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Scientific Technology Options Assessment

S T O A

Policy options for the improvement of the European patent system

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Executive Summary

This report is based on an independent, policy-oriented investigation of the current European patent system. The central premise of the report is that the patent system has so far been a positive factor in promoting innovation and the diffusion of knowledge, and thus that the system is contributing in a constructive way to economic and social welfare objectives. In acknowledging the importance of the patent system in relation to many aspects of society, it is also essential to continually evaluate whether the system is working as effectively as it could be. In addition, because of some of the influences coming to bear upon the system at the moment, as well as the various ways in which it has been operating, the workings of the European patent system especially merits close public attention.

However, it is not the objective of the report to evaluate whether a patent system should exist. Rather, the investigation works from the starting position that the system is there, and so the main thing to do is to try to improve its workings. This is because the Working Group believes that the European patent system may be operating in certain ways and within certain sectors such that there is room for various improvements to be made. To do this, the Working Group puts forward a series of policy options. The Working Group supports the introduction of a Community patent and a European Patent Court, and the policy options presented in this report should not be seen as an alternative for this ultimate goal. They have been developed to improve the system as it is known today, since the Community patent is not guaranteed to be introduced in the near future. Should it be introduced, the Working Group considers that many of the policy options put forward would have an even better effect.

When making its recommendations, the Working Group recognizes that the protection and enforcement of the rights of inventors through the patent system must be done in a manner to stimulate innovation and the diffusion of knowledge. In order to propose meaningful policy options that meet these objectives as much as possible, the evidence put forward in the report includes an assessment of key patenting activity trends occurring at the moment. The analysis assesses what kind of impact these trends have on the ability of the European patent system to work well, and what are the specific challenges that arise as a result.

The report identifies that worldwide, the most important patent trends happening now relate to the number of patent applications being made. Specifically, the fact that applications received by patent offices continue to grow steeply, resulting in high numbers of granted patent rights. One potentially undesirable consequence of this development is a dampening effect of the incentive to innovate in the first place. This is mainly because costs associated with inventive activity have risen, often substantially. Rising costs reflect, among other things, overcrowded and overlapping sets of rights in specific research areas. Another effect of increased numbers of patent applications is the extra and sometimes severe pressure it puts onto examining offices and the sheer volume and complexity of the applications received.

These sorts of trends fundamentally challenge conceived notions of the patent system. The Working Group believes that left unchecked, this will have a damaging effect on the European patent system. The main impact is that there may be a deteriorating effect on patent quality in terms both of the clarity and balance of individual rights given to inventors, and the effectiveness of the system as a whole to meet economic and social welfare aims. The discussion about patent quality emerges from the report as the core underlying challenge to the future of the European patent system. The key task is to try to manage the growing patent workload while at the same time, maintaining the highest quality possible.

Another significant challenge identified is that new subject matter and science-based inventions are making it harder for examiners to accurately assess patentability requirements. And this may mean that undesirably broad rights are being granted in emerging technologies.

No single all-embracing policy strategy is able to meet these and the other challenges identified in the report. Instead, the Working Group believes a package of interrelated options is more suitable. This reflects the intricacy of the policy situation and mirrors the many connected and complex fields involved. For instance, the workings of the European patent system are closely related with rules about EU competition law, and policy initiatives regarding science and innovation. For these reasons, the policy options put forward are varied in scope and in method, and aim at tackling specific areas of concern.

The policy options put forward by the Working Group for the improvement of the European patent system are presented and discussed fully at the end of the report. Below is a simple list of the titles of the options.

- **Insertion of the economic mission of the patent system in the European Patent Convention**
- **Enhancing governance within the European patent system**
- **Improving quality aspects in regard to patentability standards and patent grant procedures**
- **Dealing with emerging technologies**
- **Increasing access to patented inventions**
- **Facilitating defensive publications**

The Working Group strongly urges careful consideration of these policy options, one by one and as a group of proposals. They are complementary and carefully designed to improve the functioning of the current European patent system. All other things being equal, if these options are not taken up the European patent system will continue to face increasing pressure as a result of wider and deepening trends that are occurring at both a regional and international level. The main end result of this will be an ever-decreasing level of quality that the European patent system is able to provide, as regards inventors and society. This may result in a negative impact on economic and social welfare. And even though, given the limitations of scientific research, it may not be realistic to describe these effects precisely, it is nonetheless the overriding feeling of the Working Group that positive action of the kind suggested here is much better than no action at all.

The analyses made and policy options put forward by the Working Group have been developed between May 2006 and May 2007. The members of the group have volunteered their input and they have met five times to discuss the report contents and commented on various drafts mostly through e-mail communication. In November 2006 at a workshop in the European Parliament, policy options were debated with politicians and a wide variety of experts and stakeholders, and the report was peer reviewed. The report has been developed within these limits and does not intend to build on new research, rather collecting and (re)organizing existing knowledge about the patent system. The Working Group recommends initiating new and more comprehensive empirical investigations and debates of a similar kind of nature to this report.

Introduction

The project – purpose, scope, method and report contents

Purpose and scope

This project has been initiated – and this report written – in order to assess how the European patent system best fulfils its objective of defining the exclusive rights granted to inventors so as to further the goal of enhancing social and economic welfare by means of encouraging inventions and their distribution. Finding the right balance is important, since the reward offered to inventors in the form of exclusive rights provides the incentive to innovate, but if the reward is too excessive, it may hamper innovation and the distribution of knowledge.

The general premise of this report is that the European patent system has so far been a positive factor in promoting innovation. Therefore, it is not the objective of the report to evaluate whether such system should or should not exist. Rather, the report works from the starting position that the European patent system may be operating in certain ways and within certain sectors such that various improvements can be made.

Thus, the aim of this report is:

- to analyze the historical and present impact of the European patent system on innovation and diffusion of knowledge
- to identify current key trends in the patent system
- to identify the challenges these trends present
- to point to policy options that may meet these challenges, and in the process, improve the functioning of the European patent system

Although the policy options presented address the workings of the patent system as it is currently structured, the aim has been to present options that will be relevant for the future of the European patent system – no matter how the system will be structured. In the opinion of the Working Group, a Community-based rights' regime is the preferred approach for the future of the patent system and in fact, many of the policy options listed here would be more effective under such a regime.

It is the hope of the project management and the Working Group that the options presented in this report will be of use to Members of the European Parliament and others in any debate about the future of the European patent system. It is also the wish that the thoughts and ideas of this report will mean greater attention is paid to the overall objectives of the patent system: to enhance social and economic welfare.

Method

The analysis within the report and the policy options presented as a result draw on the knowledge from legal and economic experts as well as the input from various stakeholders and peer reviewers. The project has been carried out by the project manager and an interdisciplinary Working Group consisting of three legal experts and three economic experts (as well as hands-on experience from the European Patent Office). This combination of expertise has been designed in order to bring together insight from these two disciplines, both of which are central to current debates about the workings of the patent system but whose knowledge is rarely combined in this way. This report is therefore, the result of an effort to combine these two areas of expertise and taking into account contributions from various practitioners and stakeholders.

The Working Group was made up as follows:

- Mr. Robin COWAN, Professor of economics, BETA, Université Louis Pasteur and UNU-MERIT, Universteit Maastricht
- Mr. Wim Van der EIJK, Principal Director International Legal Affairs and Patent law, EPO
- Mr. Francesco LISSONI, Professor of Applied Economics, University of Brescia
- Mr. Peter LOTZ, Head of Department of Industrial Economics and Strategy, Copenhagen Business School
- Mrs. Geertrui Van OVERWALLE, Professor of IP Law, University of Leuven, Belgium
- Mr. Jens SCHOVSBO, Professor, University of Copenhagen, Faculty of Law and
- Mr. Matthew ELSMORE (rapporteur), Assistant professor, Aarhus Business School-University of Aarhus

The report is based on the deliberations within the Working Group, and reflects the commonly developed proposals of the group, rather than opinions of individual group members. The Working Group members have participated as individuals and not as representatives of their respective institutions.

The contents of the report build on existing studies and available data discussed by the Working Group members at five separate meetings. In between these meetings, various drafts of the report have been exchanged, commented on and edited mostly through e-mail communication.

Furthermore, the report draws on discussions the Working Group had with a range of other experts and stakeholders held at a conference in the European Parliament on November 9th 2006 (see programme in Annex 2). The workshop was organized to receive ideas for policy options from Members of the European Parliament, academics, practitioners, business representatives and other stakeholders. The workshop speakers invited were:

- Mr. Roger BURT, IBM Europe, United Kingdom
- Mrs. Michelle CHILDS, CPTech, United Kingdom
- Mr. Peter DRAHOS, Australian National University, Australia
- Mr. Dominique GUELLEC, OECD, France
- Mr. Reto HILTY, Max Planck Institute, Germany
- Mr. Tim HUBBARD, The Sanger Institute, United Kingdom
- Mr. Lars KELLBERG, Novo Nordisk, Denmark
- Mr. Hans-Werner MÜLLER, UEAPME, Belgium
- Mrs. Ingrid SCHNEIDER, Universität Hamburg, Germany
- Mr. Thomas SCHWEIGER, Greenpeace, Germany
- Mr. Thierry SUEUR, Air Liquide, France
- Mr. Hanns ULLRICH, European University Institute, Italy

Comments on the factual contents of an interim version of this report were also received from Mr. Burt, Mr. Drahos, Mr. Guellec, Mr. Kellberg, Mrs. Schneider and Mr. Ullrich.

At a final stage of the process, the report was peer reviewed by the following experts:

- Mr. Jan BRINKHOF, Leading partner of Brinkhof Advocaten and Professor of Industrial Property Law at the University of Utrecht, the Netherlands
- Mr. Vincenzo DENICOLO, Professor of Economics at the University of Bologna, Italy
- Mr. Dietmar HARHOFF, Professor and Academic Director of the Institute for Innovation Research, Technology Management & Entrepreneurship, Munich,Germany
- Mr. Joseph STRAUS, Professor at the University of Munich and Director of the Max Planck Institute for Intellectual Property, Competition and Tax Law, Germany.

A final draft of the report was presented and debated on a dissemination workshop in the European Parliament on June 14th. (See programme and meeting minutes in Annexes 4 and 5).

Report contents

The report is structured as follows:

Chapter 1 is titled "Background to the European patent system". This background chapter defines important terminology that enables the reader to understand more clearly the aims, objectives and method of the report. In this respect there is a description of what is meant by the central elements of the report: "patent" and "European patent system", and a brief discussion of the "Community patent". All of which will provide a better basic foundation from which the later chapters can build upon. Although therefore, the information presented in this chapter is not new, it is very important to the overall report. The chapter takes a historical glance at the growth of the patent system and the recent arrival of the "knowledge society", and how patent rights are acquired in the first place. As well as this, an eye is cast to the international dimension of patents.

Chapter 2 is called "Objectives of the patent system". It seeks to establish the objectives of a patent system. Selected empirical evidence is therefore used to support the arguments made and to try to shed light on whether the objectives by the patent system are being achieved, in terms of the stimulation of innovation and diffusion of knowledge. As part of this discussion, various limitations of the available evidence are looked at. To finish, a socio-economic point of view is presented on balances within the system.

In chapter 3, "Emerging patent trends – a question of numbers and quality", key trends and developments that presently influence the workings of the European patent system are identified, assessed and put into the context of that system. Specific trends that may jeopardise or affect the balanced functioning of today's patent system are pinpointed. It is noteworthy that many of the trends discussed contribute to or originate from the most relevant trend of all, namely the increase in the number of patent applications. From the assessment of key trends, the report identifies various challenges, which confront the current workings of the European patent system. This will allow proposals and mechanisms to be put forward in the final chapter to resolve the challenges identified.

The final chapter, "The policy options" puts forward proposals specifically designed to deal with the challenges previously identified. The policy options are recommended on the basis of the evidence presented in the earlier part of the report, and thus try to take into account things happening at the moment and in the past that affect the current functioning of the European patent system, such as key trends. In designing these options, the objectives and desirable balances of the patent system have also been taken on board. Broadly speaking, the options deal with aspects relating to clarifying the economic mission of the European patent system, improving matters of governance and patent quality, as well as proposals designed to alter the behaviour of patent users. As part of these, there are measures recommended that aim at creating better links between the European patent system and the EU, and with increasing participation and transparency within the system itself.

Annexes

~~Annex 1~~ contains the CV's of the Working Group. Annex 2 contains the programme for a workshop held in the European Parliament on November 9th, 2006, with the purpose of debating various policy options. Annex 3 presents the three focus areas elaborated by the Working Group for the workshop. Annex 4 is the programme for the workshop in the European Parliament on June 14th, where a final draft of the report was presented and debated. Annex 5 contains the meeting minutes. Annex 6 contains a list of references cited throughout the report.

CHAPTER 1: BACKGROUND TO THE EUROPEAN PATENT SYSTEM

1.1 Introduction

The aim of this background chapter is to define important terminology in order to enable the reader to understand the aims, objectives and method of the report more clearly. This chapter will provide a basic foundation from which the later chapters can build upon. Thus the information presented in this chapter is not new, but is important nonetheless in the context of the overall report as a way to set the scene. To do so, this chapter takes a historical glance at the growth of the patent system and the recent arrival of the "knowledge society", and how patent rights are acquired in the first place. As well as this, an eye is cast to the international dimension of patents. First of all, there is a description of what is meant by the central elements of the report: "patent" and "European patent system".

1.2 What are "patents" and what is "the European patent system"?

At a broad level, this report is about Intellectual Property (IP) and Intellectual Property Rights (IPRs). Specifically however, it focuses on the "patent" which is a central part of an IP system and the sets of rights that make up IPRs. The main purpose of the report is to put forward policy options for the improvement of the "European patent system". It is important before going any further to explain what is meant by each of these expressions and a little about the institutions and set up of the system, as well as the output of that system.

The definition of a "patent" has altered over time reflecting among other things, changes in society and economy. Today, patents are recognised as exclusive rights granted in respect of inventions, to prevent those other than the grantee from exploiting the invention without his consent. The right given to an inventor does not automatically allow him to exploit it, as it is a right often subject to additional rules. For example, patented drugs cannot be marketed unless and until they have been approved by the relevant authorities. Thus as will be seen, judging the overall efficiency of the patent right, and more widely the patent system, requires also some understanding of how these interact with other legal institutions and regulations.

The expression "European patent system" refers here in this report to the multi-layered, regional system that exists in Europe regarding patent-related activity. Originally, the intention was to have one patent system for the European Communities, including not only standardised grant processes but also providing one, uniform patent right for the whole of the common market. However, the objective could not be achieved at that time, as there were inseparable views on whether a respective convention should be open for accession to non-Community Member States. Therefore, a split was made between setting up a uniform granting system, which would also be open to non-EC Member States of the EC (Convention on the Grant of European Patents (EPC) signed in Munich 1973) and a real integrated Community system to be created at a later stage – though such a Community system has still yet to be established. This explains in brief why the European patent system is distinct from the European Communities.

The European patent system as it stands now is implemented by the European Patent Organisation, which was established by the EPC. The result is a centralised system effectively administered day-to-day by its executive body, the European Patent Office (EPO). The EPO operates on behalf of all EPC contracting states, i.e. all Member States of the EU plus Iceland, Liechtenstein, Monaco, Switzerland and Turkey. The system reflects the collective political determination to establish a uniform patent system in Europe but as it is today, it is in a sense incomplete for even though the grant is mainly centralised, patent rights are still largely determined by the national laws of EPC contracting states.

Having said that, harmonisation and unification of substantive patent law has been achieved in the EU Member States to a considerable degree, and in particular, with regard to the requirements for patentability, the grounds for revocation and the extent of protection.

It is important to stress that this report looks at matters from "inside" the European patent system and so it does not specifically address issues peculiar to other patent systems and the wider EU environment. This is not to say the report does not acknowledge for instance, the fact that more and more of the time, EU aspects are creeping in to discussions on the European patent system, thus raising new issues and questions. These wider aspects are discussed where appropriate and in furtherance of the report. Primary emphasis though is on the "European patent system" in terms of the EPC and the EPO. To achieve the overriding aim of the report, that is to put forward policy options relating to the future of the European patent system, the interplay of that system internally, and externally with other patents system is of course examined. It is important to realise therefore, that when the report refers to "the patent system", it is meant more generally, for example on matters of historical importance, or in relation to wider market- and technology-based trends.

1.3 The Community patent

At this stage, it is also worth explaining a little about the "Community patent". The Community Patent Convention ("CPC"), which was initially signed at the Diplomatic Conference in 1975 and re-negotiated in 1989, was designed to complement the European patent system with an *EC-wide* patent, the "Community patent"[1]. Despite several revision conferences, the CPC has never entered into force. Thus, although the CPC has had an unmistakable effect on the substantive patent law of the EPC contracting states as a consequence of resolutions signed in 1975 and 1989, an EC-wide patent remains to be established today. Partly as a result of the lack of progress, in 2000 the European Commission decided to take a new initiative by way of an EC regulation for a Community patent, which was to be enacted under the EC Treaty[2]. Consequently, the international contract for the EU Member States, as with the CPC, would be replaced by the creation of secondary community law.

The basic aim of a Community patent is to introduce a unitary title, granted by the EPO, and valid throughout the EU and in a similar way to how the Community Trade Mark and Community Design systems currently operate. In addition, a judicial panel under Article 225a EC Treaty would be established to act as a "Community Patent Court". The aim of this new judicial system is to ensure unity of law and practice law throughout the EU, through the development of judicial guidance and principles. The European patent system is currently incomplete, because the granted patents are still governed by national law, litigation on European patents is still a matter for national courts, and the policy responsibility for patent matter lies partially with the member states and partially with the European Union. It is obvious that this division of legal regimes and responsibilities does not contribute to the proper functioning of the patent system in Europe.

The Working Group strongly supports the creation of a Community patent which is cost effective and provides for legal certainty, mainly because operational authority, legal framework and policy making could be governed in one institutional framework.

[1] See Koch/Stauder, "Vereinbarung über Gemeinschaftspatente, Textausgabe mit Einführung und Sachregister", 2nd edition, Köln et al. 1997; and Kolle, "The EU Council Regulation on a Community Patent, Enforcement of Intellectual Property Rights and Patent Litigation", epos*cript* vol.6, 615-622.

[2] In this regard, see the latest Communication from the Commission to the EP and the Council, "Enhancing the patent system in Europe", COM(2007) 165 final.

Overall, the Working Group certainly believes that a unitary approach would enhance the efficiency of the European patent system and the quality of its output[3]. The policy options in this report should in no way be seen therefore, as an alternative for this ultimate goal. They are written to improve the system as it is known today, having in mind that the Community patent has proved over a history of decades to be difficult to achieve in Europe, and it is therefore not guaranteed that this goal will be reached in the near future. At the same time, the Working Group considers that many of the policy options put forward in this report would have a better effect under such a unitary system.

Although the report in its policy options does not expressly refer to litigation matters, the Working Group is also of the opinion that a European Patent Court dealing with litigation on European patents is a real and urgent necessity. The Working Group recommends that efforts to create such a court be pursued[4], be it as part of the Community patent project or as a separate undertaking to bridge the time until the Community patent sees the light of day.

1.4 Historical aspects

The European patent system is a modern example of old and well-established ideas. Though the origins of patents for invention are rather obscure and no one country can really claim to have been the first in the field with a "patent system", Italy and England do have some of the longest continuous patent traditions in the world. For instance, in Italy patent remnants can be traced back to the 15th century, where provision of exclusive rights was made for skilled craftsmen who mastered strategic technologies – which emerged with the advent of book printing in Venice[5]. The primary aim of the Venetian patent law was not exclusively rewarding inventors *per se*, but promoting the welfare of Venice, the city. The grant of patents was seen as a means to reach that goal, and in many senses, the same can be said for modern patent legislation.

Gradually, the idea of a patent system became popular among national governments. Many countries were motivated to introduce a patent system partly by the hope that it would attract foreign technology. This meant patent systems allowed applications from enterprises based abroad, as well as those at home. Thus, patent rights began as instruments used by governments as a way to induce the transfer and disclosure of foreign-based technologies, and stimulate nationals[6]. The laws achieved this by granting to domestic and foreign inventors various degrees of monopoly, rather than specific rewards for inventive activity. And during and immediately following the Industrial Revolution, IPRs emerged as a universal and strategically important legal discipline in their own right. It was during this period that the dominant IP areas, like patents, copyright and trademarks, started to materialize into the forms largely known of today. By the end of the 19th century, it was the case that most industrialised countries had fairly developed and efficient IP systems.

