of the most fundamental principles in EC law, incorporated in Article 28 of the EC Treaty<sup>163</sup>, is the free movement of goods and free competition within the Community. This principle is restricted by Article 30 of the EC Treaty, which provides a specific exception for “industrial and commercial property” rights under the condition that they do not discriminate or disguise restriction of trade between the member states. In addition, Article 295 of the EC Treaty requires the Community to respect national systems of property ownership. For that reason the Commission and the Court have developed a distinction between the existence of the IPR, which can not be affected by the rules of free movement and competition, and its exercise, which can be limited by other provisions of the EC Treaty. This distinction has its origin in *Consten-Grundig* where the Court found that Articles 30 and 295 “do not exclude any influence whatever of Community law on the *exercise* of national IPRs” (my emphasis).<sup>164</sup> Article 30 was therefore not seen to limit the field of application of Article 81. The Court also made it clear that the grant of the rights were not affected, only the extent of their exercise was limited.<sup>165</sup>

It is clear that it is within the subject matter of an IPR to license and ask royalties for the licensing. The Commission has since long encouraged patent licensing as a way to more effectively exploit and develop an invention. In recital 12 of the Patent regulation, licensing under certain obligations is “generally seen to contribute to improving the production of goods and to promoting technical progress; they make patentees more willing to grant licenses and licensees more inclined to undertake the investment required to manufacture, use and put on the market a new product or to use a new process, so that undertakings other than the patentee acquire the possibility of manufacturing their products with the aid of the latest techniques and of developing those techniques further. The result is

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<sup>163</sup> The Treaty Establishing the European Community, OJ C 325, 24 December 2002  
Hereinafter *EC Treaty* .

<sup>164</sup> *Consten Grundig v. Commission* [1966] ECR 299, at 346.

<sup>165</sup> *Id.*

that the number of production facilities and the quantity and quality of goods produced in the common market are increased”<sup>166</sup>.

However, the Court and the Commission have always considered that the conditions of the license may fall under Articles 81 and 82. Under Article 82, a license may not discriminate between licensees and the royalties have to be reasonable.<sup>167</sup> Case law and regulations have also made it clear that provisions in a license agreement may fall within Article 81(1). The EC competition policy towards licensing generally follows the basic principle of the US IP Licensing Guidelines. Section 3.1 of the Licensing Guidelines provides that a licensing agreement should not be challenged unless it reduces competition that would have occurred in the absence of the agreement, or it contains elements that are prohibited by the antitrust laws. This entails that only if a licensing agreement restricts competition beyond what would have occurred in the absence of that license should the competition authority begin to examine whether this added competitive restriction was more than offset by procompetitive efficiencies.

The principle is founded on two general ideas of IP and competition. The first is that the IP laws should provide incentives for firms and individuals to innovate and invest in those innovations in a way that produces new goods and services and that fosters overall economic growth. The second is that while the limited monopoly rights granted by the IP laws may be fully exercised, they should not be allowed to be exercised to extend the restriction of competition beyond that granted under the IP laws. This means that any licensing agreement covering patents should not restrict competition or create new monopoly power beyond that granted to a patent holder.

## 5.2 Article 81

Article 81(1) of the EC Treaty prohibits as incompatible with the common market, all agreements between undertakings which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the common market.

Basic principles for the assessment of agreements under Article 81(1) are set out in chapter 1.3.1 of the Cooperation Guidelines.<sup>168</sup> Some agreements have as their object to restrict competition, such as price fixing, output limitation or dividing markets. These are considered to have negative

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<sup>166</sup> Commission Regulation (EC) No 2349/84 of 23 July 1984 on the application of Article 81(3) of the Treaty to certain categories of patent licensing agreements, recital 12 hereinafter: Patent regulation .

<sup>167</sup> This thesis will not deal with the application of Article 82 to IPRs.