Patents quickly became established as a primary means for rewarding invention, based on state-sponsored application and registration processes. A large number of patent systems were significantly updated during the latter part of the 19th century, and throughout the 20th century, by national governments and international conventions.

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[3] The Working Group is not advocating a wholesale copying of the US patent system. Compared to that system, the European system already has important virtues that can be maintained also under a carefully planned unitary system. In particular, the Working Group encourages lawmakers to address the potential surge in low-quality applications that might be the result if a Community patent can be obtained and enforced at lower costs.

[4] See proposal for a European Patent Litigation Agreement (EPLA) at www.epo.org/patents/law/legislative-initiatives/epla.html and also Luginbühl, Streitregelungsübereinkommen vs. Gemeinschaftspatent, GRUR Int. 2004, 357-366; Willems, "The EPLA - Trojan Horse or Gift of the Gods? ...und sie bewegt sich doch!" Patent Law on the Move, Festschrift für Gert Kolle und Dieter Stauder, Köln et. al 2005, 325-338.

[5] The Venetian Patent Act (1474) is generally agreed upon as the oldest patent act in the world. Also during this general period of time, the English Crown began making specific state-sponsored grants of privilege to manufacturers and traders who satisfied certain conditions. The text of the patent law, known simply as the Monopoly Act, was enacted in England in 1624. This law clearly defined basic concepts which are still influencing interpretation of patents in the present day.

[6] See David, "The Evolution of Intellectual Property Institutions and the Panda's Thumb". This paper was prepared for presentation at the Meetings of the International Economic Association in Moscow, 24-28 August 1992. See also Kurz, "*Weltgeschichte des Erfindungsschutzes*", Köln, Carl Heymanns Verlag, 641 p; *WIPO*, Introduction to Intellectual Property, Kluwer Law, 1997.

This was partly done to meet the needs and challenges of new technologies and organizational forms, as well as reduce the inefficiency of certain existing patent procedures[7]. Many of the founding principles still operate today. For example, the disclosure provisions of many current patent systems were an essential part of the effort to induce foreign inventors to reveal their ideas, thus aiding domestic craftsmen[8].

The economic rationale upon which the development of patent systems has been largely based is broadly agreed upon. It is that economic welfare is created through new ideas and their strategic use, and the system has been a political device to help create and sustain economic welfare. A patent system does this by among other things, providing incentives to research and improving the efficiency of the market for knowledge and ideas[9]. Ideally, society would wish that the benefits to be gained by the generation of new ideas are maximised at both a private level (i.e. inventors and patent users) and a public level (i.e. wider society, including other companies). Further, that there is a level of fairness and balance. This is a main part of the challenge facing decision makers and involves other areas of policy such as the rules on competition.

1.5 The "knowledge society"

Patent systems date back to before the Industrial Revolution. The patent system, as an institution, has survived the transition from a rural society to a manufacturing society and now to a service-based society. With only major changes instituted in the late 19th century, the patent system has shown itself to be a lasting factor even in an environment, which is seemingly very different from the one that nurtured the system in the first place. And in fact, the patent system even appears to have taken a greater role.

In a "knowledge society", the growth and wealth of societies are no longer products of natural resources and manual labour alone, but increasingly of science and education. The advancement of this new kind of society relies on the use and accumulation of knowledge resources more intensively and strategically than has previously been necessary. Production is increasingly based on the refinement and deployment of ideas rather than on physical products. Society still produces and trades more and more physical products, but the market for services, knowledge and ideas is expanding much faster. In particular, the exchange of intellectual assets through licensing structures for instance, has assumed greater significance and added another layer to the old-fashioned trading of goods and simple services.

This aspect of society is not novel, but the scale of the change is dramatic. Within this knowledge society, science and technology develops rapidly, which means that the governing law has to be carefully planned, applied, and, if necessary, revised. The rules and practices governing patents and the patent system are particularly central in this regard. This is primarily because, as will be seen, they are an important part of society's support for the innovation process. Achieving policy objectives within the knowledge society poses considerable challenges by placing demands at a public level; namely on the agencies administering the patent process, as well as the patent system itself.

It is reasonable to question therefore, whether the role of the law, specifically in the case of this report, patent law and the European patent system, is meeting the challenges being set, by among other things, changes in trading patterns and the way in which technology develops.

[7] In general, catching-up countries have adopted weak IPR legislation which among other things, provided enough incentives for foreign technologies to be imported, but also left room for quick imitation by local firms.
[8] See David, *ibid*.
[9] See OECD, "Patents and Innovation: Trends and Policy Challenges" (2004, Paris); available at: www.oecd.org/dataoecd/48/12/24508541.pdf.

1.6 Grant procedure

At this stage, it is worth taking a brief look at what it takes to acquire a patent under the European patent system, and how this is achieved.

The EPC created a centralised patent application, examination and grant procedure. This makes it possible for an inventor to obtain a patent for up to 37 European states through a single application filed at the EPO or filed through national offices of the EPC contracting states[10]. This "European patent" has the effects of a national patent granted in the contracting states applied for[11]. However, a European patent will only be granted if a number of fundamental substantive requirements contained within the EPC are met. These are:

- the invention must have technical character;
- the invention to be protected must be novel;
- it must involve an inventive step;
- it must be sufficiently disclosed in the patent application; and
- it must be susceptible of industrial application[12].

Although there is no agreed upon definition of exactly what an invention is, it is common ground in Europe that an invention is a technical solution to a technical problem. An invention can, therefore, never be a simple discovery which does not include a technical aspect. An invention is novel if it is not part of the "state of the art", i.e. if it was not made available to the public anywhere in the world before the application was filed[13]. An invention is considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person with general knowledge in the technical field in question. In order to fulfil the disclosure requirement, the invention must be disclosed in the application in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. In addition, an invention is regarded as susceptible of industrial application if it can be made or used in any kind of industry. And finally, the application must not fall "as such" within any of the categories of non-patentable inventions or exceptions to patentability, such as for example, applications relating to schemes, rules and methods for performing mental acts, and essentially biological processes for the production of plants or animals. It is clear, therefore, that the assessment of all these substantive requirements demands a certain level of expertise, which is provided by the patent examiner.

The grant procedure is divided into two stages: examination on filing, including formality check and search, and then the substantive examination. The first stage is initiated by filing the patent application. Once the EPO has received a patent application and the formality requirements are met, it carries out a search and draws up a search report. This report mentions the documents which may be taken into consideration in deciding whether the invention to which the European patent application relates is novel and involves an inventive step. The EPO publishes the patent application, together with the search report, after the expiry of a period of 18 months from the date of filing or, if priority from an earlier application is claimed, from the date of priority. Applicants can claim priority from an earlier patent application filed at another patent office if they file within 12 months of the initial application. The subsequent application will be treated as if it was applied for on the same date as the initial application; the "priority date"[14]. The search report, which is accompanied by a non-public opinion, on whether the application and the invention to which it relates seem to meet the requirements of the EPC is sent to the applicant.

[10] The 37 states are made up of all the EPC contracting states, of which there are 32, plus the five states recognising European patents (Albania, Bosnia-Herzegoniva, Croatia, the Former Yugoslav Republic of Macedonia and Serbia).
[11] See Stauder, Singer/Stauder, "European Patent Convention", 3rd edition, Cologne/London 2003, 15-18.
[12] These requirements are variously mentioned and detailed in the EPC, in particular see Articles 52, 53, 54, 56 and 57.
[13] See Krasser, "Patentrecht, 5.Auflage", München 2004, 262; and Paterson, "The European Patent System", 2nd edition, London 2001, 485.
[14] See Paterson, ibid, 454; Ullmann/Grabinski, Benkard, EPÜ, München 2002, 944-948.

This concludes the first stage of the grant procedure. The applicant's request for examination initiates the second stage. Based on this request, the EPO starts to examine whether the application and the invention to which it relates meet the requirements of the EPC (in particular the above-mentioned substantive requirements for patentability). If the Examining Division of the EPO is of the opinion that these requirements are met, it decides to grant the patent. Within 9 months of the grant, any person may give notice to the EPO of opposition to that patent. The goal of this opposition procedure is to revoke patents which have been wrongfully granted by the EPO. Decisions of the EPO are generally open to appeal to the EPO Boards of Appeal.

The European patent system is not exclusive. The possibility for obtaining strictly national patent rights is still open. For applicants interested in protection in one or a limited number of EPC contracting states, this may be an attractive possibility. The national route remains used by many applicants, especially in the bigger states. However, partly as a result of the further integration of the markets within Europe, the number of national filings is becoming relatively smaller. It is expected that this trend will continue, provided the European system remains cost effective. Overall, the advantages of the European system become more apparent when protection in 3 or more EPC contracting states is sought.

Two other aspects are worth noting. Firstly, in terms of time aspects, the average period in 2005 from initial application taken to grant was 45.3 months[15]. Secondly, statistics for 2005 indicate the cost of a European patent application maturing into granted rights and being maintained for a 10-year term to be around a figure of EUR 31,600. This estimate is based on a bundle of some 6 sets of national patent rights[16]. In addition to these costs associated with payments to external parties, the patent applicant might also incur further in-house costs, estimated from around EUR 6,000.

1.7 International issues

As with other IPRs, the geographical scope of a patent's legal effect is limited. This means that its rights have a national scope and effect – that is to say, a patent from the US will not have effect anywhere other than in the US. Thus to have effect in Japan for instance, a European based patent holder must make a separate application and secure Japanese-based rights. Accordingly, the environment within which many patents and their owners operate is regional and international. Patents holders look to the international scene, and not just the national level.

The initial structure for the international regulation of IP was laid down by the dominant IP countries at the end of the 19th century. In the field of patents, this was in the form of the Paris Convention for the Protection of Industrial Property (1883)[17]. Broadly, this convention established the principle of national treatment, which broadly speaking, ensures foreign nationals of signatory countries have to be treated as if they were "domestic" nationals in other signatory countries.

[15] See EPO annual report 2005, p. 22.

[16] See the EPO's report on fees and costs, "The cost of a sample European patent - new estimates" which is available at: www.epo.org/patents/Grant-procedure/Filing-an-application/costs-and-fees.html. The EPO data stresses that in view of the various cost factors involved – technology fields, application routes, the strategy of applicants etc. – a single figure can hardly give a binding estimate of the expected cost of a particular patent application. For instance, according to the survey, costs may differ by more than 100% between the electronic engineering and biotechnology areas. Furthermore, the costs incurred over the life time of a patent will also vary, as maintenance costs differ according to which countries are designated.

[17] See Kurz, supra.

Today, there are many regional and international structures for gaining patent rights. Japan, the US and Europe are generally considered the most important patent markets. Regrettably however, some of the most significant rules regulating the registration and infringement of patents differ within these markets – though basic rules implementing international conventions are largely the same. In Europe, the law has become increasingly harmonized since the conclusion of the EPC, which is designed to standardize patent requirements.

It is not yet possible to obtain a global patent via a single patent application filed with one of the leading patent authorities such as the EPO, the Japan Patent Office (JPO), or the United States Patent and Trademark Office (USPTO). However, it is possible to obtain international patent search and preliminary examination at any of these three offices and some others through the Patent Co-operation Treaty (PCT), signed in Washington in 1970 and operative since 1978. The PCT provides a useful tool for applicants who wish to apply for patents in many countries – at relatively low expense. The system is also beneficial to national patent offices which can make use of a search and preliminary examination report drawn up according to international standards. Overall, the Paris Convention and the PCT make the patent system more workable for everyone, including small enterprises, private inventors and researchers.

In addition, the Patent Law Treaty (PLT), which entered into force in 2005, seeks to harmonize internationally formal procedures, such as the requirements to obtain a filing date for a patent application, the form and content of a patent application, and representation. There are also ongoing, intense negotiations under the auspices of WIPO to devise a Substantive Patent Law Treaty (SPLT), which would harmonise substantive patent law at a global level.

The strongest step towards international harmonisation of patent protection was taken through the conclusion of the Agreement on Trade-Related Aspects of IPRs (TRIPS Agreement) of 1994, part of the Uruguay Round Agreement under the auspices of The General Agreement on Tariffs and Trade (GATT), now the World Trade Organization (WTO)[18]. The TRIPS Agreement sets a global standard for the development and protection of IPRs and ensures that the patent system is replicated in more countries – WTO currently has nearly 150 members, including the EC as a single member, the US and China. The TRIPS Agreement includes requirements for the national administration and enforcement of IPRs.

Box 1: International regulation – the TRIPS Agreement

The TRIPS Agreement establishes minimum and adequate standards for the level of protection, and enforcement, of IPRs. In essence, these standards are those of the EPC, of EU Member States' national laws and of the US. These standards do not prevent a country introducing higher levels of protection, which is often taken up.

The TRIPS Agreement ensures that patents are available for any inventions, whether products or processes, in all fields of technology, provided that the invention is new, involves an inventive step and is capable of industrial application. Patents must be available and patent rights enjoyable without discrimination as to place of invention, the field of technology and whether products are imported or locally produced.

[18] See Dreier, "TRIPs and the Enforcement of Intellectual Property Rights, From GATT to TRIPs", IIC Studies, Vol. 18, Munich 1996, 248-277; and Gervais, "The TRIPS Agreement: Drafting History and Analysis", 2nd ed., London et al. 2003.

CHAPTER 2: OBJECTIVES OF THE PATENT SYSTEM

2.1 Introduction

In the previous chapter the history and current functioning of the European patent system was described, mainly from a technical and legal perspective. This chapter seeks to establish the objectives of a patent system. Selected empirical evidence is therefore used to support the arguments made and to try to shed light on whether the objectives by the patent system are being achieved, in terms of the stimulation of innovation and diffusion of knowledge. As part of this discussion, various limitations of the available evidence are looked at. To finish, a socio-economic point of view is presented on balances within the system.

2.2 The purpose of the patent system

As already stated, it is not the objective of this report to evaluate whether a patent system should exist. Instead, the focus is on to what extent improvements to the patent system can be made given the ways it may be operating within certain sectors. The report works from the basic premise that the fundamental purpose of a patent system is to enhance social and economic welfare by stimulating innovation and diffusion of knowledge. This basically involves increasing economic welfare by speeding up technological change, which in turn requires more innovations to be introduced, and faster innovation diffusion within the economy.

In order to achieve these objectives, the patent system relies upon two principal pillars: (i) the grant to inventors of exclusive property rights over the inventions they claimed to have produced – provided these inventions, judged by prevailing examination requirements, are truly novel, inventive and susceptible of industrial application; and (ii) the imposition on patent applicants of a duty to disclose all the technical information on the claimed invention, which average experts in the field may find it necessary both to understand and possibly implement the invention in full[19].

The exclusive right is the key to the system. Since an exclusive right shields the patent holder against competition from others which may wish to copy the invention, an opportunity is provided to demand higher prices than would otherwise be the case. Viewed in isolation, such a result is undesirable for the economy and for society, as it imposes on consumers what economists refer to as “welfare loss”. However, these increased earnings constitute a powerful incentive to invest in the production of new technology.

Three further and specific points on the exclusive right merit note here. The first point is that the exclusive right is not everlasting – usually a patent can be valid only for 20 years at most. This time period starts from the date of filing of the application. But this does not include the priority year and so in effect, if priority is claimed the term is really 21 years. Second, simply in order to know what is protected and to gain protection, the invention must be meticulously described in the patent documentation thus revealing what might otherwise have been kept secret. This provides an opportunity for everybody else to view all the technical details relating to the invention, though the exclusive right prevents non-grantees from using it (unless permitted by the grantee). In turn, this “access” facilitates the dissemination of (technical) knowledge which arguably may inspire others to build further inventions. The structure of the patent right also means that imitation of the innovation is permitted as soon as the patent expires, and so restoring competition where the patent had previously established a monopoly. The third point here is that in many countries the exclusive right comes with an obligation to actually use the invention. In cases of insufficient use or “non-use”, the authorities may put into effect this rule to demand compulsory licensing of the invention. In the past however, this type of compulsory license has hardly been applied in practice.

[19] Both of these requirements were touched upon above in section 1.6.

2.3 Patent and competition law

As with other IPRs, patents are exclusive market rights. They provide protection against the unauthorized use of a patented invention by for instance, a competitor. Therefore, patents may have a significant effect on competition. The major aim of patent law is to advance technological development for the benefit of society. The overriding objective of competition law is to promote and maintain a process of effective competition so as to achieve a more efficient allocation of resources and maximize consumer welfare. At first glance the aims and objectives of patent and competition law may seem to be in conflict.

However, the two bodies of law are actually complementary, as both are aimed at encouraging innovation, industry and competition. The same competition law principles are applied to conduct involving IP and to conduct involving any other form of tangible or intangible property. A patent owner's rights to exclude are similar to the rights enjoyed by owners of other forms of private property. And as with other forms of private property, certain types of conduct may have anti-competitive effects against which competition law offers protection.

A patent does not automatically confer market power upon its owner. If it does confer market power, that market power does not by itself offend competition law. Nor does such market power impose on the patent owner an obligation to license the use of that patented invention to others. But market power could be illegally acquired or maintained, or, could enable a patent owner to harm competition through unreasonable conduct regarding the patented invention.

The interface between patent and competition law is a highly sensitive and complex area of law. Some basic aspects of the relationship between patent law and competition law in the EU are described in Box 2 below.

Box 2: Interface between patent and competition law in the EU

The main rules of competition law can be found in Articles 81 and 82 of the EC Treaty and the various national competition acts. In brief, these rules prohibit anti-competitive agreements between undertakings, on the one hand, and the abuse of a dominant position in the relevant market, on the other hand. With regard to the first aspect, a so-called European block exemption regulation and guidelines[20] have been issued regarding "technology transfer agreements" (which include patent licenses). These rules set out the principles for the assessment of technology transfer agreements under Article 81 of the Treaty and indicate what kind of restrictions or clauses are not to be contained in such agreements.

In principle, charging unreasonably high prices may be prohibited on the basis of the provisions regarding the abuse of a dominant position. However, the application of this principle may raise some problems. First and foremost, the relevant market should be set and the existence of a dominant position should be established. Next, it is difficult to set an 'unreasonable' standard.

In addition, it has been argued on the basis of the case law of the European Court of Justice[21] regarding copyright that in limited circumstances, such as for instance situations where a patent covers a technology which is totally closed to competition, competition law might be invoked as a basis for granting a compulsory license which forces the patent holder to issue a license.

[20] European Commission Regulation (EC) No. 772/2004 of 27 April 2004 on the application of Article 81 (3) of the Treaty to categories of technology transfer agreements, [2004] *O.J.* L 123/11 (this Regulation replaces European Commission Regulation (EC) No. 240/96 of 31 January 1996 on the application of Article 85 (3) of the Treaty to certain categories of technology transfer agreements, [1996] *O.J.* L 31/2) and European Commission Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements [2004] *O.J.*, C 101/2.

[21] See Case C-418/01, *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*, [2004] ECR I-5039.

2.4 The socio-economic balances of the patent system

All institutional structures have costs and benefits, the patent system being no exception. So an important aspect of policy-making is to achieve a balance. In the main, this means that costs incurred by granting monopoly power must be offset by benefits from ensuing technological development.

In principle, the patent system addresses market failure concerning the incentives of innovators. If innovation is important for economic growth, institutions must exist to reward inventors. If an innovation can be freely imitated by competitors it is difficult to extract a return on the investment needed to create it. A solution that is sometimes effective for the inventor is secrecy. If he can keep the technical details of his invention secret, imitation is both difficult and costly. Secrecy can have a social cost though, if invention is seen as cumulative. One aspect of the patent system that is often overlooked is that inventors must reveal their inventions to obtain patents. This is the *quid pro quo* for the temporary monopoly right, and serves the social purpose of making the new knowledge available for others to build upon[22].

A second solution to the incentive problem is direct subsidy to knowledge production. This is a solution that has been, and continues to be very effective in producing scientific knowledge of a basic or fundamental nature, and is mainly achieved through funding of universities and research institutes. These institutions generate knowledge that is useful and freely available to all. It is doubtful, though, that this could be effective in producing marketable information. Providing subsidies also implies making choices about which potential projects or areas to subsidize. Government agencies have been effective in doing this at a very general level (at the level of general research area such as biotechnology or nanotechnology for example), but it is perhaps less-well-equipped to make this sort of choice at the detailed level demanded for creating a marketable product or process. Thus for research projects "close to the market" a patent system may be more effective than a system of subsidies.

Such a solution is not costless, though. The monopoly power created by the patent right does provide incentives for innovation, but it also raises prices and reduces quantities to the consumer. Considerable work, both theoretical and empirical has been devoted to the optimal patent design[23]. While it is difficult to provide a general conclusion, the consensus seems to be that relatively-short lived patents subject to (non-trivial) renewal fees provide something approaching optimality. However, for cumulative innovations to materialize, it is also necessary that patent breadth and scope (i.e. the number of applications of the same idea over which the patent grants exclusive rights) be limited: too "broad" patents grant their inventors too many rights over any foreseeable applications of their inventions, thus discouraging other individuals and companies following in the same line of research. Equally, too "narrow" patents have a dampening effect by not providing enough incentives to invent in the first place. But too "broad" patent rights mean that society will have to rely solely on the inventors for any development of the protected invention, and not on a collective effort.

It is clear that the relationship between patents, innovation and competition is complex. Yet it is possible to make a number of broad statements in summary. Firstly, in regards to innovation, patents create an incentive for R&D and innovation investments, but raise transaction costs and inhibit cumulative innovation.

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[22] See Scotchmer (1991), "Standing on the Shoulders of Giants: Cumulative Research and the Patent Law", *Journal of Economic Perspectives*, Vol. 5, No. 1, pp. 29-41.

[23] For example, since the publication of Nordhaus' fundamental work on patent duration (also known as patent "length"), economists agree that the best way to balance the short-term welfare losses and long-term gains is to grant patents of finite length; that is patents which expires after a limited number of years (20 in most countries) and are also subject to renewal fees. See Nordhaus, "The Optimal Life of Patent: Reply" (1972) American Economic Review, 62, 428-431; and see also, Scotchmer, "On the optimality of the patent renewal system', (2001) Rand Journal of Economics (32), 181-196.

Secondly, in relation to competition, patents facilitate the market entry of new or small firms with limited assets, and enable vertical disintegration; whereas they create short-term monopolies, which may become long-term in "network industries" such as telecommunications[24]. From these statements it can be seen in a relatively straightforward way that the theoretical debate surrounding patents may be as follows: strong patents (i.e. patents of enough length and breadth, properly enforced by the legal system) can encourage invention, but too strong patents (too long and broad ones, possibly not matched by strong disclosure rules) will both stifle innovation and reduce welfare.

When deciding on patent legislation, the lawmakers have the objective to enhance social welfare by increasing the rate of technological progress. This is done by providing potential inventors with incentives to do more research and development and to disclose the technology they develop. But since incentives are paid by the customers, there is a balance to strike between the benefits and the costs of the incentives. Only if the incentives actually generate more inventions, are they worth paying for.

2.5 Does the patent system adequately support innovation and diffusion of knowledge?

Despite the observation that patents and patent systems are an integral part of the ways in which modern societies grow and develop, no direct or conclusive evidence actually exists on the social value of the patent system. This point has been framed most famously by Fritz Machlup in 1958 when in his report to the United States Senate, he remarked:

"If one does not know whether a system 'as a whole' (in contrast to certain features of it) is good or bad, the safest 'policy conclusion' is to 'muddle through' – either with it, if one has long lived with it, or without it, if one has lived without. If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it[25]*".*

Modern economic analysis offers little to refute this and in fact, research in the 50 years since Machlup's remarks has hardly added better or clearer evidence. But it may well be asked why empirical investigations are inconclusive. The major problem is that these types of issues cannot easily be tested scientifically and as a result, general conclusions are difficult, if not impossible, to draw simply because reliable data do not exist. The main obstacle is "counter-factual observations", which affects much research in the social sciences, and basically means that "real experiments" cannot be done. It is not possible for research to test in situations where entire societies are observed with and without patent systems for instance. And even in the rare cases where countries implement new patent systems or change significant elements to an existing one, the effects cannot be simply estimated because in the meanwhile, that society has changed in many other ways. All resultant generalizations based on these methods are open to criticism.

What can be taken from all of this in terms of a policy perspective and in terms of this report is that the analysis proceeds on the basis of a set of plausible "best" assumptions. If this is what is meant by Machlup when he talks of "muddling through", then effectively the central issue is how to make valid assessments of the impact of for example, a little more or a little less protection, and generally, of relatively small adjustments to the overall patent system.

[24] Networks are fastest-growing components in most industries. The term "network industries" includes the Internet, e-mail, telephony, computer hardware and software, music and video players, and service operations in the banking, legal, and airlines industries among many others.

[25] See Machlup, "An Economic Review of the Patent System" (1958) Study no. 15. Committee on the Judiciary. United States Senate. Washington, D.C. Machlup adds, "This last statement refers to a country such as the U.S. - not to a small country and not a predominantly nonindustrial country, where a different weight of argument might well suggest another conclusion."

As Machlup argued, "While economic analysis does not yet provide a sufficiently firm basis for choosing between 'all or nothing', it does provide a sufficiently firm basis for decisions about 'a little more or a little less' of various ingredients of the patent system[26]". He believed that before these decisions can be made with confidence, factual data of various kinds may be needed and that well-trained economic researchers and analysts should be able to obtain enough information to reach competent conclusions on questions of patent reform. Accordingly, this section continues to identify and examine selected empirical evidence with a view to determining more accurately what the value of the patent system is, broadly speaking, and thus whether it meets the objective of stimulating innovation and diffusion of knowledge.

2.5.1 Historical and international comparisons

Historical studies have been especially important for international comparison. They have addressed the issue of the interaction between patents, research, economic growth and competition. In particular, Lerner has examined historical evidence over a 150-year period for a large number of countries[27]. As a result of this research, he suggests that three factors may come together to explain differences in patent legislation across various countries. These are: (i) the extent of patent protection may be determined by the relative economic strength of the nation – more developed nations advance their technological level more through inventive activities than through imported technologies, and therefore tend to produce stronger patent systems; (ii) the internal political situation, in particular, the degree to which power is centralised among a ruling group; and (iii) the historical origins of the nation's commercial legal system.

The research finds evidence that is consistent with these views, but which also suggests greater complexity. Wealthier nations are more likely to have strong patent systems in place, to allow patentees a longer time to put their patents into practice, and to ratify treaties forcing equal treatment of patentees from other nations. However, advanced nations also tend to limit patent protection in some important ways, whether through requirements that protect earlier innovators or through charging higher fees for patent awards. In addition, countries with democratic institutions are consistently more likely to have patent protection and longer awards, as compared to those without such institutions.

To summarise, it can be said that existing sets of national IP legislation owes at least as much to historical circumstances (and the related political balances and ethical issues), as to careful economic planning derived from the economic theories of optimal patent protection described above.

Lerner also examined 177 changes in legislation in a number of countries, which occurred over the 150-year period. His conclusions indicate that on the one hand, a strengthening of patent protection may result in an increase of inventive activity, but those countries which already have a strong patent system in place have less to gain from strengthening it further. On the other hand, countries with low per capita gross domestic product, which are presumed to have limited resources for inventive activity and to rely on imitation of foreign technologies, also have less to gain from strengthening their IP regimes. These results are consistent with previous work, albeit based on more limited data sets.

[26] Ibid.
[27] Lerner's report, "150 Years of Patent Office Practice", can be found at www.people.hbs.edu/jlerner/150PatPrac.pdf.

2.5.2 Cross-industry comparisons: sectoral patents

Cross-industry based research has suggested that the effectiveness of the same patent legislation may vary across different industry sectors[28]. From the theoretical viewpoint, this is not entirely unexpected since the impact of the patent system depends on its interaction with environmental conditions, which vary across sectors. However, this may mean that when it comes to measuring the societal benefits of patents, it might well be that patents divert inventive activity away from sectors where patents are not very effective to those sectors where they are. If this is the case, the relevant measurement of the benefit side is not the technological development in the sectors with patents, but the entire country's technological development. In addition, as industries change over time it is extremely difficult to know to what extent the inner workings of inventive activity remain the same, for example 150 years after the cases that were investigated.

2.5.3 Firm-level studies and comparisons

Many studies report a positive correlation between the number (and quality) of patents owned by a company and its performance, which is typically measured by its market value[29]. Again though, this is at best a very indirect indication of the efficiency of the patent system. For one thing, holding a patent provides the basis for a monopoly and so the fact that companies with patents are performing better than companies without should certainly be expected – otherwise the patents' exclusive rights are without any real economic value. It is not easy to infer from such studies any specific indications as to whether a given industry sector performs better in terms of inventive activity with or without patents, and if so, to what extent either way.

The studies also demonstrate the need for a broader understanding of the barriers and opportunities offered by the patent system to firms generally, and especially small and medium-sized enterprises (SMEs)[30].

2.5.4 Publication aspects and diffusion of knowledge

The publication and dissemination of knowledge about new inventions, which the patent system facilitates, means a greater diffusion of new technology. And this in turn, may encourage more positive levels of competition[31]. Studies back this up, showing that some firms make extensive use of published patents as a source of information[32]. The free access to public records provides a constant flow of information which may provide the inspiration for new or further R&D and/or may decrease redundancy and repetition[33]. It is likely at least that considerable research costs can be saved through the publication of patent related information, such as the description of the invention. In this way, the patent system can contribute to limiting expenditure spent on research, while simultaneously enhancing its efficiency. On the flip side however, the sheer scale of information flow inherent in modern patent systems often makes it difficult for firms, especially SMEs, to exploit and manage the system as effectively as possible.

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[28] See Moser, "How Do Patent Laws Influence Innovation? Evidence from Nineteenth-Century World's Fairs", The American Economic Review, Vol. 95, No. 4, September 2005.

[29] See Harhoff, Narin, Scherer, and Vopel, "Citation Frequency and the Value of Patented Inventions", The Review of Economics and Statistics, 1999; and Hall, Jaffe, and Trajtenberg, "Market Value and Patent Citations", Rand Journal of Economics, 2005.

[30] See Lanjouw and Shankerman, "Protecting Intellectual Property Rights: Are Small Firms Handicapped?" *Journal of Law and Economics* (April 2004), 45-74.

[31] See OECD (2004), ibid.

[32] See Sheehan, Guellec and Martinez (2003), "Business Patenting and Licensing: Results from the OECD/BIAC Survey", in Patents Innovation and Economic Performance, proceedings of the OECD conference on IPR, Innovation and Economic Performance, 28-29 August 2003, OECD.

[33] See Sideri, S. and Giannotti, P. (2003): Patent System, Globalization, Knowledge Economy. WP. n. 136. Centro di Ricerca sui Processi di Innovazione e Internazionalizzazione.

In many other respects patents can have positive effects. They can have another type of positive influence on competition by making it easier for entrepreneurs and start-ups to facilitate their market entry, to gain and sustain a foothold and position in the market. This is because patent rights can be a decisive factor in attracting venture capital for entrepreneurs and start-ups from external investors. Furthermore, patents can be influential in strengthening cooperation with other firms as well as bolstering negotiating positions with respect to competitors, and thus helping to appropriate larger revenues through licensing[34].

2.5.5 Summary

It can be seen from the latter part of this chapter that methodological difficulties exist in providing empirical evidence as to the impact of the patent system in the first place, let alone a specific system such as the one in Europe. This reflects the main essence of what Machlup identified in his influential study over half a century ago: that it is not possible in the first place to test scientifically whether a patent system should exist, and thus the existence of the patent system *per se* cannot be questioned. It is also problematic from the available empirical data to precisely determine the efficiency of the system in terms of its effect on innovation and diffusion of knowledge, suffice to say that stronger patent protection does not necessarily equate with more innovation and greater diffusion of knowledge.

However, in line with some of Machlup's other findings, the Working Group does feel it is possible to assess with confidence whether a little more or little less of various aspects of the system, as it currently stands, will aid the overall effectiveness of the system and achieving its objectives. Accordingly, a proposal of specific policy options can be made while acknowledging the fact that methodological constraints may help explain the difficulties of determining what the correct balance within the system should be, and how to achieve it. A large part of the question of whether the European patent system fulfils its purpose is about striking a balance between broadly, too much and too little protection. Given that this report works from the position that the patent system is there, the overriding aim then becomes to investigate whether the European patent system may be operating in ways that warrant a reassessment and reformulation of the current regulatory environment. In order to better understand what, if at all, needs to be done, the next stage is to assess current key patenting trends that may be affecting the system and causing it to act in certain undesirable ways.

[34] See Gans, Hsu, and Stern, "When Does Start-up Innovation Spur the Gale of Creative Destruction?" The Rand Journal of Economics, Vol. 33, No. 4, 2002. It is interesting to note that IBM, holder of the most patents in the world, reports annual revenues in excess of US$1.5 billion from patent licenses alone. Overall, estimated revenues from licenses have risen globally from around US$10 billion dollars a year in 1990 to more than 100 billion in 2000. See OECD (2003), ibid.

CHAPTER 3: CURRENT PATENT TRENDS – A QUESTION OF NUMBERS AND QUALITY

3.1 Introduction

This chapter looks at key trends and developments that presently influence the workings of the European patent system. These trends are identified, assessed and put into the context of that system. Specific trends that may jeopardise or affect the balanced functioning of today's patent system are pinpointed. It is noteworthy that many of the trends discussed contribute to or originate from the most relevant trend of all, namely the increase in the number of patent applications. From the assessment of key trends, the report identifies various challenges and those which confront the current workings of the European patent system are listed. This will allow proposals and mechanisms to be put forward in the final chapter to resolve the challenges identified.

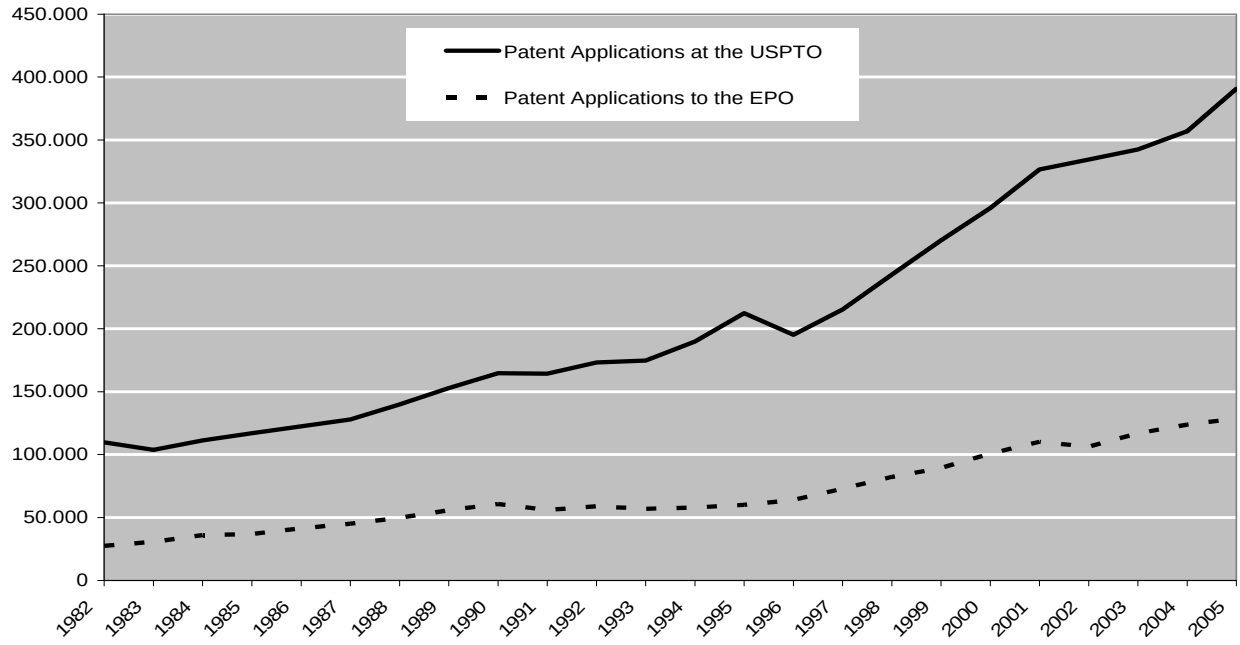
At the outset it is important to realise that some of the trends presented are common to the US, where they have been documented in widespread literature. In comparison, European trends have been less extensively analysed and explored. Some US analyses however, may also apply to European data, if properly qualified. It is also worth noting that several sets of policy options derived from on-going US debates on patents are floating around within European circles, so that it may be useful to understand from data to what extent the European patent system is moving in the same direction as the US system[35].

3.2 The increasing numbers of patent applications

No disagreement exists on the observation that, both in Europe and in the US, the patent system has been put under increasing pressure by the growing demand of patent protection.

As Figure 1 below shows, the number of patent applications has increased dramatically over the past 25 years, both in Europe and the US. This trend is common to other countries, such as Japan, for which similar figures can be found.

Figure 1: Numbers of patent applications received at the USPTO and EPO, 1982-2005



Source: OECD

[35] For more information on the current status of the US patent system, see "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy", A Report by the Federal Trade Commission, October 2003. See also the National Research Council 2004 report, which is available at www.nap.edu/catalog.php?record_id=10976.

It should be noted though that the number of applications still is much lower overall in Europe than in the US. The EPO experienced a rapid growth in applications in the 1980's but thereafter the percentage wise growth has been the same in the two regions. The USPTO for instance, consistently receives three times as many applications as the EPO. In this regard it is important to note that US and Japanese practice concerning patentability are in general not as strict as in Europe. This may go some way to help explaining the differences between the number of applications filed with the EPO, and the USPTO or the JPO.

Such an impressive increase cannot be but the result of a number of corresponding trends. First and foremost, these changes may result from an increase in the activity of established inventors and applicants. New windows of opportunity have been opened by R&D in a number of technical fields, which individuals, firms and other organizations may seize upon in order to produce an increasing numbers of inventions, which then require patent protection.

Second, the increase in patent applications may result from the appearance of a number of actors previously uninterested in patenting, either for lack of economic incentive or insufficient inventive activity. It will be seen that this is the case for universities, and for a number of companies, especially from previously developing countries.

Third, the number of patent applications may have increased because of an expansion of patentable subject matters, which has made patent protection available in fields previously out of the range of a patent. Examples in this sense come mainly from the US, which now permits patenting software and business methods, but also from Europe where patents for gene-related inventions are granted.