<sup>168</sup> Commission Notice Guidelines on the applicability of Article 81 of the EC Treaty to horizontal cooperation agreements, OJ C 003, 06/01/2001 hereinafter Cooperation Guidelines .



market effects and presumed as per se illegal without examining their actual effect on competition.<sup>169</sup> When restriction of competition is not the target of the agreements, the effects of the agreements, such as limitation of competition between the parties and effects on the common market, have to be analyzed. The negative effects are depending on the nature and purpose of the agreement and its economic context in the market.<sup>170</sup> While some agreements, such as cooperation between non-competitors or cooperation between competing companies that cannot independently carry out the project or activity covered by the cooperation, do not fall under Article 81(1) others may, after having analyzed market power and market structure.<sup>171</sup>

Under Article 81(3) of the EC Treaty, the provisions of Article 81(1) may be declared inapplicable. This might be the case if an agreement between undertakings contributes to improving the production or distribution of goods or to promoting technical or economic progress. Consumers also have to be allowed a fair share of the resulting benefit so far it does not impose restrictions, which are not indispensable to the attainment of the objectives. The agreement can further not afford the possibility of eliminating competition in respect of a substantial part of the products in question.

When cooperation between firms increase innovation or provide better products at reduced prices, the economic benefits may outweigh restrictive effects on competition.<sup>172</sup> The greatest efficiency is believed to be generated by integrating complementary skills and resources. The efficiencies have to be proven to depend on the cooperation and that no other less restrictive means are sufficient to achieve similar benefits.<sup>173</sup> Not only the parties to the agreement, but also the consumers have to benefit from the cooperation.

## **5.2.1 Block Exemption**

### **5.2.1.1 Patent Licensing Regulation**

Under certain conditions the criteria of Article 81(3) can be assumed to be fulfilled for specified categories of agreements. Patent pools have generally been excluded from regulations and block exemptions. The agreements have been viewed as unsuitable for automatic exemption, generally because of their complexity or the fact that they are likely to lead to unacceptable coordination of behavior between actual or potential competitors. The Patent licensing regulation<sup>174</sup> does not therefore include patent pools or reciprocal licensing agreements. The experience so far acquired was seen as

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<sup>169</sup> Id. paragraph 18.

<sup>170</sup> Id. paragraph 20.

<sup>171</sup> Id. paragraph 24, 26.

<sup>172</sup> Id. paragraph 32.

<sup>173</sup> Id.

<sup>174</sup> Commission Regulation (EC) No 2349/84 of 23 July 1984 on the application of Article 81 (3) of the Treaty to certain categories of patent licensing agreements hereinafter Patent licensing regulation .

inadequate and it was not seen appropriate to include these arrangements within the scope of the Regulation.<sup>175</sup>

### **5.2.1.2 R & D Regulation**

In the field of R&D, production agreements are seen as promoting efficiencies when combining complementary knowledge and assets. Some patent pools may therefore be exempted under regulation 2659/2000,<sup>176</sup> which applies to collaborations for research and development between two or more undertakings. The exemption shall apply for the duration of the research and development and where the results are jointly exploited, for an additional seven years.<sup>177</sup> When two or more of the undertakings are competitors, the exemption only applies if the combined market share of the firms does not exceed 25 % of the relevant market,<sup>178</sup> provided the agreement does not contain any “hard core” restrictions (“black clauses”).<sup>179</sup> According to recital 10 of the regulation, “cooperation in research and development and in the exploitation of the results are generally seen as promoting technical and economic progress by increasing the dissemination of know-how between the parties and avoiding duplication of research and development work, by stimulating new advances through the exchange of complementary know-how, and by rationalizing the manufacture of the products or application of the processes arising out of the research and development.” These arrangements also benefit consumers by introducing new or improved products.<sup>180</sup>

### **5.2.1.3 Technology Transfer Regulation**

The Technology transfer block exemption regulation (TTBE)<sup>181</sup> is the most recent regulation explicitly mentioning patent pools. According to Article 5.1, the TTBE shall not apply to agreements between members of a patent pool. Recital 8 (repeating recital 8 of the Patent licensing regulation) merely states that technology pools pose “different problems” which cannot be dealt with in a single regulation. Article 1.1 also expressly limits the scope of the TTBE to agreements between no more than two undertakings. If there are no more than two members of a patent pool (basically cross licensing), the TTBE may nevertheless apply as long as the parties are not subject to any territorial restrictions (TTBE Article 5.2(2)).

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<sup>175</sup> Patent licensing regulation, *ibid.* recital 8.

<sup>176</sup> Commission Regulation (EC) No 2659/2000 of 29 November 2000 on the application of Article 81 (3) of the Treaty to categories of research and development agreements hereinafter R & D regulation .

<sup>177</sup> *Id.* Article 4 paragraph 1.

<sup>178</sup> *Id.* Article 4 paragraph 2.

<sup>179</sup> *Id.* listed in Article 5.

<sup>180</sup> *Id.* Recital 12.

<sup>181</sup> Commission Regulation (EC) No 240/96 of 31 January 1996 on the application of Article 81 (3) of the Treaty to certain categories of technology transfer agreements, hereinafter TTBE .

The TTBE has been criticized for being too narrow and for following an outdated legalistic approach in the field of horizontal agreements. The recent reforms have instead signified a shift to a more economic and effects-based approach. This notion was expressed by the Commission in their evaluation report of the TTBE, which was designed to analyze its consistency with the new competition rules recently adopted and other recent policy developments.<sup>182</sup> One of the issues especially examined by the Commission was the fact that patent pools are left uncovered by the block exemption. The Commission acknowledges that licensing activities have changed significantly during the last 10 years. The traditional use of IPRs to prevent competitors from using the innovation has now expanded to accomplish diverse commercial strategies.<sup>183</sup> In particular, it is found that more collaborative efforts and more complex licensing arrangements now are required to keep pace with the greater complexity of new technologies. These arrangements are often necessary as to take advantage of complementary IPRs owned by many different companies.<sup>184</sup> Patent pools have therefore become more frequent in order to establish technology standards, to clear blocking positions and settle infringement disputes.<sup>185</sup>

The Commission observes that multiparty licensing and patent pools may be procompetitive when they are comprised of non-competing members.<sup>186</sup> Their competitive advantages, such as integrating complementary technology, reducing transaction costs and clearing blocking patents are affirmed, especially when covering essential patents. However, when covering competing technology, patent pooling is feared to have serious anticompetitive effects, such as price fixing, exclusion of third parties and reduced incentive for members to engage in R & D.<sup>187</sup> Having regard to the efficiency enhancing factors and potential anti-competitive effects, the Commission states that “the question is open as to whether, and to what extent, multiparty licensing agreements should be covered by a revised block exemption”.<sup>188</sup>

## 5.2.2 Individual Exemption

Beside the possibility for license agreements to fall under the provisions of a block exemption they can benefit from Article 81(3) after individual examination following notification. A restraint or conduct which has anticompetitive effects on the market can then be exempted from Article

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<sup>182</sup> Commission evaluation report on the transfer of technology block exemption regulation No 240/96 - Technology transfer agreements under article 81, COM/2001/786, Celex No. 501DC0786, paragraph 3, 4 and 8. Available at [http://www.europa.eu.int/comm/competition/antitrust/technology\\_transfer/](http://www.europa.eu.int/comm/competition/antitrust/technology_transfer/) [hereinafter Commission evaluation report].

<sup>183</sup> Id. paragraph 64.

<sup>184</sup> Id. paragraph 67.

<sup>185</sup> Id. paragraph 70.

<sup>186</sup> Id. paragraph 133.

<sup>187</sup> Id. paragraph 134.

<sup>188</sup> Id. paragraph 135.

81(1) on the ground that without that restriction the market would, in effect, be less competitive. If an agreement is notified, the most probable result is that the agreement gets negative clearance and that the file is closed after sending a comfort letter.

The recent notifications concerning patent pools show that the vast majority was cleared by comfort letter without further action.<sup>189</sup> Certain cases were given publicity either through the publication of a notice or through press releases in view of their economic importance or their significance for competition policy.<sup>190</sup> Only a limited number of notifications gave rise to competition concerns and were cleared by the Commission following modifications to the original agreements.<sup>191</sup>

## 5.3 EC Case Law

### 5.3.1 Concern of Anticompetitive Risks

The EC Case Law relating to patent pooling is very sparse and although the agreements do not constitute “genuine” patent pools the examples may illustrate the concern in the EC. Despite the brief history, it is clear that the EC has for a very long time been aware of the potentially anticompetitive aspects of certain restrictions in multiparty licensing.