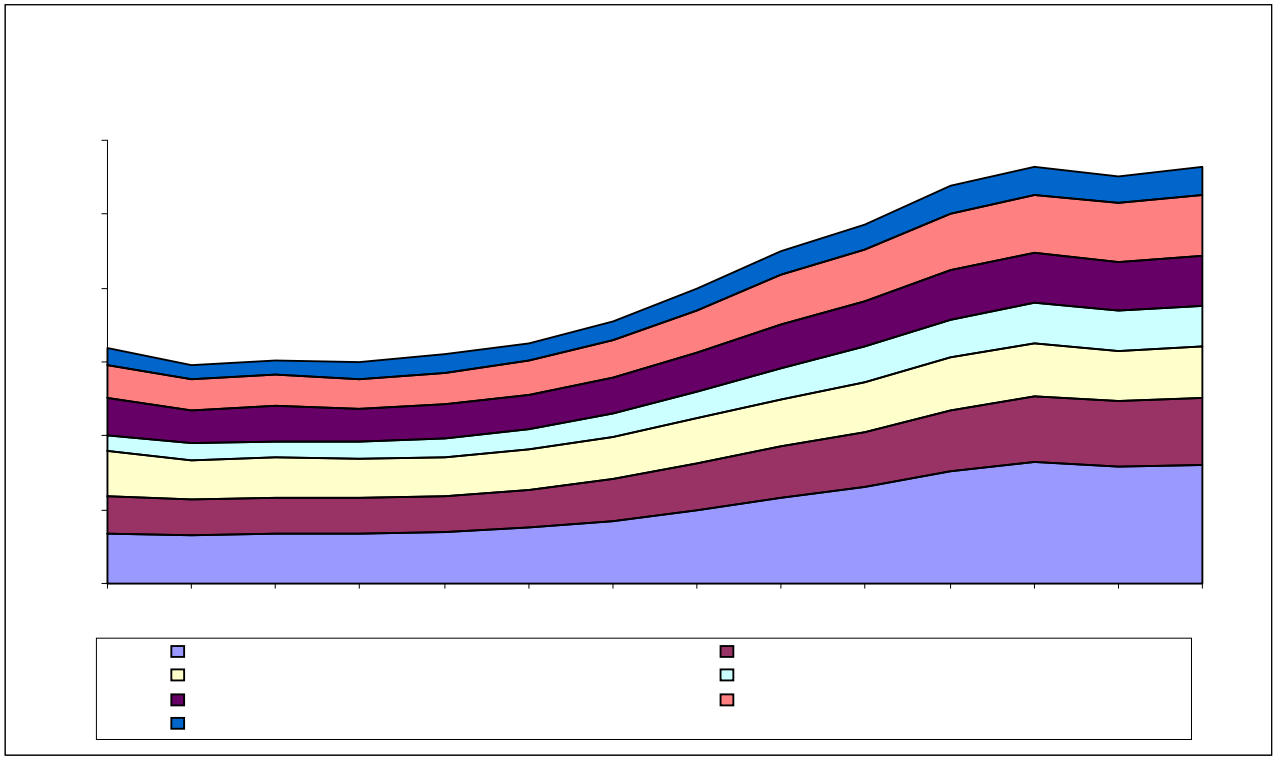
Fourth, and finally, it may be that firms and other organizations that engage in inventive activity have nowadays a higher propensity than before to look for patent protection. Some consensus exists that, in the US, a general strengthening of IPRs and their enforcement has encouraged firms to make more extensive use of patents for both "assertive" reasons (marketing of proprietary inventions through licensing) and above all for "defensive" reasons (firms which would have been otherwise reluctant to invest in patenting feel forced to do so in order to use patents as bargaining chips when trying to settle or to avoid an infringement trial).

Each of these explanations for the more extensive use of the patent system has some value. Thus disentangling them is very hard to do and is further aggravated by the fact that as yet, no conclusive evidence has been produced by any quantitative study. Bearing this in mind, the analysis proceeds to examine them in turn.

3.2.1 Increasing number of inventions

This explanation finds some intuitive support in Figure 2 below. The figure shows quite clearly that technological fields such as Electrical Engineering & Electronics and Pharmaceuticals & Biotechnology have contributed greatly to the overall trend, followed at some distance by Instruments. These are the most dynamic fields among the many wherein inventions can be produced and protected through patents. The superior contribution they make to the rise in the number of patent applications illustrate that such growth has to do with technological opportunities, and not only with legal arrangements of firms' strategies for the protection of their intellectual assets.

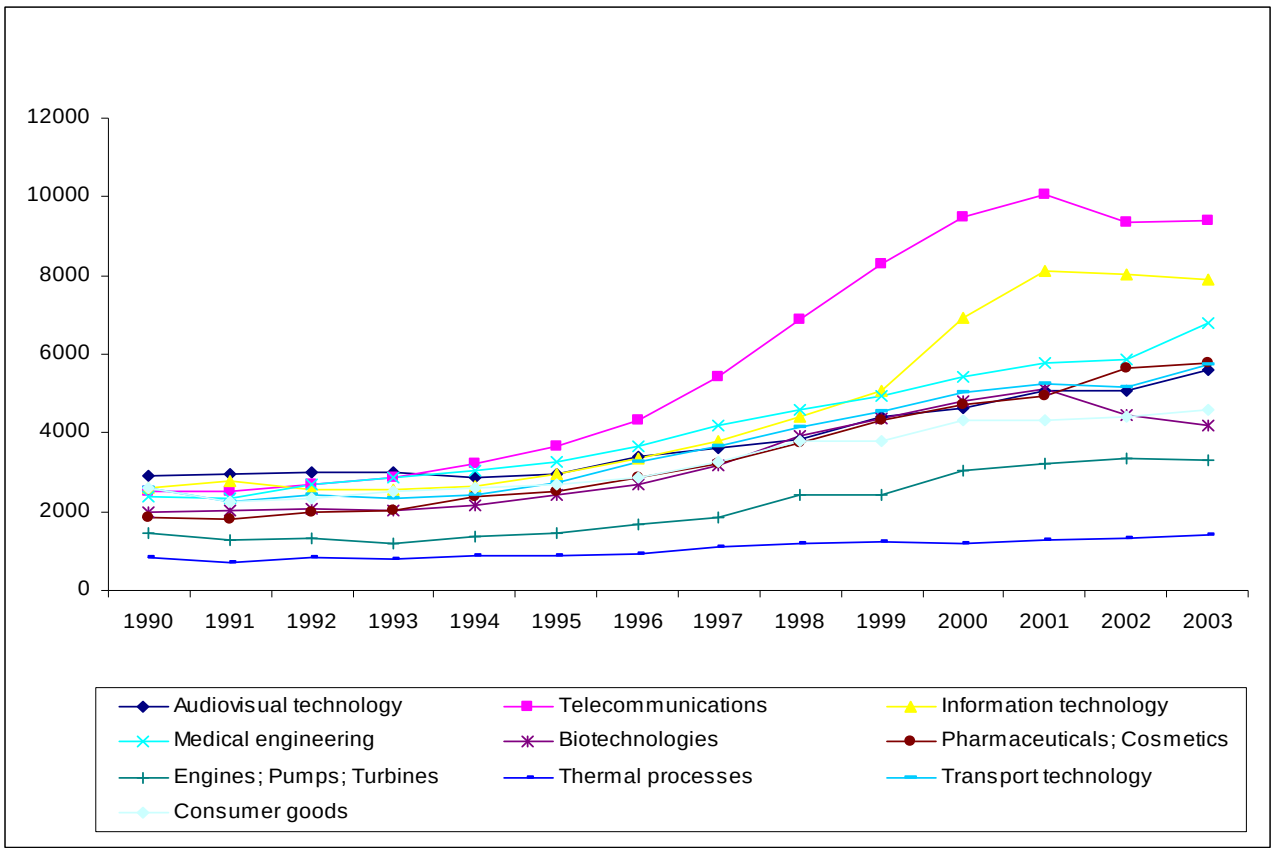
Figure 2. EPO: Number of patent applications, by technological field, 1990-2003



Source: EP-CESPRI database

This intuition is confirmed by examining patents at a finer classification level.

Figure 3. EPO: Number of applications, 10 fastest-growing technologies, 1990-2003

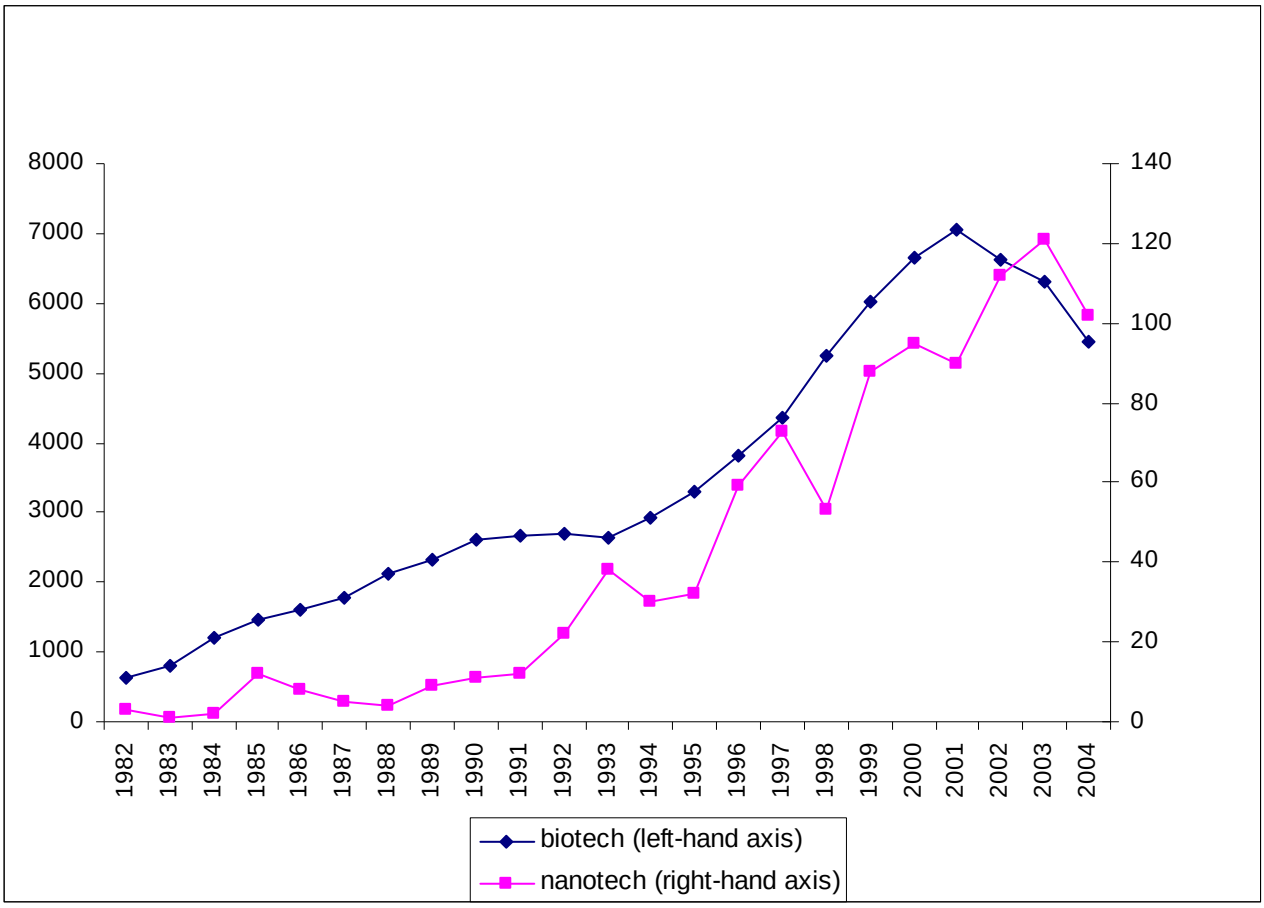


Source: EP-CESPRI database

Figure 3 above shows that, among the "10 fastest-growing technologies" of the period 1990-2003, three belong to the field of Electrical Engineering & Electronics – they are respectively: Telecommunications, IT, and Audiovisuals. Two of the others are Pharmaceuticals & Cosmetics and Biotechnologies, which together constitute the Pharmaceuticals & Biotechnology field in Figure 2 above. Medical Engineering, which belongs to the field of Instruments in Figure 2 above, is also in the top 10.

The finer the classification, the more evident is the emergence of more narrowly defined technologies, which are so new that the International Patent Classification (the IPC) does not yet accommodate them in a specific class. In this respect, the most striking case is that of nanotechnologies, which is set to repeat the explosion formerly seen by biotechnologies (see Figure 4 below).

Figure 4. EPO: Number of patent applications, in biotech and nanotechnology, 1982-2004



Source: EP-CESPRI database

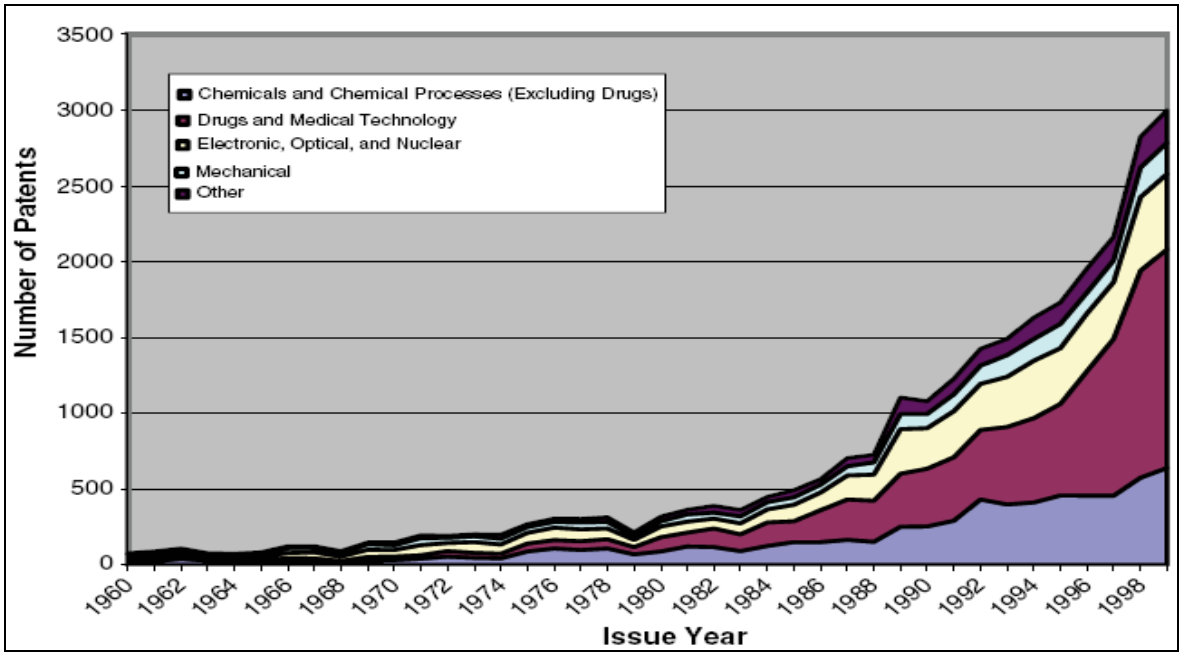
The role of Bio-technologies and Electronic technologies however, may have to do also with the other explanations offered for the patent application boom. Biotech and Electronics, in fact, stand out respectively as prominent examples of the "science based" and "complex" technologies. In the remainder of this section, the report will show how new inventors, new patentable subject matters, and increasing demand for patent protection (and not only technological opportunities) affect the trends observed for these technologies.

3.2.2 New inventors

3.2.2.1 Universities

The growth in science-based pharmaceuticals-related patenting is unusual as it heavily involves universities. It is a fact well-known that patenting activity by the US university sector has been on the rise since the Second World War. Its growth rate has become especially impressive since 1980, when changes were made to the regulatory environment with the precise intention to encourage the amount of university patenting. The result was an increasing propensity for universities to patent and grant exclusive licenses, effectively over the results of public funded research (see Figure 5 below). Thus, one remarkable impact on the growth of science-based inventions over the past few decades has been the sustained entry of universities on the patenting scene[36].

Figure 5. Patents granted to US universities, by technology, 1960-1999



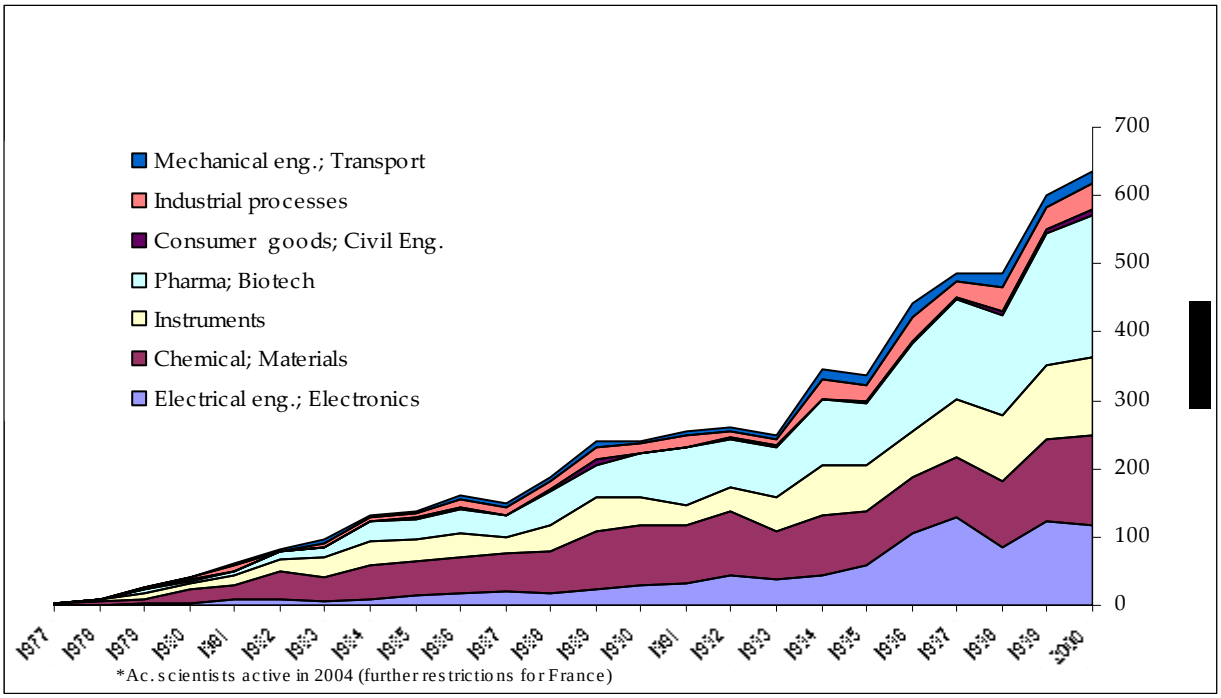
Source: Mowery and Sampat (2005), "The Bayh Dole Act of 1980 and University-Industry Technology Transfer: A Model for Other OECD Governments", Journal of Technology Transfer 30:115-127.

Yet the relationship between patenting by the university sector and science-based invention is not as clear cut as this. For although eased or even encouraged by specific bouts of legislation, university patenting itself as a trend has most certainly been the result of the emergence of science, especially academic science, as a fertile ground for inventions. It can be easily seen that the contribution of universities to patenting is particularly strong in science-based fields such as pharmaceuticals & biotech, instruments, electronics and chemicals. It comes as no surprise therefore, that recent research has identified similar trends for a number of European countries, such as France, Italy, and Sweden (see Figure 6 below). And more research is emerging to confirm that this is a continental trend.

[36] In the context of political emphasis and law reform, see from the US, the Bayh Dole Act of 1980, and more recently in the EU, the 2000 Lisbon Strategy, and for a specific reference from within the EU, see for example, article 169 of the Flemish 'University Decree'.

European “academic patents” differ from US “university patents” to the extent that, while both protect inventions by academic scientists, the former tend to be owned by companies and, to a lesser extent, public research organizations. In contrast, US university patents are owned by the universities themselves. However, with the encouragement of governments, European universities have become more aggressive in trying to retain the IPRs over their scientists’ inventions. And while in the past they left their scientists to dispose of such IPRs freely or allowed private sponsors to retain all of the IPRs, nowadays these universities tend to impose disclosure norms. As a result, they have been better equipped to build up patent portfolios for commercial exploitation. Besides confirming the role of science-based inventions, this trend of university patenting suggests that even an institutional actor – one that traditionally left research tools in the public domain – may in the future be tempted to enforce too strictly its IPRs over such a crucial element of the cumulative scientific enterprise.

Figure 6. Academic patents applications from France, Italy, and Sweden; by technology and year



Source: Lissoni F. et al. (2006), “Academic Patenting in Europe: New Evidence from the KEINS Database”, paper presented at the UNI-KNOW / RIDE workshop on Universities as Knowledge Environments of the Future”, Chalmers University, GÖTEBORG, 11-12 December, 2006.