#### 5.3.1.1 Bronbemaling v. Heidemaatschappij

In *Bronbemaling v. Heidemaatschappij*,<sup>192</sup> a paragraph in a licensing agreement preventing the patent holder not to issue identical or similar licenses to other firms without consent of the parties to each agreement and the other licensees was seen to violate Article 81(1) of the EEC Treaty. The case originated in an opposition proceeding in the Dutch patent office concerning a patent for a horizontal well-point drainage system. The proceedings were settled by granting licenses to the three firms opposing the grant of the patent. According to the terms of the licenses, no other licenses would, without the consent of a majority, be given to others but them.<sup>193</sup> The parties stated that the reason for this was that they had gone to the trouble and expense of improving the patented invention. After the patent had been granted Bronbemaling and another company separately applied to the patent holder, Heidemaatschappij, for a license to exploit the horizontal drainage process specified in its patent. Bronbemaling were consequently refused licenses and eventually complained to the Commission. Heidemaatschappij also notified the licensing agreements to the Commission, wanting Article 81 (1) to be declared inapplicable under

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<sup>189</sup> Some of the most recent decisions are reviewed below.

<sup>190</sup> See for example, MPEG-2 (IP/98/1155 of 18.12.1998) and DVD (IP/00/1135 of 9.10.2000).

<sup>191</sup> See for example, Canon/Kodak (IP/98/353 of 15 April 1998).

<sup>192</sup> OJ L 249/27, 25/09/1975, Celex No. : [375D05 70](#) - IV/28.967.

<sup>193</sup> Second subparagraph of Clause 11 (1) of Heidemaatschappij’s licensing agreement.

Article 81 (3). The firms concerned supported their application for exemption under Article 81 (3) by arguing that the “licensing agreements ensure that the patented process can be exploited more widely and technical progress is promoted in that the licensee firms pool their experiences, thus enabling improvements to be made both to the process itself and to the machinery used to work it”.<sup>194</sup>

The Commission did not object to the patent licensing agreements themselves but only to the anticompetitive provisions in the second subparagraph of Clause 11 (1). The Commission stated that a restriction of the freedom to grant licenses is not the essence of a patent holder’s right, even when the licensees have improved the invention. The provision did not contribute to improving the production or distribution of goods or to promoting technical or economic progress, but instead prevented wider use of the process and reduced the exploitation of know-how. The confining of the process to a limited number of licensees was therefore not seen to have any beneficial economic effects.

#### **5.3.1.2 Philips VCR**

In Philips VCR,<sup>195</sup> a cross-licensing agreement of patents was found to have a negative effect upon competition within the European Community. Philips and Sony had entered into an agreement with other VCR producers on “uniform application of technical standards for the VCR system”.<sup>196</sup> The arrangement was a royalty-free cross-license of patents to ensure the compatibility of cassettes with recorders from different vendors. However, the agreement provided that only the Philips complete system would be allowed and any change to the Philips system required the consent of all of the parties.<sup>197</sup> Despite the improved interoperability of the cassettes with video machines of different producers, the Commission refused exemption arguing that other, perhaps better, systems were excluded. Such exclusion was significant due to Philips strong market position.<sup>198</sup> Restrictions were also imposed upon the parties, which were not necessary in order to reach the improvements in production or distribution.<sup>199</sup>

#### **5.3.1.3 IGR Stereo Television**

In IGR Stereo Television,<sup>200</sup> the patents needed for making television sets specially equipped for stereo reception of German TV were held by IGR, a company owned by all the firms manufacturing color TV in Germany. IGR granted licenses to these manufacturers, but decided to license non-members only after a certain date, and for a limited number of sets. IGR then used its

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<sup>194</sup> Bronbemaling v. Heidemaatschappij, *ibid.*, paragraph III.

<sup>195</sup> Commission Decision of 20 December 1977 relating to a proceeding under Article 81 of the EEC Treaty, OJ No L 47, 18/1/1978, p.42 [hereinafter Philips VCR].

<sup>196</sup> Philips VCR, *ibid.* paragraph 8.

<sup>197</sup> Philips VCR, *ibid.* paragraph 9 and 11.

<sup>198</sup> Philips VCR, *ibid.* paragraph 29.

<sup>199</sup> Philips VCR, *ibid.* paragraph 31.

<sup>200</sup> Eleventh Report on Competition Policy, *ibid.* at point 63.

patent rights to prevent Salora, a Finnish company, from supplying stereo TV sets to two large mail order firms in Germany. Salora was therefore being prevented from supplying any of the special sets at a time when the new stereo sets were being launched on the German market. Salora requested interim measures, which the Commission has power to order in appropriate cases. IGR agreed to grant licenses immediately and free of restrictions as to quantity.

Although no formal decision was adopted one can assume how the Commission could have reasoned on the basis of Article 81. Under Article 81, IGR and its members would not have been permitted to shut Salora out of the German market while exploiting it themselves. There was no actual competition between the members and IGR and its members may well have formed a monopoly for their own benefit. Although in general there is no duty to supply under Article 81, there is a duty when a discriminatory refusal has serious anticompetitive effects. Apart from collecting all patents needed for manufacturing the television set, there was no procompetitive purpose of the pool.

#### **5.3.1.4 Bayer and Hennecke v. Süllhöfer**

In *Bayer and Hennecke v. Süllhöfer*,<sup>201</sup> cross licenses had been granted after dispute about validity of patents. The licensing agreement contained a no-challenge clause where Bayer and Hennecke agreed not to challenge the validity of the patent applied for by Süllhöfer. Later on, further disputes arose between the parties and after appeal the ECJ had to consider whether the no-challenge clause was incompatible with Article 81(1).

The Commission argued that a no-challenge clause in a licensing agreement, in principle, should be considered as a restriction on competition, but could however be compatible with Article 81(1) when included in an agreement with the purpose to settle court proceedings. The Court rejected this view and stated that Article 81(1) did not distinguish between agreements whose purpose was to put an end to litigation and those with other aims in mind. An agreement should be appraised in its economic context like any other agreement. It stated that a no-challenge clause might, depending on legal and economic circumstances, restrict competition within the meaning of Article 81(1). The ECJ suggested that there would be no restriction on competition when the license was royalty free. However, if the clause involved a limitation of the licensee's freedom of action, it would be depending on the market positions of the parties.

### **5.3.2 Recognizing procompetitive effects**

Recently the Commission has been more supportive of the potentially procompetitive aspects of patent pools. No formal decisions were taken on these notified agreements but the Commission sent the parties an

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<sup>201</sup> Case 65/86 (1990) 4 CMLR 182.

administrative comfort letter mentioning its opinion on the competitive effect of the agreement.

### **5.3.2.1 Canon / Kodak**

In 1993, Canon, Kodak, Minolta, Fuji and Nikon notified the Commission of agreements they had concluded for the development and exploitation under license of the advanced photographic system (APS).<sup>202</sup> This was a new technology standard which involved the production of new types of cameras, films and photo-finish equipment. The parties to this agreement were all large companies in the European and world market in cameras, lenses, color films, color photographic paper and single use cameras. They were committed to grant licenses to competitors in order to ensure worldwide acceptance of APS as a new standard. This is a typical example of firms that are primarily manufacturers who aim to generate revenues essentially from their production, rather than from the licensing of their IP. The Commission reviewed some aspects of the third party licensing in 1997, mainly as it related to the technical assistance given to licensees.<sup>203</sup> Following some adjustments, the Commission was confident that the conditions ensured full competition, e.g. were “*securing a transparent and fair licensing system*”.<sup>204</sup>

### **5.3.2.2 MPEG-2**

Another recent notification included the previously reviewed MPEG-2 pool, cleared by the US Antitrust division in 1997.<sup>205</sup> The patent licensing agreement was notified in January 1998 and cleared by the Commission in December 1998.<sup>206</sup> The pool offers both a single non-exclusive license program and is administered by an independent entity, MPEG LA (see above section 4.3.1). Furthermore, patent holders can offer licenses for their patents outside the pool. The Commission considered that the pool had “beneficial effects for the consumer and did not contain unnecessary or excessive restrictions on competition”.<sup>207</sup> By clearing these agreements, the European Commission demonstrated that it was of the same opinion as its American counterpart; that the specific terms of the pool is broadly procompetitive.