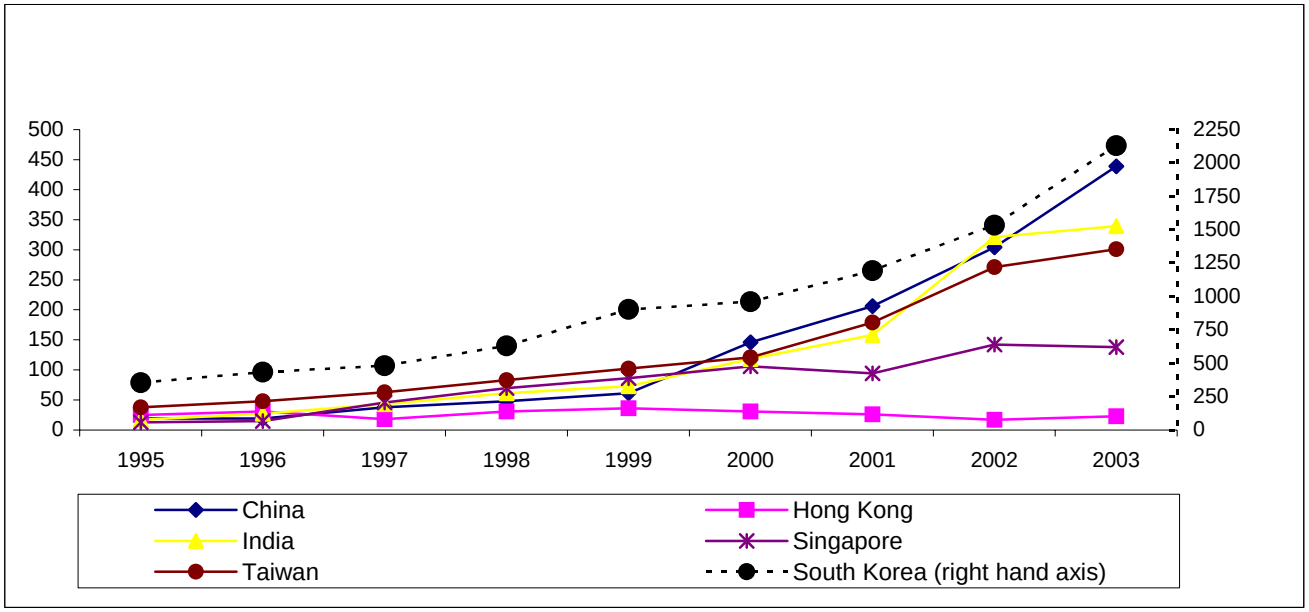
3.2.2.2 Companies and countries

It is well-established that patenting activity is highly concentrated in a few countries whose technological leadership goes undisputed – countries such as the US, Japan, Germany, the UK and France. According to EPO statistics, these countries alone account for well over 60% of the patent applications they receive[37]. In addition, economists have often pointed out that patents tend to be concentrated by applicant, with a few companies holding very large patent portfolios. Thus the reality is that patent ownership is dominated by those few who hold many patents, and the vast majority of companies actually own no patents at all.

[37] See EPO 2005 annual report, cited above.

However, the surge in patenting activity reported above seems to bring about a decrease in concentration, both by country and by company. Figure 7 below shows how the number of patent applications from China and India are growing fast. They have already overtaken the smaller Asian "Tigers" (Hong Kong, Singapore, and Taiwan), and seem poised to catch up soon with the Korean patent office – where the patent portfolio of applicants is already as large as that of well-established European countries.

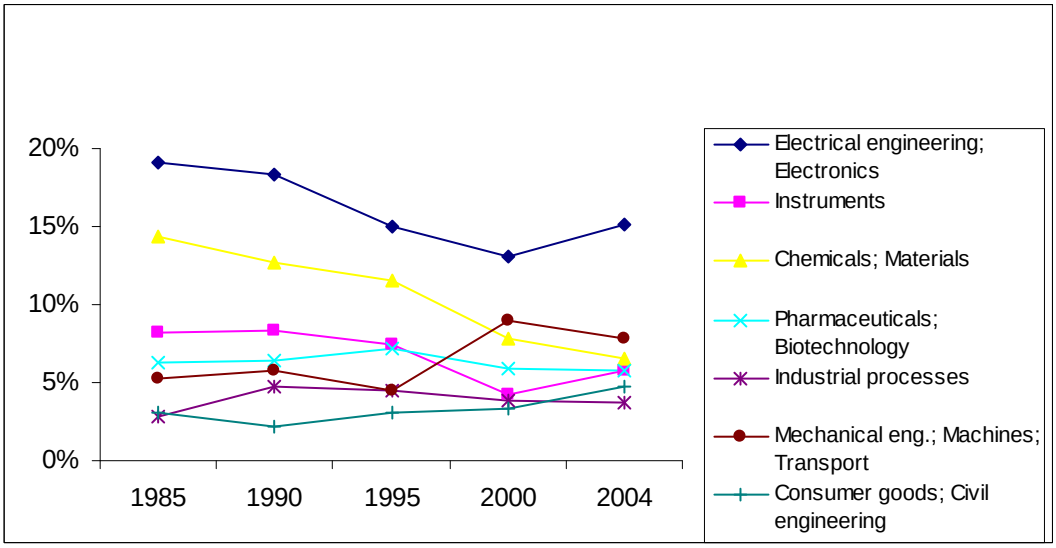
Figure 7. EPO: Number of applications by India, China and the Asian Tigers, 1990-2003



Source: EP-CESPRI database

As for concentration by firm, this is still very high (especially in electronics), but it shows signs of weakening (see Figure 8 below). This reduction will possibly reduce the market power of large patent holders, but may also increase the rate of litigation, to the extent that the technological domain and commercial interests of many patent holders will tend to overlap.

Figure 8. Share of 4 four largest patent holders over total patents, by technology and country, 1985-2004



Source: EP-CESPRI database

3.2.3 Newly patentable subject matters

Science-based inventions contribute to the growth of patent applications to the extent that many of the new subject matters have been added in order to make room for science-based inventions. Most notably, this has occurred with gene-related patents (see Box 3 below).

Concerns have been expressed that patents related to science-based inventions tend to be defined in such a broad way that they end up blocking further scientific progress, especially if they are licensed exclusively or at a high price.

This is because the scientific community tends to produce inventions that are arguably little more than 'proofs of concept' (not patentable *per se*), and are thus very close to general principles that have numerous applications. In addition, many science-based inventions can be regarded as research tools, either because they consist of scientific instruments or because they consist of biological matters. Such material constitutes the object of study of many scientists, whose cumulative efforts an inventor may block by enforcing the acquired patent too strongly.

Box 3: Hot debates – gene technology

Gene patents are hotly debated. Before the advent of biotechnology, it was generally unacceptable to grant patents for higher life forms. This was partly due to ethical considerations and partly due to the fact that patents for natural "discoveries" are typically stronger since alternatives are difficult to develop. Long ago however, patents of micro-organisms and of microbiology processes and products were accepted. In 1873 for example, Louis Pasteur patented isolated yeast in France, the US, and in other countries. Patents have also been issued in the past for vitamin B12 and the hormone adrenaline. Yet the boundary between what is and what is not patentable is difficult to define – and gene technology has seriously challenged the concept of patentable subject matter.

In genetics, many "inventions" are merely demonstrations of certain causal relations or information processes in the cell and, as such, are basically discoveries. As it becomes easier to map and document natural processes, problems may arise. Most obviously, excessive patenting and broad product patents may block further utilization and invention.

According to the EU Directive on the Legal Protection of Biotechnological Inventions, an invention is patentable even if it pertains to a product consisting of or containing biomaterial or a method of producing, processing or utilizing biomaterial. Patents for biological material may be formulated as product patents, use patents and/or process patents. The Directive has been implemented in the EPC, following implementation in the EU Member States. This and other changes may explain the big gap between the number of gene-related patent applications and the number of granted patents in Europe. Thus, while some 8,000 or so applications claiming DNA sequences were filed up to December 2003, only 890 were granted – of the remainder, nearly 3,000 were withdrawn and over 4,000 are still being examined. The situation is very different from that found in the US, where many such patents have been granted. Such a comparison tends to suggest that in Europe at least, the risk of excessive patenting of genes may be exaggerated.

Thus, the possibility of extending what is patentable to new subject matters may be detrimental for the general progress of technology as a whole. This remark can also be applied to software. Software, very much like scientific instruments and biological matters, serves not only the purpose of immediate commercialization, but it is also at the basis of further software development. Accordingly, bits and pieces of existing programmes are taken by software developers worldwide to develop new software tools. Too strong IPRs on software and too strict enforcement may therefore, stifle this cumulative enterprise. Box 4 highlights some of the issues involved.

Box 4: Hot debates – the case of "software patents"

Another heated area of debate in the European patent system results from the exclusion within the EPC as regards the patenting of computer programs "as such" – often referred to as "software patents".

On the one hand, there is pressure to extend the scope of patentable subject matter to all software running on a computer. This is being argued for even if the alleged invention is only the general application of modern technology (e.g. the Internet) to well-known business procedures or the implementation of a new business procedure or other non-technical features by normal technological means. Some quarters go so far as to demand patenting of pure business methods, without the indication of any technical implementation.

On the other hand, plenty of interest groups in the area of free and open source software are of the opinion that patents stifle innovation. Hence, they are completely against software patents *per se*. Moderate interest groups however, do accept patents for technical systems in which the control process is implemented by means of a computer program – and this would apply to washing machines, airplanes etc.

The legal practice of the EPO lies somewhere in-between the two extreme positions, to the extent patents are granted only for subject matter which solves a technical problem by technical means. This can be for software which controls the operation of the computer itself (e.g. operating system features) or which provides certain functionality for users in a broad range of applications (e.g. office software, technical systems, graphic software, games).

3.2.4 Increasing demand for patent protection (defensive and assertive patenting)

A growing body of research explores the impact of patents across different industries via the use of questionnaires submitted to selected firms. A number of cross-sectional surveys suggest that, in almost all industries, patents are not perceived by firms as the most important way to protect inventive activity[38]. Nevertheless, patent applications are on the rise also in several of those industries, such as in ICT and Electronics. It seems that firms in such industries take more patents than felt necessary simply to protect them from imitation, and it also appears that this tendency is getting stronger. For example, a study of ICT firms in the OECD countries indicates that 75% of those asked said they would patent technology today which they would not have patented a decade ago, even if it had been possible. This is at least suggestive that patents are being used differently today than they were in the past[39].

The sectors which are most affected by this phenomenon, at least in the US, are those whose process and product innovations rely upon complex technologies where an individual piece of equipment is the result of a very large number of components, all susceptible to patent protection. Here, the recent boom in patenting observed by many researchers is largely explained not by a firms' drive to innovate more than before, but by a need to accumulate large enough "patent thickets". These patent thickets work as a sort of insurance against possible legal actions from other companies. They are in effect therefore, a kind of defensive manoeuvre.

[38] Notable exceptions to these findings are pharmaceutical and chemicals based companies. See Arundel, A., G. van de Paal, and L. Soete 1995 PACE Report: Innovation Strategies of Europe's Largest Industrial Firms: Results of the PACE Survey for Information Sources, Public Research, Protection of Innovations, and Government Programmes, Final Report. Prepared for the SPRINT Programme, European Commission. Maastricht, Netherlands: Merit, University of Limburg, Levin et al, ibid, and see also the results of all editions of the Community Innovation Survey (http://cordis.europa.eu/innovation-smes/src/cis.htm).

[39] See Sheehan *et al.* (2003), ibid.

For instance, take the situation where company A fears that its products will infringe one or more patents owned by company B. So, by developing and holding a large enough patent thicket company A makes sure that company B will inevitably infringe one of these thicketed patents. As a result, negotiations will follow in order to avoid court action between them, and likely end up with mutual cross-licensing between companies A and B[40].

While innovation in science-based fields relies on scientific inputs that can be patented as "stand-alone" inventions (such as a chemical compounds, or a modified gene, each of which can be seen as a marketable product in itself), innovation in complex technologies requires assembling an extremely large number of patented inventions into a "system" whose overall layout cannot be devised well in advance. This suggests that while the growth of patenting in science-based fields can be explained by the combination of increased scientific inputs, and new rules that allow, *de facto*, for the patentability of scientific discoveries, the explanation for what is now called the "patent explosion" in electronics and other complex technologies is different. In these cases, the number grow because large manufacturers fear that crucial components of the complex systems they aim to produce will turn out to be covered by patents already held by rivals, or by entrant firms. As a result, they tend to patent each invention deemed to have some potential to enter their complex systems, or other firms', in order to use them as bargaining devices for cross-licensing, alliances, and mutual threats of infringement actions[41]. The strengthening of IPR enforcement adds to this fear and the related reaction, with perverse effect: i.e. that more and more patents of any quality, even dubious quality, are taken as if they were an insurance against a possible later allegation of patent infringement, or being left out from a cross-licensing deal which encompasses the mutual agreement not to sue each other for infringement[42]. This is the core of the fourth explanation listed in section 3.2 above, for the upward trend in patent numbers, especially for the Electronics sector.

Some ongoing research suggests that part of the explosion in the number of patent applications may be categorized as defensive publishing – in the sense of companies simply publishing a patent application in order to prevent the rivals from taking their own patent[43]. This can occur even in a small country, one possibly with low fees, which automatically prevents future patenting of the published invention, and even if at a later stage the application is withdrawn. Broadly speaking, this is because the publication has become part of the state of the art which is used to judge subsequent applications. So if it is easier to make an invention publicly known by filing a patent application than, say, writing a scientific article, a patent application may be used as a way to prevent competitors from obtaining exclusive rights and thus secure the applicant's freedom to operate.

3.3 Impact of the patent trends

Before embarking upon an analysis of the challenges raised by the trends described in this chapter, it is vital to understand the consequences of these trends for the European patent system, its effectiveness and welfare implications.

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[40] See Hall, "Exploring the Patent Explosion" (2004) Journal of Technology Transfer 30.

[41] See Hall and Ziedonis, 2001. "The Patent Paradox Revisited: An Empirical Study of Patenting in the US Semiconductor Industry, 1979-95," Rand Journal of Economics, 32(1): 101-128. They examine the patenting behaviour of firms in an industry characterized by rapid technological change and cumulative innovation. Survey evidence suggests that semiconductor firms do not rely heavily on patents to appropriate returns to R&D. Yet the propensity of semiconductor firms to patent has risen dramatically since the mid-1980s. Hall and Ziedonis explore this apparent paradox by conducting interviews with industry representatives and analyzing the patenting behaviour of 95 US semiconductor firms during 1979-95. The results suggest that the 1980s strengthening of US patent rights spawned "patent portfolio races" among capital-intensive firms, but also facilitated entry by specialized design firms.

[42] A parallel effect of too many, possibly overlapping patents crowding a technological field, is that inventors may see it as too costly to monitor existing IPRs in their field of research. And as a result, they may not pursue certain research lines or commercialize new products for fear of being challenged with a patent infringement claim.

[43] See Henkel & Pangerl, "Alternatives to the patent arms-race: an empirical study of defensive publishing", 2007, available at: http://www2.druid.dk/conferences/viewabstract.php?id=929&cf=10.

The most immediate consequence of the patent application boom is an increase in the workload of the EPO and all patent offices in general.

The increase in workload may have serious consequences for the quality of issued patents. Though this is a matter hard to measure, the concern among the community of patent experts and practitioners is almost unanimous.

Another consequence of the application boom has been the increasing visibility of the patent system, which has more and more attracted the attention of media and the public at large.

The report now examines these consequences in turn.

3.3.1 Increasing workloads at the EPO

Recent calculations undertaken by Guellec and Van Pottelsberghe document the rising workload of the EPO[44]. As can be seen in Table 1 below, not only has the number of patents increased 9 times over a 25-year period, but as well, the average number of claims per patent has doubled. This growth reflects the attempts by applicants to be granted broader patents. Such a tendency may be explained by substantive reasons, including the increasing weight of applications related to science-based inventions, which tend naturally to be broader[45]. It may also be explained by the strategic attitudes of applicants, which show a natural preference for broader (and therefore stronger patents). In so far as the US is concerned, these preferences have been met with lenience by the examining offices and courts in the past twenty years or so[46].

Table 1. Evolution of EPO workload over a quarter of century

	1980	1990	2000	2005 (1)
No. applications (incl. PCT)	21000	65000	130000	192000
Avg. no. of claims, per patent	10	12	17	20
Avg. no. of pages, per patent	n/a.	16	27	30
Total no. of claims (‘000)	210	780	2210	3840
Total no. of pages (‘000)	n/a.	1040	3510	5760

(1) Estimated values

Source: Guellec and van Pottelsberghe (2007)

As a matter of fact, the total numbers of claims contained in a year’s applications to the EPO is a better workload measure than the number of applications as such. This is simply because an examiner’s job is to go through all claims in an application and give an opinion on their legitimacy. The figures in Table 1 suggest that, according to this perspective, the workload at the EPO has increased by well over 47% in the five years from 2000 to 2005. Similar rates of increase are suggested by calculations based upon the number of pages to be read by examiners.

Certainly the number of examiners working at the EPO has not matched such workload growth rates. EPO statistics, derived from the Annual Report for 2005, indicate that the number of examiners has increased by 20%, which though may seem a lot does not get near the 73% increase in the number of claims.

[44] Guellec, D., and Van Pottelsberghe de la Potterie, “The Economics of the European Patent System: IP Policy for Innovation and Competition”, Oxford University Press, 2007.

[45] “In 2005, the patent filings in the biotechnology cluster were composed of 35 claims on average […] followed by computer related technologies (26 claims) and pure and applied organic chemistry (25 claims)” (Guellec and Van Pottelsberghe, ibid., page 212)

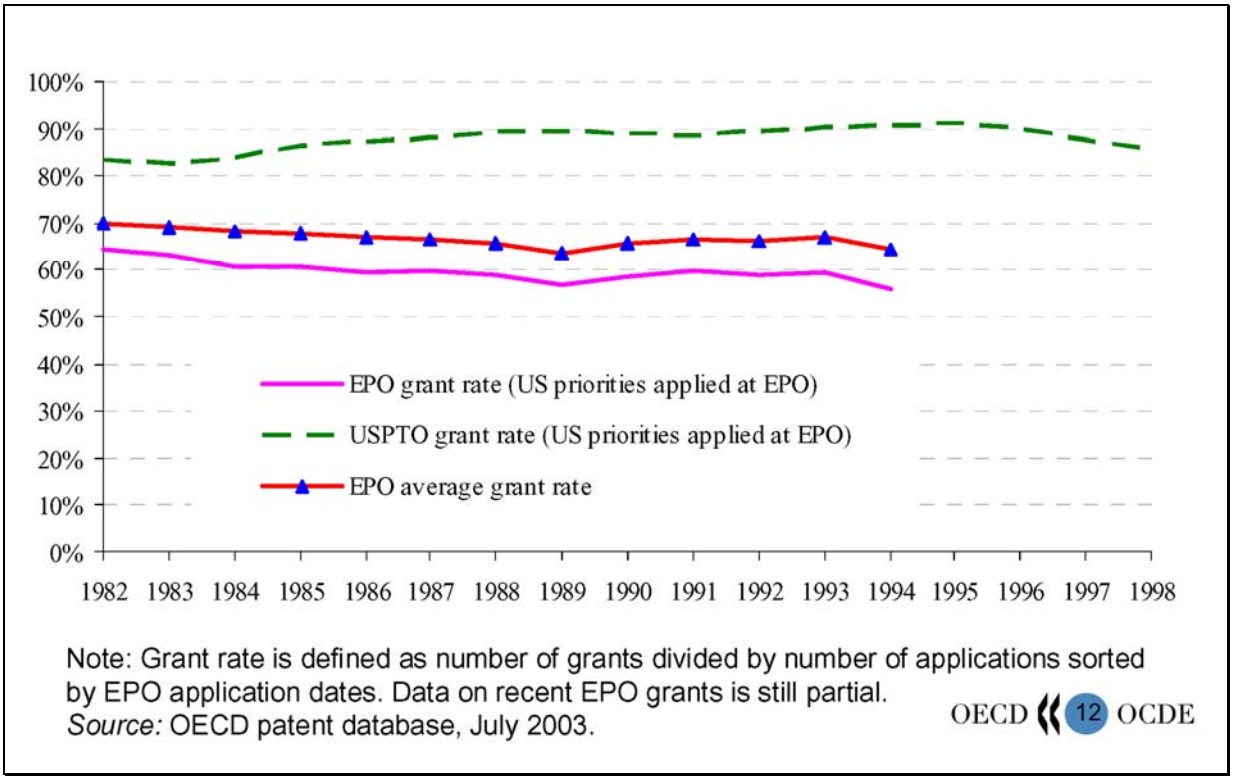
[46] See Jaffe and Lerner, ibid. Notice that USPTO practices, as far as the number of claims is concerned, reach Europe through the PCT examination procedures. US applicants, used to inserting many claims in their applications, increasingly decide to go through a PCT examination conducted by EPO, thus driving up the overall number of claims to be examined by the European office.