### **5.3.2.3 DVD**

The DVD pool, cleared by the Commission in October 2000,<sup>208</sup> had a similar licensing arrangement.<sup>209</sup> The companies submitted the agreement to

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<sup>202</sup> Notice in OJ C 68/3 of 5 March 1994.

<sup>203</sup> Notice in OJ 330/10 of 1 November 1997.

<sup>204</sup> Press release IP/98/353 of 15 April 1998.

<sup>205</sup> See section 4.3.1.1 Review of MPEG-2.

<sup>206</sup> Notice in OJ C 229, 22 of July 1998 p. 19, point 1; Press release IP/98/1155 of 18 December 1998.

<sup>207</sup> Press release IP/98/1155 of 18 December 1998.

<sup>208</sup> Press release IP/00/1135 of 9 October 2000.

<sup>209</sup> Previously reviewed in section 4.3.2.2 DVD II

the Commission in May 1999.<sup>210</sup> The investigation by the Commission found that the patent pool would promote technical and economic progress by allowing quick and efficient introduction of the DVD technology. It was also found that the agreement “did not contain unnecessary or excessive restrictions on competition”.<sup>211</sup> The pool was therefore considered to be beneficial for the consumer and a comfort letter under Article 81 (3) was issued.

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<sup>210</sup> Notice in OJ C 242, 27 of August 1999 p. 5, point 1.

<sup>211</sup> Press release IP/00/1135 of 9 October 2000.



## 6 Guidelines for Patent Pools

In the previous sections I have reviewed the economic rationale, the competitive effects and tried to find out the EC attitude towards patent pools. When looking at this analysis in its broad scope there are in fact only a small number of general principles and restrictions on licensing that need to be considered in a review of a patent pool. In most cases, when some restrictions on competition are avoided, one can conclude that the patent pool will be procompetitive and should not be challenged by competition authorities. The starting point is the fundamental principle that IPRs should be fully respected in competition policy concerning licensing. Competition rules should therefore only prevent licensing agreements that restrict competition beyond the subject matter of IPRs.

Most of the recent patent pools have been designed to support a new technology standard.<sup>212</sup> In regard of the development and the effect of the “new economy”, this also seems to be the main target for future patent pools. It is therefore important to establish a competition policy that gives incentives for the development of patent pools to support new product standards. Based on the large number of independent patents required for production, patent pools have become essential institutions. They can promote efficient assembly of essential patents and rationalize licensing while avoiding competition problems. It seems sensible to encourage the use of patent pools on account of their commercial benefits but equally important is the need to clarify competition policy. The design of standards and patent pools constitute a new area of competition law and IP law that requires a new set of thinking. Communication and bargaining between competing firms should be allowed to a larger extent and competition authorities should be more flexible and encouraging towards these collaborations. A first step to take, therefore, is to create a competition policy which recognizes the economic benefits of setting standards with the support of patent pools and allows more exchange of information between horizontal competitors.

In light of this development, this analysis focus on competition guidelines for the creation of patent pools as part of establishing a technology standard. The structure of these platforms is usually made up of organizational agreements administered by a central institution. The institution continuously manages and reviews the standard and the patent pool of technology that supports it. The purpose of the standard is to provide a basis for design and production of new products that have to be interoperable and can be produced by any firm adopting the standard.<sup>213</sup> Thus, the very idea of a standard is that it provides interoperability, openness and free competition.

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<sup>212</sup> It is important to remind that these standards are not “industry standards” which in most cases do not involve patent pools.

<sup>213</sup> See further discussion above, section 4.1.4 Integrating Complementary Technology and Promoting Network Effects.

When setting a standard of high technology products that require many licenses from different patents, a patent pool can be the perfect instrument in order to reduce costs and promote efficiency.