Having said that, the increasing availability of online databases on prior art and of dedicated search software has almost certainly made the work of examiners easier. It may also have contributed to an increase in productivity, i.e. in terms of the number of applications processed by unit of time. But one can hardly believe that this development has compensated fully for the increase in the workload as suggested by the recent strikes of EPO examiners over the issue of workload and productivity targets[47]. Furthermore, figures on "grant rate" suggest that although being more rigorous than the USPTO, when it comes to examining applications the EPO may not have been able to keep up its high standards.

Figure 9 below reports comparative trends for grant rates at the USPTO and EPO. It shows that the examination process is much more severe at the EPO than at the USPTO. While the EPO's grant rate did not manage to reach a level of 70% (of applications) either during the 1980s or 1990s, the rate at the USPTO never dropped below 80%.

The report also observes that the EPO's grant rate declined over the years, from around 70% to around 65%, and this is perhaps not surprising given increasing patent application rates. What is striking though is the weakness of this trend, as compared to the huge increase of the workload outlined above – it suggests that the number of patents granted has also dramatically increased over the past 20 years. In actual fact, data from EPO annual reports indicates a sustained growth in the first half of the 1990s followed by a decline over the next five years, and again a steep rise from 2000 to 2003 (see Figure 10 below). While in 1995 (the record year of that decade for number of granted patents) the EPO granted 41,607 patents, in 2003 (thus far the record year of the current decade), granted patents numbered 59,992. This represents a 44% increase and is not dissimilar from the rate of increase of the EPO's workload.

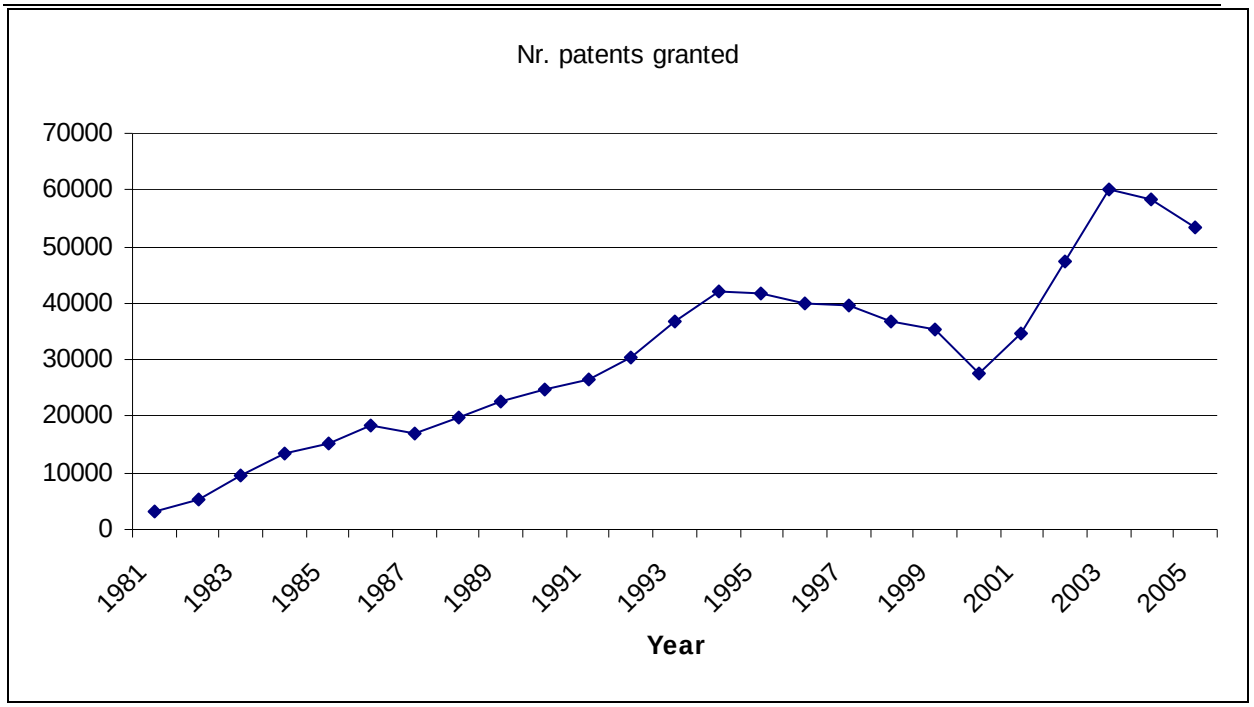
Figure 9. Comparing EPO and US grant rates



NOTE: Grant rate is defined as (no. patents granted)/(no. applications) per application year
Source: OECD data from Martinez and Guellec (2003)

[47] See the articles appearing in the New Scientist (19/2/2000) and Nature (3/6/2004)

Figure 10. Granted patents at the EPO, 1981-2005



Source: EPO annual reports

To summarize, the report has observed a marked increased of workloads for EPO examiners, which may lead or may already have led to a deterioration of the accuracy of the examination process. Such a deterioration may, in principle, result either in the undue rejection of applications that would have been worthy of approval, or in the granting of patents which would not have been granted on closer scrutiny. Given that the EPO grant rate has not significantly dropped over the years, the Working Group suspects that the latter case is predominant. That is to say there is good reason to believe that the increasing pressure on EPO may have generated granted patents of dubious quality. The patent quality issue however, is a very complex one, to which the report now turns.

3.3.2 Deterioration of patent quality

The expression "patent quality" usually crops up when discussing trends such as those showed above, and much of the recent discussion about the European patent system has been about the need to grant "quality patents". It is important at this juncture to discuss what exactly is meant by the oft-used expression "patent quality", and partly because it is a diverse expression and has a number of strands to it which makes it complicated to define. It is also important to have this discussion about quality since it links up directly with the challenges identified below, and the policy options presented in the next chapter.

There is no generally agreed upon definition of "patent quality" which the report can point to. The difficulty in finding a commonly accepted definition arises because different groups approach the issue of patent quality very differently, and with different goals in mind. It is very likely therefore, that these groups would end up with contrasting definitions. In addition, the context is important and to understand for instance, whether when talking about the quality issue the discussion refers to individual patents (such as in relation to if a given patent meets the standards of patentability), to the patent system as a whole (such as in relation to the processes of examination and granting, and the judicial system), or both.

Among patent practitioners, quality is most often associated with the performance of the granting authority and its products, i.e. that there is adequate and cost-effective examination within reasonable time limits, and claims strictly commensurate with the contribution to the state of the art[48]. In practitioners' jargon, "patent quality" also includes the status of the patent applications filed with the patent offices (such as regarding the clarity of information provided by the applicant and the number of invention claims made), as well as the post-grant examination of validity in opposition cases and court proceedings. In terms of "bad quality patents", popular definitions usually refer to "trivial patents", that is to say patents for insignificant inventions. Anecdotes have always abounded on the existence of patents covering inventions of dubious usefulness.

However, the Working Group believes a relationship exists between the quality of individual patents and the resulting quality of the system as a whole, and as will be seen, the policy options reflect this overlap.

To help come up with a working definition, the report refers to a useful and rather comprehensive summary of "patent quality" offered by Mr. Dietmar Harhoff at the most recent European Patent Conference (EUPACO) in Brussels[49]. Mr. Harhoff suggested that "high quality patents" ought to meet the following criteria:

- High inventive step. Patent applications for trivial inventions require examination as much as others. Trivial applications may also refer to minor variations over existing patents, possibly close to expiration, for which grantees are looking for some sort of extension, or which competitors want to imitate.
- If the examination is thorough (such as one that leads to rejection) a social cost may arise in the form of an increase of examination time and granting (of good patents). Conversely, pressure on the patent office not to delay search reports and grants may cause trivial patents to slip through the net. Then, they will float around the system and be used by grantees to threaten infringement actions. However unsuccessful these actions may be, they will increase transaction costs. In many cases they won't be unsuccessful, to the extent that the party accused of infringement may be ready to pay for settlement rather than incurring in higher costs by going to court.
- Patents should be clearly written, so as to speed up the examination process. Patents may be poorly written either because of the incompetence of the applicant or their intention to escape the examiner's attention. The latter is the case of the above-mentioned minor variations over existing inventions, which applicants may try to disguise as major ones by inserting misleading references to prior art or obscure phraseology. The systemic problem with poorly written patents is that they defeat one of the purposes of the patent system generally, which is knowledge diffusion. If a patent is not understandable, the knowledge in the invention cannot be used for cumulative innovation or R&D, and this breaks the trade-off between incentives, monopoly power and openness.
- All prior art is taken into account during the search/examination stage. This dimension has to do with the quality of the examination process. Examiners may be placed in a position where access not only to patent literature but also (and increasingly) to non-patent literature (such as scientific publications) is fast and comprehensive.

[48] In regard to the European patent system and these specific areas, the EPO has already set up a quality management system (QMS) for search and examination. For more information, see the EPO publication "Quality matters", available at www.epo.org/about-us/publications/proceedings/quality-2005.html, and Straus at 17 in the same document.
[49] For more information, please go to www.eupaco.org/eupaco2.

The quality of the examination phase must be such to ensure the legal "robustness" of granted patents – that is the small likelihood of their revocation in courts. Besides requiring a solid assessment of the novelty step in the application (see above), this quality element requires certainty of the patentability of the subject matter, which may be a problem in technological fields closely related to scientific discoveries.

An additional dimension of patent quality concerns the overall functioning of the patent system, and has to do with patent strength. The overall strength of a patent results from its breadth (the number of claims it covers, and the generality of those claims), its maximum duration, and the extent at which the judiciary is more likely to uphold the validity of allegedly infringed patents, rather than not. The stronger the patent, the stronger the monopoly power it creates, and the higher the risk that such power will out-weigh the beneficial effect of the patented invention. Conversely, too weak a patent system may deprive potential inventors of the necessary incentives.

In these respects, the overall quality of the patent system resides not only in the quality of the individual patent applications, but also on reining in vested interests that may wish to increase patent strength well beyond what is socially efficient, or to weaken patent protection down to the point of uselessness. Quality in this respect therefore, is about improving economic and social welfare and may be judged according to the effect it has on economic activity more generally, both before and after the patent grant process.

It is also important to remember that the quality discussion is not unique to Europe. In fact, special concerns on patent quality have been voiced mainly by US economists with respect to the US patent system. These economists suggest that the patent explosion may have caught the USPTO "off-guard", to the extent that the quality of patent examination has deteriorated. This, in turn, has made patenting less costly because it has reduced the risk of rejection. One of the overall effects may be that a greater number of lower quality patent applications are filed. This is highly undesirable and the Working Group urges therefore, that particular efforts should be placed on preventing the European patent system going down this sort of road, in a similar way to what has happened in the US.

3.3.3 Increased interest from the wider public community

Another aspect worth remembering is the interface between the EPO, the EU and the Member States which was mentioned at the start of the report. Bearing this in mind at this stage can help focus on the sorts of measures which may realistically improve the European patent system.

The patent system has grown into a prominent policy tool. More and more now the patent system in Europe is influenced by the EU given that the EU has competence to develop policy in this area, by among other things, the use of regulations and directives, as well as its involvement in TRIPs negotiations as a member of the WTO. At the same time, public and political interest in the system has increased, partly due to the trends identified above. Yet as a result of its historical development, the European patent system has sometimes been perceived as rather insulated from the rest of the EU, in policy terms and in respect of the wider society. This is critical as issues relating to patents are now more integrated into thinking behind innovation policies at an EU level than ever before. Patents, as with other IPRs, are no longer seen as separate specialized areas outside the scope of broad social and economic concerns. Accordingly, the European patent system is a very important part of the current functioning and future development at the Community level and this relationship must be considered.

3.4 Challenges to be met

Faced with the trends described above, and with the related consequences, the European patent system should meet the following challenges:

1. Overall, the total number of patent applications is putting strain on the system and causing problems for patent examiners. Potentially, this pressure will mount further as the increase in the number of countries engaged in inventive activities means the filing of more and more patent applications at the EPO. As a result, although it is difficult to document, the quality of patents is reported to be declining. The main challenge is to prevent this from happening within the European patent system.
2. The speed at which new subject matter and science-based inventions are introduced in the patent system makes it harder to assess the state of the art and thus, to determine whether the claimed invention is novel and involves an inventive step. An overall result is that too broad patents are occasionally granted and one of the effects is that innovation is hampered as other inventors are unable to work around the patents. The main challenge is to ensure that too broad patents are not issued within the European patent system.
3. The growth of patents in complex technologies which require the assemblage of a multitude of inventions to move forward has in certain areas, such as electronics, resulted in a particular form of patent behaviour. Defensive and strategic patenting has for instance, in some sectors resulted in patent thickets, the consequences of which are generally undesirable in terms of creating too many, possibly overlapping patents, which can crowd a technological field and make it difficult and costly to navigate through. The main challenge is to alleviate the effects of patent thickets within the European patent system.
4. More companies are patenting. One effect is that a greater number of companies have to spend more time and effort on trading rights and licensing. Such resources may have been better used to innovate. The main challenge is to ensure that companies are not forced to deal excessively with patenting and licensing and are ‘freed up’ to concentrate more on innovation in terms of the European system.
5. Increased interest in the system has resulted partly from the trends described in this chapter and partly from a more general shift in emphasis toward issues of “governance” – this has come from both within and outside traditional regulatory actors. The main challenge is to ensure that the European patent system is as transparent as possible, and that the involvement of more experts, politicians and stakeholders in the future development of the system is secured.

All of the trends identified in the sections above can be expected to continue and increase in strength in the future. It is the assessment of the Working Group therefore, that they should be addressed immediately. Thus, the final chapter to follow below presents a range of policy options specifically designed to show how the challenges listed can be met.

CHAPTER 4: THE POLICY OPTIONS

4.1 Introduction

The Working Group presents its recommendations for policy options in this final chapter of the report. It is from the basis of the three previous chapters that these options have been devised, and they try to take into account things happening at the moment and in the past that affect the functioning of the European patent system today. In designing these options, the objectives and desirable balances of the patent system have also been taken on board. The Working Group has presented the options under six main headings, and under each heading specific proposals are made to tackle particular challenges. Before moving to discuss and flesh out the details of each policy option, it is timely to remind the reader of several important aspects that provide an important background to the proposals presented below.

4.2 The need for improving the European patent system

Firstly, as mentioned at the start of the report (section 1.3), the Working Group strongly supports the creation of a Community patent accompanied by a European Patent Court dealing with litigation on European patents. This would enhance the efficiency of the European patent system and the quality of its output. The policy options presented should not be seen as an alternative for this ultimate goal. They have been developed to improve the system as it is known today, having in mind that the Community patent has for long been difficult to achieve in Europe, and is not guaranteed to be introduced in the near future. Should it be introduced, the Working Group considers that many of the policy options put forward would have an even better effect.

Secondly, the report recognises that the patent system is not at all "carved in stone" but changing all the time, even if the fundamental laws remain largely unchanged. Accordingly, this report works from the starting position that the patent system is there, and the aim is not wholesale change, but to propose workable solutions designed to improve the current functioning of the patent system. This is especially the case with the European patent system, given some of the influences coming to bear upon the system at the moment as well as the various ways in which it has been operating. The Working Group recommends the adjustment of the system as it now stands with proposals that further the objectives to stimulate innovation and the diffusion of knowledge. This report is part of a wider and essential process of continual evaluation as to whether the patent system is working as effectively as it could be.

The third point is that the Working Group recognises differences between the main patent systems of the world and acknowledges that challenges to other patent systems of the world and in particular, the US system, may not exist in Europe, or may not be as bad as they are elsewhere. For instance, the sorts of problems experienced in the US did not arise because of some design change but rather due to natural, organic developments of the system itself and users learning new ways to use existing processes to their advantage. Partly as a result of this, the US patent system is being exposed to severe scrutiny at present[50]. From these sorts of investigations, the Working Group can identify developments and trends in places such as the US which care should be taken to avoid in Europe. The main message is that while recognising the global dimension of patent rights, the report is really about finding room for improvement within the European patent system.

[50] See "To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy", A Report by the Federal Trade Commission, October 2003.

Fourthly, from a consideration of current key trends in the patent system – both in Europe and abroad – the Working Group have identified a number of challenges that the system is presently unable to fully cope with. As another reminder, the main challenges that face European patent system, as identified by the Working Group, are as follows:

1. A rapidly increasing demand for patent rights is putting strain on the system and jeopardising patent quality. The main challenge is to prevent this from happening within the European patent system.
2. The high speed of introduction of new technologies makes it harder to determine the adequate scope of patents granted. The main challenge is to ensure that too broad patents are not granted within the European patent system.
3. Partly as a result of the growth of patents in complex technologies, a rise in defensive and strategic patenting behaviour has in some sectors resulted in "patent thickets" where numerous and possibly overlapping patents exist making it difficult for new and small inventors to enter the market. The main challenge is to alleviate the effects of patent thickets within the European patent system.
4. More and more companies are patenting and spending greater time and effort on trading rights and licensing, thus diverting resources from actual innovation. The main challenge is to ensure that companies are not forced to deal excessively with patenting and licensing and are 'freed up' to concentrate more on innovation within the European system.
5. Increased interest in the patent system calls for greater transparency and the involvement of more experts, politicians and stakeholders in the future development of the system. The main challenge is to ensure that this occurs within the European patent system.

It is important to note however, that the policy options below are not structured in a one-to-one way so to speak, that is to say, that each challenge is met by a corresponding policy options. Instead, the policy options are presented as coming under headings, and must also be viewed as a collective of policy recommendations, each one with various individual elements to it. It will also be seen that in fact overlap exists among the policy options. Any given policy option does not necessarily address only one challenge – it may come to address several of the challenges listed above at once.

The final point here is to re-state that the general premise of this report is that the patent system has so far had a positive influence on levels of innovation. It is not the objective of the report to evaluate whether such a system should exist. Instead, the assessment looks to identify areas where improvements could be made to the current functioning of the European patent system. It is the opinion of the Working Group that in order for the system to better meet and cope with the challenges listed, a range of specifically designed policy options be considered. As a part of the process of identifying these policy options, a workshop in the European Parliament was held on November 9, 2006 (see Annex 2). For this workshop, the Working Group had identified three focus areas within which academic experts and various stakeholders were invited to present policy options (see Annex 3). The ideas presented and debated at this workshop have served as a valuable source for further development of the report for the Working Group, as well as peer review and feedback at a later stage of the report drafting. On the basis of these activities, the policy options which, in the opinion of the Working Group, are best suited to meet the challenges described above and in the previous chapter have been singled out.

Thus, the following policy options have been formulated:

- **Insertion of the economic mission of the patent system in the European Patent Convention**
- **Enhancing governance within the European patent system**
- **Improving quality aspects in regard to patentability standards and patent grant procedures**
- **Dealing with emerging technologies**
- **Increasing access to patented inventions**
- **Facilitating defensive publications**

4.3 The list of policy options

These options will now be explored in detail. They are presented below and developed in order to meet one or more of the challenges identified. The bullet points below each of the six headlines form a summary of the concrete initiatives suggested under each headline.

4.3.1 Insertion of the economic mission of the patent system in the EPC

- Insert a preamble in the EPC, stating clearly and transparently the economic mission of the patent system

The Working Group finds it important that the role of the European patent system as a vehicle for increased innovation and knowledge diffusion is firmly established in the formal acts of the system. One of the main challenges in this respect is focusing public interest and debate on the overall social and economic mission of the patent system.

The Working Group notes a number of measures already taken in this area. Firstly, it is worth mentioning that a new article was implemented into the EPC 2000 about a conference of ministers of the EPC contracting states to be held at least every 5 years. One of the main aims of the conference is to discuss issues pertaining to the European Patent Organisation and the European patent system. Secondly, the Working Group acknowledges that the EPO has formulated a mission statement, which goes in the direction of this policy option[51]. It broadly states that the mission of the EPO is to support innovation, competitiveness and economic growth.