Although technology standards generally are seen as procompetitive, they have some potential negative effects. If the standard is successful there may be reduced competition for developing new and better products. This is especially the case if the standard becomes superceded by new and better products. In order to keep the market competitive it is therefore important for the competition authorities to ensure that the agreements do not preclude licensees from competing with the standard in the future. Another potential drawback is that consumers may be left with outdated products because they are not compatible with the prevalent standard.

With the background of the efficiency and procompetitive objectives of a technology standard, one can distinguish some generally accepted competition conditions patent pools are required to meet. Additionally, the standard should be open to all and the use of independent experts to evaluate the IP should be encouraged.

- The patents should be complements to each other.
- The royalty should be charged on the basis of patents essential to the standard.
- Licensees should be free to develop competing products and standards.
- Licensors should be free to participate in development of competing products and standards.
- Licenses to the pool should be non-exclusive, allowing those licensing technology to the pool to license that technology independently to others.
- Licenses should be non-discriminatory.
- Royalties paid to the pool should be reasonably related to the level of use of the licensed technologies.
- Grantback restrictions should be non-exclusive and only concern patents essential to the pool.

These conditions are consistent with those set forth by the US Antitrust Division in their business review letters and with the EC comfort letters approving patent pools. These conditions guarantee that there will be no unnecessary IP in the pool; potential competition of new technology will not be prevented; companies will compete on equal terms; royalties will be reasonable and related to use; and that grantback provisions will not be misused.

# 7 Conclusions

## *Rationale for patent pools*

Patent pools, along with cross-licensing, have been used for over a century to facilitate the assembly of complementary patents and to promote efficient production. Licensing generally, and multiparty licensing in particular, is an example of the market trying to allocate the required IP to the most efficient producers. In a competitive economy, this fundamentally induces efficiency.

From the beginning patent pools have been used to solve a commercial problem. They were created in order to avoid blocking patents slowing down production and development, to settle patent disputes or to assemble the IP from different patent holders to support a standard.

- New products in innovative industries may require multiple licenses from separate rights holders in order to overcome problems with blocking patents. This “patent thicket” is especially a problem in cumulative innovation, where each discovery builds on many previous findings. Patent pools can also solve the complements problem and make pricing of the IP more efficient. When patent holders set fees individually, the total cost to a firm purchasing them individually is larger than if the patents had been assembled by one owner and had been offered as a package with a single fee set for the package. Thus, in the absence of a patent pool, the total cost of the licenses, when required patents are licensed individually, will generally be higher than the monopoly price for the combined package. This will consequently raise prices and if the combined costs are too high it may prevent a new product from being produced at all. By allowing “one-stop-shopping” for the licensed technology, patent pools greatly reduce transaction costs to obtain technology. Such one-stop-shopping allows a company using the technology to avoid negotiating separate licenses with every company owning a patent that is essential for production.

The problem of blocking patents also creates a “tragedy of the anticommons” where a large and growing number of licenses must be sought from patent owners before their respective IPRs can be used. The resources will then be underused, or perhaps not used at all, because too many owners have the ability to prevent each other’s use of intellectual property. Thus, patent pools provide an instrument for solving these problems by assembling required IP and making it available to producers.

- Patent infringements can also be avoided or settled by the formation of patent pools. This is an attractive solution for companies who wish to avoid expensive and time-consuming patent litigation where the outcome can be uncertain. When there is no threat of litigation, each firm can continue with the business of producing goods and services.

- Patent pools have also solved problems in the area of setting technology standards, where they have become an almost essential mechanism in assembling and licensing the IP required for implementation of a standard.

Thus, the economic rationale for patent pools is well founded and patent pools have proven to serve many legitimate productive purposes that enhances efficiency. Although patent pools are believed to be inherently procompetitive, they can and have been used to restrain competition, and this is the source of competition concerns.

#### *Recent Development*

Patent pools have promoted many efficiency-enhancing business functions in the past and can be expected to play an even greater role in the high-tech, dynamic competition of the new economy. Patent pools are not necessarily well suited for all areas of technology. They are especially well suited to those technologies where a well-defined standard is needed. Most patent pools have so far been used to define technology standards developed for communications, computers, and electronic areas of technology where interoperability of equipment and software is critical for acceptance and operation of the technology. These are technologies typically associated with the new economy. In the new economy, the critical importance of IP, which may be widely dispersed, combined with the increased need for compatibility and the technical complexity of the solutions to many problems, requires that firms are allowed to collaborate on setting standards and to assemble the IP required to support those standards.