The Working Group recommends taking a step further by clarifying as transparently as possible the purpose of the European patent system and inserting it as a preamble into the official text of the EPC – much in the same way as is done for secondary legislation within the EU. And in regard to the on-going discussions around the Community patent, it would be ideal for the same preamble to find its way into possible future legislation.

It is important to stress that insertion of a mission statement into the preamble is not designed to change the EPC itself, but simply to facilitate better understanding of the purpose of the system among the wider public. It also aims to provide clearer guidance than currently exists as to how subsequent changes of the regulatory environment might take place. As an example, such a clear statement of the purpose of the patent system might facilitate decisions on whether to include new subject matter under the patent system, and might be a valuable source of reference in court cases on patent-related matters.

[51] See www.epo.org/about-us/office/mission.html.

The Working Group recommends therefore, that wording is introduced to achieve these aims and that during the first 5 year conference of EPC contracting states a decision is taken about what that wording should be. In the meantime, the Working Group would like to take this opportunity to initiate the process, and suggests the following wording as a first draft for insertion as a preamble into the EPC:

"The granting of patents serves the purpose of enhancing social and economic welfare by means of encouraging inventions and their diffusion. The protection provided by patents should be sufficient to ensure proper incentives to inventors. This should imply that patents should be granted in a proportionate and transparent manner, so as to ensure legal certainty[52]*".*

4.3.2 Enhancing governance of the European patent system

- Establish a standing committee within the European Parliament, which would focus on improving patent awareness among parliamentarians
- Create a link between the European Parliament's standing committee and an independent and external advisory body
- Encourage dialogue between the standing committee and the external body to deal with broader economic and social questions arising from trends and practices within the patent system
- Develop regular and public communication of patent policy decisions made by the Administrative Council of the European Patent Organisation
- Ensure a stronger patent competence in the Commission, and greater consultation of interested parties

4.3.2.1 Enhancing patent awareness within the European Parliament

The policy options under the governance heading are concerned with issues such as transparency and participation in activities related to the European patent system. One of the main challenges to be met regarding the debate about the future of the European patent system is ensuring an increased level of transparency and political accountability. First and foremost, this involves strengthening the role and expertise of the European Parliament in this field, given that it is a critical participant in these sorts of discussions. The other main challenge is trying to accommodate the rise in public interest and wish for involvement of civil society at large in matters concerning the European patent system.

The Working Group believes that the recommendations made below will mean that discussions in the future will both be richer and be settled earlier, and that as a result more robust solutions will be devised to meet the current and future challenges for the European patent system.

The various recommendations on governance are split up according to the three major players in the field: the European Parliament, the EPO and the Commission.

a. Internal Parliamentary Standing Committee on Patents

The first recommendation of the Working Group is to establish a standing committee within the European Parliament that is dedicated to patent matters. This committee will link up with a newly established external advisory body (see below).

[52] This wording is based upon ideas previously expressed by others. See specifically, Guellec and Van Pottelsberghe de la Potterie, "The Economics of the European Patent System: IP Policy for Innovation and Competition" (Oxford University Press, 2007). Similar thoughts are expressed in the TRIPS Agreement (Article 7), and in the Commission Communication, "Promoting Innovation through Patents. The Follow-up to the Green Paper on the Community Patent and the Patent System in Europe", COM(99) 42 final.

The purpose of the Parliamentary standing committee is partly to formalise an internal structure within the European Parliament that will enhance its awareness of European patent issues. It is also designed to increase the depth and clarity of the European Parliament's contribution to the whole patent discussion.

To do so, the standing committee will liaise with an external advisory group on broader economic and social questions arising from any trends and practices that develop within the European patent system. By institutionalising the scanning of applications and grants of patents in relation to for example, sensitive issues such as biotech, patent information could be used as an 'early warning system' for policy makers. This, in turn, may better inform regulators linked to but outside of the European patent system.

b. External Advisory Body to the European Parliament (Standing Committee on Patents)

The second recommendation is, as stated above, to establish an external advisory body. The Working Group believes such a body is essential to enhancing patent awareness within the European Parliament. This external advisory body would be independent of regulatory bodies and agencies and would exist to examine the impact of the European patent system on the innovative sector, and other sets of interests in society. The findings it gathers and views it expresses will be part of a formalised dialogue with the European Parliament and specifically, its standing committee on patents. The external group may decide to formulate recommendations to the EPO and more widely the EU.

The Working Group would like to stress that the role of such an external advisory body is not envisaged as involving any form of check or audit function of the EPO. The Working Group is fully aware that the EPO already has internal procedures for checking the work of examiners, in the form of the Quality Management System. Partly to achieve its purpose though, the external body will naturally have to deal with the EPO in terms especially of collecting data, such as that relating to the numbers of patent applications and grants. This information may then be used in a more strategic sense and as a way of spotting potential trends within the European patent system. The result might be suggestions of the kinds of challenges that may crop up as a result, and ways to deal with them.

The Working Group anticipates therefore, that rather than acting as an outside audit service on the EPO or the system as a whole, the external body will flag up potentially important developments that may impact on economic and social issues, and thus warrant further investigation. This sort of body would be composed of experts in law, economics, and patent-related matters. An involvement of various practitioners and stakeholder such as consumer groups is highly recommended.

4.3.2.2 Increased participatory environment within the EPO

To further improve matters of governance and accountability relating to the European patent system, a couple of proposals directly related to the EPO are suggested. First, the Working Group recommends that the Administrative Council of the European Patent Organisation, acting as political body of this organisation, regularly communicates to the public on policy projects and the decisions it has taken. Such a proposal reflects the fact that as an independent supranational organisation, the European Patent Organisation is self-regulatory and not subject to the EU or the supervisory jurisdiction of the European Court of Justice.

Second, it is recommended that the EPO opens up its consultation process. Today, the EPO looks mostly for input from users of the patent system and patent practitioners. This focus may be justified for technical and procedural matters, but for issues with a wider importance the consultation should be broadened, in order to get also the views from other interested groups in society and for example, the scientific community.

An interesting example of such broadening of consultation can be found in the process leading to the publication of the report "Scenarios for the Future", where a wide variety of views was collected on the possible future of the patent system[53]. The Working Group encourages the EPO to continue this approach.

Although various ways to collect the views from interested groups in society could be explored (hearings on specific topics, round table meetings, internet discussion forum etc.), the working group recommends to also consider widening the membership of the Standing Advisory Committee before the European Patent Office (SACEPO) to include other stakeholders and experts than the classical ones.

4.3.2.2.1 Increased participatory environment within the Commission

It is widely accepted that strategically speaking, patent law and policy is very important as part of a wider EU-based innovation policy, as well as competition law. A significant challenge today is to try to strengthen the organic links between the EU – as increased policy maker, and the EPO – as implementing body.

The Working Group suggests that a way in which this could be done is to raise patent awareness and competence within EU-legislative authorities concerned with matters such as innovation and competition regulation, i.e. the Directorate-Generals of the Commission, as well as various national agencies. The Working Group believes it is fair for the Commission, of all the EU institutions, to take charge of enhancing links between the EU and EPO, and especially in view of its central role regarding the Community patent.

A further recommendation related to the Commission is about involving groups such as system users (i.e. patent applicants and holders), scientists, NGOs and consumers more in the workings of the European patent system. This involvement is already done for specific sets of communications on an ad-hoc basis. It is recommended to formalise this existing process to a more regular occurrence, so that relevant discussions and decisions on European patent policy are opened up to a greater number of stakeholders. This will also help to acknowledge interests other than those of the main patent right holders.

4.3.3 Improving patent quality in regard to patentability standards and patent grant procedures

- Introduce measures to counter-balance the pressure to grant a patent
- Discourage the filing of lengthy and overly complex patent applications
- Reduce the possibility for applicants to unduly prolong or complicate the examination procedure
- Involve third parties in the collection and evaluation of information on prior art
- Give financial incentives to applicants to make their application public before the 18-month limit
- Raise the standards for the inventive step requirement

The central challenge is that at present, the patent system seems to have a certain bias towards granting patents, which risks lowering the bar for obtaining a patent. The sheer volume, size and complexity of patent applications combined with the pressure coming from applicants and their representatives seeking a positive outcome, creates a structural pressure on patent offices to grant patents. It has to be understood that the interests of the applicant in the grant of a patent are well-represented during the examination procedure, but the interest of society, not to be confronted with an exclusive right for an innovation that is not a true invention, is not normally articulated.

[53] For more information, go to http://www.epo.org/focus/patent-system/scenarios-for-the-future.html.

The evidence collected in this report suggests however, that patents for small innovations that have little inventive merit over the prior art are more likely to hinder economic development and innovation than promote it. These patents will create unjustified barriers to enter markets and limit the room for manoeuvre for enterprises, especially SMEs.

The Working Group believes that strong and well-equipped patent offices operating according to clear and strict rules are needed to maintain the right balance in order to sustain a good quality patent system. Such a system provides for patents that protect true inventive achievements, give an incentive to invest in innovation and offer legal security to its holders. Although the Working Group realizes that many criticisms of the patent system, like the accusation of delivering "trivial patents" are often based on evidence from outside Europe, it is nevertheless felt that also with respect to the European patent system the quality of the output of that system has to be reviewed critically. Therefore, the Working Group recommends "raising the bar" as a key policy option in order to promote that the patent system continues to perform its basic functions now and in the future. This policy option has two specific and connected sub-categories to it.

4.3.3.1 Strictly applying patentability standards

The challenge for quality is concerned with the rigorous application of the patentability standards. Thus first of all, it is important that the existing standards for patentability (novelty, inventive step and industrial applicability) are applied thoroughly and consistently. It is clear that with an ever-growing number and complexity of applications, the pressure upon patent offices to deliver a high "production" might take precedence over such thoroughness. In this context, mention should be made of the fact that it is generally more difficult and time consuming, from the perspective of the examining office, to refuse a patent than to grant a patent. The grant of a patent does not have to be justified vis-à-vis the applicant, whereas a (intended) refusal will have to be based on sound reasons – reasons which in many cases will be contested by the applicant. Measures to counterbalance the pressure to grant a patent should therefore, be encouraged. These could include the following:

- Provide patent offices with enough means to carry out a full and comprehensive search and examination, even in situations of back-logs and a growing workload
- Introduce quality management mechanisms in order to promote and monitor that consistent and predictable decisions are taken
- Recognize that refusal of applications normally requires a greater time investment than the grant of a patent
- Stress that (examining) patent offices are not created to grant patents but to prevent patents for claimed inventions that do not live up to the required standards
- Increase the awareness that patent offices are there to serve the general public interest and not the specific interests of applicants

A second aspect of the examination process to appreciate is that it is determined to a large extent by the applicant. The procedure is based on his application and his subsequent defence of it. Thus it would also be worthwhile to look into ways to support applicants that behave in a way that actually improves the output of the whole process.

In the 1990s, the focus in the debate on patents was very much on "applicant friendliness". Patent systems were put under pressure to do away with burdensome procedural requirements, to reduce costs and to enhance flexibility for applicants. And many recent changes to patent systems were inspired by this concept. The Working Group does not wish to put the need for efficient and cost effective procedures directly into question.

However, it is felt that it is now appropriate to shift the balance to promoting procedures that increase the efficiency with which patent offices can operate and contribute to high quality decisions. In this context, the following is proposed:

- To take measures that discourage the filing of lengthy and overly complex applications, for example by introducing considerable page and claim fees
- To review the procedural options for applicants, with the aim of reducing the possibilities to unduly prolong or complicate the examination procedure

There is a third aspect of the quality issue here that the Working Group wants to stress. At present, the patent office has the burden to collect and evaluate the prior art that would prevent the grant of a patent. It is recommended to look at ways to involve third parties in this task. Although the EPC provides the possibility for third parties to file observations concerning pending applications, this option is not actively promoted. Modern communication technologies such as on-line file inspection enable patent offices to give broad public access to pending patent applications. Such facilities could be further elaborated in order to allow for the collection of up-front observations from competitors or other interested parties that might be affected by the grant of the patent[54].

The Working Group believes that such input would assist the work of an examiner in a patent office. Additionally, it could be considered to give a financial incentive to applicants to waive their right to keep their application confidential for 18 months after filing. The application would then enter earlier into the public domain, and so the patent office might receive valuable input earlier.

4.3.3.2 Raising the standards for patentability

The discussion about the quality of patents often concentrates on the question of whether the protected invention is really inventive over the prior art. The standards for assessing whether a claimed invention is patentable have been developed by patent offices and courts over a long period of time. The result is that firstly, the invention has to be novel – that is to say, new. This is an absolute standard and is relatively easy to assess. What is decisive is that the patent office has a comprehensive overview of what is already known. Secondly, the invention has to involve an inventive step, which according to European patent law means (having regard to the state of the art) ot being obvious to a person skilled in the art. Although over time the patent system has built up methods for determining whether this requirement is met, this aspect is less straightforward than the novelty requirement.

Accordingly, much of the debate about patents is whether this threshold for protection, from the inventive step requirement, is set at an appropriate level. Despite the fact that there is not really compelling evidence that this threshold is set too low at present, the Working Group has received a sufficient number of indications from experts and stakeholders to indicate that it would be worthwhile to further look into this aspect. In this respect it is worth mentioning that in a very recent US decision, the Supreme Court criticised the way the non-obviousness test is being applied by courts in the US and as a result, it has set a higher standard for establishing non-obviousness[55]. Although the European situation cannot be compared directly with the situation in the US, in regard to inventive step, this is still an interesting development. It is worth knowing that in one of Europe's major trading partners a trend towards raising the bar for patenting is already visible.

[54] Cf. the U.S. "Peer to Patent Project": the USPTO selected the Community Patent Review project as one of its strategic initiatives that will be implemented to improve and streamline the patent application review process. Sponsored by Computer Associates, General Electric, Hewlett Packard, IBM, Intellectual Ventures, Microsoft, Red Hat, the MacArthur Foundation, and the Omidyar Network, the Community Patent Review project seeks to create a peer review system for patents that exploits network technology to enable innovation experts to inform the patent examination procedure. In every field of scientific endeavour, peer review is a critical quality control mechanism to improve innovation. Throughout the public sector both peer review and citizen consultation are either legally mandated or practiced as a way to inform policymaking – see http://dotank.nyls.edu/communitypatent/about.html.

[55] See KSR INTERNATIONAL CO. v. TELEFLEX INC. et al, No. 04-1350, decision date April 30, 2007.

Another aspect of interest is that the way innovation takes place has changed a lot over the last decades. In the early days of the development of the patent system, inventions could often be ascribed to a single person. Nowadays, and especially in modern technological fields, innovation is in many cases not the result of the work of a single person, but the fruit of cooperation between researchers with different fields of expertise. On this basis, the Working Group suggests to investigate whether the notion of a person skilled in the art, as defined by the patent system, is still in touch with the reality of the wider innovative environment. If this person is, so to speak, "under-qualified" or "out of touch", the result would be that many innovation developments that are seen in practice as the normal and expected outcome of a research effort would actually be seen by the patent system as not obvious for a person skilled in the art and thus patentable. In addition, it is important that the definition of a person skilled in the art sufficiently takes into account the differences between different technological fields.

4.3.4 Dealing with emerging technologies

- Allocate additional resources to EPO examiners in order to better assess prior art and avoid too broad patents
- Ensure on-going deliberations on what is patentable and what is not

This policy option deals with the challenges associated with the rapid introduction of new subject matter and science-based inventions. In particular, the possibility of this leading to patents being granted when they should not, and also rights being granted with too broad claims attached.

The patenting of emerging technologies raises special concerns regarding the application of the patentability requirements by the patent authority, i.e. the individual examiner. A European patent is only granted if a number of fundamental substantive requirements contained within the EPC are met. Two of the basic requirements are that the invention to be protected must be novel and involve an inventive step. An invention is novel if it is not part of the "state of the art". An invention is considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person with general knowledge in the technical field in question. As will be noted, there is an amount of overlap here with the previous policy recommendations for improving quality – and this is because they are especially relevant for emerging technologies.

In order to establish the state of the art, the patent examiner relies mostly on written sources e.g. prior patents or applications, text books etc. In mature technologies such as mechanics, these information sources are plentiful, well-organised and largely known to examiners. In contrast, in emergent technologies such as biotech, the amount of information available is considerably less and might also be much more difficult for examiners to obtain than is the case with more mature technologies. Therefore, emerging technologies by their very nature involve special challenges to the examiner determining what is the prior art. These challenges would seem to increase further the risk of patents being granted despite the existence of relevant prior art, which was not uncovered, and also of patents being granted with too broad claims. The problems in these sorts of situations are thus not related to the standards themselves (novelty and inventive step) but to the application of these standards by examiners – examiners who cannot be reasonably expected to systematically have wide and exhaustive knowledge of prior art in the field of emerging technologies.

In order to meet this challenge, the Working Group recommends the allocating of additional resources to EPO examiners through for instance, the use of external expertise used on a consultancy and voluntary basis. In this way the examiners and the EPO would be able to assess the prior art more correctly. This would aid the decision-making process by adding to the knowledge of the possible consequences of a given patent for further innovation in the field in question.

Such expertise would thus ease the pressures coming upon the EPO, especially when examiners are faced with new or problematic technologies. It should be made possible for examiners to get such help even though it is more costly than regular procedures.

The Working Group recognises that policy-based questions on to how to deal with these types of emerging technologies does not relate to the application of the standards, but to the formulation of the patentability standards themselves. Rather this is about deciding what is to be considered patentable subject matter and is an issue outside this specific recommendation here. These sorts of issues are of course a matter for the legislator at the policy level. Accordingly, the Working Group directs the reader to the other policy options regarding governance issues and a mission statement where various mechanisms are recommended to tackle sensitive issues like new subject matter. For instance, in respect of the mission statement, it is suggested that the application of the patent system to a particular new technology must make sense from the point of view of the mission of the patent system, i.e. that patents will increase the rate of invention in that technology.

4.3.5 Increasing access to patented inventions

- Explore and support more flexible, non-exclusive exercises of patent rights, such as license of right, patent pools and clearing houses

The main challenges under this policy option are the limitation of patent thickets and easier access to patented technologies. This involves offering an alternative to efforts spent by companies on trading rights. Among the possibilities of recommendations, the Working Group draws attention to two different measures which might facilitate improved access to patented technology.

a. License of right

A first option is the "licence of right": a legal mechanism by which a patent holder voluntarily chooses to give general access to the patented invention by the payment of a license fee. The patent owner agrees to receive a pre-determined remuneration for the use of his invention and if the user pays the required amount, the patent owner has no right to prevent him from using the invention anymore, hence the term "remuneration right". The idea of a license of right is not new[56]. The CPC for example, provides in this regard that "the proprietor of a Community patent may file a written statement with the Office that he is prepared to allow any person to use the invention as a licensee in return for appropriate compensation. In that case, the renewal fees for the Community patent which fall due after receipt of the statement shall be reduced". The "license of right" also appears in the national patent legislation of various EU Member States.

The Working Group envisages that such an option would be attractive for many applicants. One particular group is independent inventors who have no clear picture of which use their inventions might have and cannot therefore, easily promote their inventions. A second group is SMEs which do not have the financial stamina to defend their rights. Another group might be universities of which many already rely on non-exclusive licensing.

The overarching problem that is mediated with a remuneration scheme is the one of increasing transaction costs stemming from the rising number of patents. In a world of more and more rights-covered technology, companies are spending large amounts of time and resources to obtain licenses to operate, and to prevent hold-ups from right-owners. A remuneration-based option might reduce these problems and encourage a more efficient exploitation of patented knowledge.

[56] See Community Patent Convention of 1975 (Article 43), the Community Patent Agreement of 1989 (Article 43), as well as in the proposed Community Patent Regulation (Article 20).