In the wake of the recent development, many technologies (besides those reviewed in this thesis), such as synthetic fibres, flat panel speakers, and next generation RAM memory chips, have been gathered into patent pools.<sup>214</sup> Another current patent pool, recently reviewed and approved by both the US and EC competition authorities, is the 3G Patent Platform Partnership ("3G3P").<sup>215</sup>

#### *New attitude needed*

The number of cases involving patent pools and competition policy has been small in the US and the EU. In light of the trend of increased patenting and more strategic use of IP, patent pools can become important as a solution to an even denser patent thicket.

I have given examples of multiparty licensing and its relationship to competition policy as it has been enforced in the US and the EU. One of the central themes was that patent pools were looked upon with great suspicion by competition authorities in the 1960's and 1970's. This was due to the fact

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<sup>214</sup> Merges, Institutions for Intellectual Property Transactions, *ibid.* at 37.

<sup>215</sup> Press release IP/02/1651 of 12 November 2002, *resp.* Letter from Charles A. James, Assistant Attorney General, Department of Justice, Antitrust Division, to Ky P. Ewing, Esq. Vinson & Elkins L.L.P. (November 12, 2002) [available at <http://www.usdoj.gov/atr/public/busreview/200455.htm>].

that on a number of occasions patent pools had been used as an instrument of anti-competitive practices, and since any kind of collaboration among horizontal competitors was looked upon with great concern. However, in the 1980's, the rapid growth and importance of the new economy started a reassessment of this thinking. A new approach was required to antitrust enforcement that was not hostile to all forms of collaboration among competitors, but one which could distinguish between those forms of collaborative behavior involving IP that were procompetitive and those that were not.

To sort out the procompetitive and anticompetitive aspects of the licensing of IP, one of the fundamental issues that first had to be considered was the tension between competition policy and IP law. It was found that both are designed to serve the same goal: to promote efficiency and to benefit the consumer. The laws creating and protecting IP do so by creating incentives for innovation, which increases production possibilities, and competition policy focus on promoting efficient use of these possibilities.

One can expect there will continue to be an increased rate of patenting and that firms will get more protective of their patents. This will increase the density of the patent thicket and probably lead to more litigation. Blocking patents also have the potential to disrupt production and cause inefficiency. Accordingly, first of all, it is important that patent pools are available to solve these problems, and second of all, there has to be simple and sound competition policies governing patent pooling. Antitrust enforcement over the past century has been focused on preventing patent pools from being used to restrain competition. Perhaps such enforcement in the future could be directed toward establishing institutional mechanisms and rules promoting effective standards. Thus, instead of concentrating solely on traditional competitive concerns, attention should also be given stimulate the use of patent pools. This should be considered when establishing either guidelines or block exemptions.

#### *Future action*

A first step for the competition authorities to take should be to make it clear that they will look favorably on efforts to establish patent pools. In order for firms to form patent pools, reasonable exchange of necessary information and negotiation between competitors must also be possible without interference from antitrust authorities. Merges suggest that the government should contribute to the formation of pools and even force parties to transactions.<sup>216</sup>

This is an area of competition law and IP law that requires both creativity and discretion. The effects of these suggestions are not clear and it will probably take some time to determine what will work and what will lead to competitive problems.

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<sup>216</sup> Merges, Institutions for Intellectual Property Transactions, *ibid.* at 50. (“This may be the only way to effectively reconcile a proliferating array of property rights with society’s need to assemble rights into useful bundles”.)

Although competition authorities should encourage the formation of pools and other exchange mechanisms, the optimal policy is not completely laissez faire. There are still anticompetitive dangers and opportunities for companies to abuse the possibility to collaborate. Thus, competition authorities need to make clear they will challenge evidently anticompetitive conduct.

Whatever the model may be, a patent pool should be operated according to the generally accepted competition conditions, set out in chapter 6. These rules should be the origin for discussions on how to elaborate guidelines or a block exemption.

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