Thus the Working Group recommends further empirical research on the use of "licenses of right" in the various EU Member States, and on the particular impact of such licenses on subsequent licensing behaviour and the reduction of transaction costs and potential royalty stacking. Furthermore, the Working Groups favours additional research on the overall effectiveness of a remuneration system. Only to the extent that "licenses of right" do not solely contribute to the reduction of fees for patent holders and transaction costs for patent users, but prove to be effective and welfare improving, should their introduction on a European-wide scale be contemplated.

b. Collective rights management models

A second possibility under this policy option heading is the establishment of "collective rights management models", such as patent pools and clearing houses[57]. When patent users are confronted with multiple patents held by multiple patent owners, patent pools or clearing houses might be a useful model to gain access to patented technology in an efficient way and at a reasonable cost. Patent pools are agreements between two or more patent owners to license one or more of their patents to one another, or to license them as a package to third parties willing to pay the royalties[58]. Clearing houses are platforms by which providers and users of goods, services and/or information are matched. The platform may bring together potential licensees and licensors of patented technologies and may also provide additional services, such as negotiating licensing conditions, developing standard licenses, and collecting and distributing royalties [59].

Both patent pools and clearing houses make the existing technology landscape more transparent and also reduce transaction costs for the participants. Accordingly, the Working Group recommends in-depth investigation of collaborative rights models, such as patent pools and clearing houses, and the extent to which these could become leading models for enhancing access to and use of patented inventions within the European patent system. The Working Group also recommends more research on the interaction between patent law and competition law and on ways to render these models suggested more easily applicable in a patent context, whilst at the same time respecting the fundamentals of competition law.

4.3.6 Facilitating defensive publications

- Make possible the practice of the defensive publication of inventions into a publicly-available database

The main challenge to deal with here is of limiting the rise in number of patent applications and the subsequent strains it puts on the patent system. The recommendation proposes an alternative to defensive patenting and the resulting patent thickets that come about.

The Working Group believes that the European patent system should be geared more towards an increased use of publication of inventions rather than patenting *per se*. Both companies and not-for-profit research institutions are often worried about the possibility that other organizations will end up monopolizing a new technological field through patenting, which may push them to pursue strategic patenting activities to break that potential monopoly. But strategic patenting is a costly way to prevent monopolization. The publication of scientific results, proofs-of-concepts and prototype studies may achieve the same results for free. Such a process is referred to as "defensive publishing". And in fact, firms for a long time have used defensive publishing in industry areas such as software.

[57] Van Overwalle et al., "Models for facilitating access to patents on genetic inventions", 7 *nature review genetics*, February 2006, 143-148.
[58] Merges, (2001), "Institutions for Intellectual Property Transactions: The Case of Patent Pools", in Dreyfuss, Zimmerman, & First (eds.): "*Expanding the Boundaries of Intellectual Property: Innovation Policy for the Knowledge Society*." Oxford, England: Oxford University Press. Also see Verbeure et al., "Patent pools and diagnostic testing", 24 *Trends in Biotechnology (TIB)*, vol. 3, March 2006, 115-120.
[59] Krattiger, (2004), "Financing the Bioindustry and Facilitating Biotechnology Transfer", *IP Strategy Today* 8: 1-45. Also see Van Zimmeren et al., "A Clearinghouse for Diagnostic Testing: the Solution to Ensure Access to and Use of Patented Genetic Inventions?", *Bulletin of the World Health Organization*, 2006, 352-359 and the references cited therein.

In cases when an inventor decides to defensively publish rather than patent, he gives up the potential of exclusive rights. In return though, a freedom to use the invention is secured for that inventor, and for others. For this kind of defensive publishing to be effective, publications must be made readily accessible to examiners so as to provide a helpful additional source of information, including the prior art. It is recommended therefore, that measures are introduced to facilitate the practice of defensive publications within the European patent system.

However, it is important to realise there are many important considerations to look at as part of such a process. Some of the key questions are who posts the information as regards content management, how this is done, and what person or body has overall responsibility. These areas of course need proper investigation. For now, the Working Group would like to suggest that defensive publications are sent to pre-existing databases or directly to the EPO, and then loaded onto a publicly-available database or register of some kind. There are many examples already in place, including the development of large public genetic databases in which many universities and private firms disclose sequences of genes and other data to block future patents[60].

One possible effect of these measures could be to dilute the practice and impact of patent thickets – where inventors prevent others patenting by defensively publishing "just in case" to make sure no-one else obtains an exclusive right. This also applies where an inventor is not sure whether the invention is patentable at all, or as to its future value. In these instances, defensive publishing may be a useful and effective measure. Another attraction may be the likely lower costs associated with defensive publishing, as opposed to patenting.

4.4 Summary of the policy options

- **Insertion of the economic mission of the patent system in the European Patent Convention**
  - Insert a preamble in the EPC, stating clearly and transparently the economic mission of the patent system
- **Enhancing governance within the European patent system**
  - Establish a standing committee within the European Parliament, which would focus on improving patent awareness among parliamentarians
  - Create a link between the European Parliament's standing committee and an independent and external advisory body
  - Encourage dialogue between the standing committee and the external body to deal with broader economic and social questions arising from trends and practices within the patent system
  - Develop regular and public communication of patent policy decisions made by the Administrative Council of the European Patent Organisation
  - Ensure a stronger patent competence in the Commission, and greater consultation of interested parties

[60] Cf. The strategy which was applied in the SNP Consortium (see http://www.wellcome.ac.uk/doc_WTX037150.html).

- **Improving quality aspects in regard to patentability standards and patent grant procedures**
    - Introduce measures to counter-balance the pressure to grant a patent
    - Discourage the filing of lengthy and overly complex patent applications
    - Reduce the possibility for applicants to unduly prolong or complicate the examination procedure
    - Involve third parties in the collection and evaluation of information on prior art
    - Promote the incentives for applicants to make their application public before the 18-month limit
    - Raise the standards for the inventive step requirement
- **Dealing with emerging technologies**
    - Allocate additional resources to EPO examiners in order to better assess prior art and avoid too broad patents
    - Ensure on-going deliberations on what is patentable and what is not
- **Increasing access to patented inventions**
    - Explore and support more flexible, non-exclusive exercises of patent rights, such as license of right, patent pools and clearing houses
- **Facilitating defensive publications**
    - Make possible the practice of the defensive publication of inventions into a publicly-available database

ANNEX 1: CVS OF THE WORKING GROUP

Robin Cowan

Robin Cowan is currently Professor of Economics at the Bureau d'Economie Theorique et Appliquée (BETA), at the Université Louis Pasteur, and Professor of Economics of Technical Change at the Maastricht Economic Research Institute on Innovation and Technology, MERIT, at the University of Maastricht. He is also an adjunct professor at the Economics Department at the University of Waterloo. He has several varied research interests, such as:

- Modelling the Economics of Technology Adoption
- The Dynamics of Networks and Network Structures
- Economics of Knowledge Generation
- Technology Competitions and Standardization
- Consumption Dynamics

Wim van der Eijk

Mr. Wim van der Eijk is since 2005 Principal Director International Legal Affairs & Patent Law at the EPO. Before joining the EPO he was manager of the Patent Division and chief legal officer of the Netherlands Patent Office. He also worked in the Ministry of Economic Affairs of the Netherlands in a variety of legal posts. Mr. van der Eijk was chairman of the Patent Law Committee of the European Patent Organisation and chairman of a Working Group that drafted the European Patent Litigation Agreement (EPLA). He assisted as an honorary judge the District Court of The Hague in dealing with patent cases.

Francesco Lissoni

Francesco Lissoni is Associate Professor of Applied Economics at the University of Brescia and Deputy Director of CESPRI, the research centre on the economics of innovation of Bocconi University, Milan. He received his PhD from the University of Manchester. His research interests cover technology adoption, the geography of knowledge diffusion, university-industry technology transfer, and the economics of science. Recent publications include: “Networks of inventors and the role of academia: an exploration of Italian patent data” , Research Policy 33/1, 2004 (with M. Balconi and S. Breschi); “The reaper and the scanner: indivisibility-led incremental innovations and the adoption of new technologies”, Cambridge Journal of Economics 29, 2005, pp. 359-379; “From publishing to patenting: Do productive scientists turn into academic inventors?”, Revue d’Economie Industrielle, 110, 2005 (with S. Breschi and F. Montobbio); and “Mobility and Social Networks: Localised Knowledge Spillovers Revisited”, Annales d’Economie et de Statistique, forthcoming 2006 (with S. Breschi). From 2003, Francesco Lissoni directs ESSID, the European Summer School of Industrial Dynamics.

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Peter Lotz

Peter Lotz is the head of the Department of Industrial Economics and Strategy at Copenhagen Business School (CBS), Denmark. His research is focused on industrial dynamics and technological change. He is currently engaged in a study of life-science researchers at universities and hospitals, looking at their motivations for collaboration with private companies. Peter Lotz teaches industrial economics and is also the vice-dean for research training (the PhD schools) at CBS.

Geertrui Van Overwalle

Geertrui Van Overwalle is Professor at the University of Leuven (KULeuven, Belgium - Centre for Intellectual Property Rights), the University of Liège (Belgium) and the University of Brussels (KUBrussel, Belgium). She has been visiting professor at the United Nations University (2000-2003), the Renmin University of China, Beijing (2001) and Monash University, Melbourne (2003).

Geertrui Van Overwalle is author of numerous articles and various monographies relating to patent law and biotechnology. Her main fields of research are: patent law, plant breeder's rights law, patents and biotechnology, IPR and biodiversity, IPR and ethics. At present she heads a project on 'Gene patents and public health' funded by the Flemish Research Council and the EU (European Framework Programme 6 – EuroGenTest).

Geertrui Van Overwalle is a member of the Belgian Federal High Council for Intellectual Property, the Belgian Federal Council for Plant Breeder's Rights and the Belgian Federal Council for Bioethics. She is a member of the European Commission's Expert Group on Biotechnological Inventions, and has been appointed as a member of the Board of Appeal of the Community Plant Variety Office at Angers. For a detailed list of publications, see http://www.law.kuleuven.be/cir/cv/gvan_overwalle.htm

Jens Schovsbo

Jens Schovsbo was born in 1965 and has been employed at the University of Copenhagen since 1993 and from 2003 as professor in IPR. He has written a number of books and articles about IPR and on the international and general aspect of IPR such as the relationship between IPR and competition law and between IPR and contract law. He was a member of the Danish Board of Technology's Working Group on "Recommendations for a Patent System for the Future". Currently, he is director of the Danish Legal Research School and permanent visiting professor at the Shangdon University Law School. For more information, see www2.jur.ku.dk/jensschovsbo.

Matthew Elsmore (Rapporteur)

Matthew Elsmore is an assistant professor of law at the Aarhus School of Business-University of Aarhus. He is a UK national with an English PhD of Laws. He specializes in EU law, and mainly in the areas of free movement and IP (trade marks). He has experience in the private sector, including 4 years at PricewaterhouseCoopers where he also gained professional qualifications. He continues practical consultancy work alongside teaching and research today, and is publishing for international journals in topical areas, as well as developing his 2003 PhD thesis into a book project with a US-UK publisher.

ANNEX 2: WORKSHOP PROGRAMME, NOVEMBER 9TH 2006

STOA Workshop on Policy options for the European patent system
Organised by ETAG on behalf of STOA
Chair: Philippe Busquin, MEP, Chairman of STOA
November 9th, 2006

Workshop programme

The purpose of the workshop is to help the Working Group collect and debate ideas for policy options and to provide MEP's, stakeholders and experts with the possibility of giving input to this debate. A background analysis will be available in print before the workshop, but policy options will not be developed until after the workshop by the Working Group and presented to – and debated with - the STOA panel on a dissemination workshop in June 2007.

8.15 – 9.00 Registration

9.00 – Welcome by Philippe Busquin, MEP, Chairman of the STOA panel

- Presentation of the project by Bjørn Bedsted, project manager, ETAG

9.20 - Opening session (Chaired by Bjørn Bedsted, ETAG)

30 minutes: Presentation of background analysis and focus areas by members of the Working Group:

- Wim Van der Eijk, Principal Director of the International Legal Affairs and Patent law Department, EPO
- Robin Cowan, Professor of Economics of Technical Change at the University of Maastricht
- Peter Lotz, Head of Department of Industrial Economics and Strategy, Copenhagen Business School
- Geertrui Van Overwalle, Professor of Law at the Katholieke Universiteit Leuven
- Francesco Lissoni, Professor of Applied Economics at the University of Brescia, Faculty of Engineering
- Jens Schovsbo, Professor, University of Copenhagen, Faculty of Law
- Matthew Elsmore (rapporteur), Assistant professor, Aarhus Business School

9.50 – Economic session (Chaired by Francesco Lissoni)

20 minutes:

- Dominique Guellec, senior economist, OECD
- Bronwyn Hall, Professor of economics, University of California

30 minutes: Questions from Working Group and audience

15 minutes: Questions from MEP's

10 minutes break

11.05 – Legal session (Chaired by Wim Van der Eijk,)

20 minutes:

- Reto Hilty, Professor, Max Planck Institute, Munich
- Hanns Ullrich, Professor, European University Institute, Law Department

30 minutes: Questions from Working Group and audience

15 minutes: Questions from MEP's

10 minutes break

12.20 – Governance session (Chaired by Geertrui Van Overwalle)

20 minutes:

- Peter Drahos, Director of the Centre for Governance of Knowledge and Development, The Australian National University
- Ingrid Schneider, Senior researcher and lecturer, University of Hamburg

30 minutes: Questions from Working Group and audience

15 minutes: Questions from MEP's

13.25 - Lunch

14.35 – Stakeholder session (Chaired by Dominique Guellec)

45 minutes:

- Tim Hubbard, The Sanger Institute
- Thierry Sueur, Vice-President, Intellectual Property Air liquid, rep. UNICE
- Michelle Childs, Head of European Affairs, CPTech, rep. BEUC
- Hans-Werner Müller, Secretary-general of UEAPME
- Thomas Schweiger, Greenpeace
- Roger Burt, Intellectual Property Law Counsel, IBM Europe
- Lars Kellberg, Vice President, Corporate Patents, Novo Nordisk

40 minutes: Questions from Working Group and audience

20 minutes: Questions from MEPs

16.20 - Wrap-up session (by Geertrui Van Overwalle)

Conclusions from today's debate

16.35 - News from the Commission

10 minutes: Mirjam Söderholm, Deputy Head of Industrial Property Unit, DG Internal Market

16.45 – Closing by Jorgo Chatzimarkakis, MEP, member of the STOA Panel

ANNEX 3: FOCUS AREAS FOR THE STOA WORKSHOP ON NOVEMBER 9TH 2007

As a part of the process of identifying these policy options presented in this report a workshop in the European Parliament was held on November 9, 2007. For this workshop, the Working Group had identified three focus areas within which academic experts and various stakeholders were invited to present policy options. The ideas presented and debated during this workshop have served as a valuable inspiration for the Working Group. The three focus areas were defined in the following way:

The three focus areas

The European patent system is a central part of the institutional infrastructure and it is very important that it functions well so as to serve a range of private and public interests. However, there is mounting worry about the system and thus it has become more and more the subject of public debate, and while it is not possible to deal with all the issues that may be worthy of further investigation, three specific areas have been identified, within which policy options are sought: these are the focus areas. The three focus areas put forward have been carefully chosen in areas which reflect the overall goals of the European patent system, and are a means of addressing the consequences of current trends in the system and ultimately therefore, about improving its output.

1. Flexibility and dynamism of the European patent system

There is growing concern that the current European patent system is in some areas blocking rather than stimulating innovation. Given the overall purpose of the patent system, this is absolutely critical. The concern reflects a perceived level of inherent inflexibility which means the system is unable to accommodate the diversity of technology innovation, especially in certain industry sectors such as biotechnology and ICT. And the rapid speed at which science and technology continues to develop puts constant additional pressure on the system. It might thus be, that the current regulatory framework could result in a mismatch between rewards offered to, and costs incurred by, patent applicants. Related to this is the increasing practice of system users to build-up large patent portfolios for purely strategic purposes, rather than for the reason of innovation – defensive patents.

This focus area is important because it is about facilitating a more efficient distribution of rights and a greater optimisation of market effects. The overall desired impact of the policy options proposed within this area is that the European patent system would have more flexibility than the current 'one size fits all' approach which reduces the speed that the system can respond to technological change. The result should mean a more dynamic and sequential level of innovation.

2. Patents and access to markets

At present, more innovations seem to be protected with a multiplicity of patent rights owned by an increasing number of holders. This increase of patents might lead to a dense and non-transparent web of patent rights and cross-licensing agreements. Observers are concerned that this may further complicate access to the market, particularly for smaller and up-coming enterprises, and other non-commercial institutions. It is necessary to deal with this effect of the European patent system.

The policy options proposed within this focus area aim at facilitating a greater use of patented technology, which should result in a more rapid exchange of knowledge. The cumulative effect may be to stimulate higher levels of scientific and technological innovation, especially among smaller and up-coming enterprises. This in turn should bring about certain perceived benefits for the wider society as a whole, such as greater levels of innovative competition.

3. Governance of the European patent system

The European patent system should reflect not only the needs of industry but also the values of society at large. To do so, the system must have transparency and representation within it. In this respect, it is desirable to involve a variety of actors in developing the European patent system. Such participation will encourage the examination and discussion of the system, its attributes and possible reform from the perspective of a wider group of stakeholders. This area also mirrors a re-prioritisation in recent years within the EU on issues of governance, such as accountability, transparency and better law making.

The policy options proposed within this focus area aim at facilitating improvements in accessibility to the system. The aim is to stimulate greater and more informed levels of participation so that system users and affected parties will come to feel more involved and part of the processes. This in turn could lead to more pluralism, legitimacy and democracy within the European patent system.

ANNEX 4 : WORKSHOP PROGRAMME, JUNE 14 2007

STOA Workshop on Policy options for the European patent system

Organised by ETAG on behalf of STOA

Chair: Mr. Malcolm Harbour, MEP, Vice President of STOA

June 14th, 2007

Workshop programme

The purpose of the workshop is to present and debate the report "Policy options for the improvement of the European patent system".

9.15 – 10.00 Registration

10.00 – Welcome by Mr. Malcolm Harbour, MEP, Vice President of the STOA panel

- Presentation of the project by Bjørn Bedsted, project manager, ETAG

10.10 – Presentation of policy options

(Chaired by Mr. Malcolm Harbour, MEP, Vice President of the STOA panel)

- Mr. Peter LOTZ, Head of Department of Industrial Economics and Strategy, Copenhagen Business School, Denmark
- Mr. Wim Van der EIJK, Principal Director International Legal Affairs and Patent law, EPO, Munich, Germany
- Mr. Francesco LISSONI, Professor of Applied Economics, University of Brescia, Italy
- Mr. Jens SCHOVSBO, Professor, University of Copenhagen, Faculty of Law, Denmark
- Mrs. Geertrui Van OVERWALLE, Professor of IP Law, University of Leuven, Belgium

10.40 – 12.00 Questions from MEPs and debate

Since the main purpose of the workshop is for MEP's and working group members to debate policy options, the audience will only be given the opportunity to ask questions if time is available.

12.00 –12.30 Reception

ANNEX 5: MEETING MINUTES FROM THE STOA WORKSHOP ON 14 JUNE 2007

Chairman of the workshop Mr. Malcolm Harbour, Member of the European Parliament and Vice President of the STOA Panel in the European Parliament, opened the Disseminations workshop.

Bjørn Bedsted, the project manager from the Danish Board of Technology and representing the ETAG group, introduced the purpose of the project, which is to provide a fresh look at the European patent system and assess whether reform is needed to rebalance the system in order to fulfil its purpose of promoting social and economic welfare. Bjørn Bedsted emphasized that the Working Group express their support for the introduction of a Community Patent and a European Patent Court. The policy options put forward from the Working Group are not an alternative for this ultimate goal. They have been developed to improve the system as it is known today and should the Community Patent be introduced, the Working Group considers that many of the policy options put forward would have an even better effect.

The Working Group members presented the policy options in the report and after that the audience was invited to participate in a discussion focussing on the policy options put forward.

Presentations of the policy options in the report:

The Working Group members presented 5 of the 6 policy options detailed in the report. The policy option on "Facilitating defensive publications" was not presented as it was considered only a minor option compared to the others.

Mr. Peter Lotz, Head of Department of Industrial Economics and Strategy, Copenhagen Business School in Denmark opened the presentation of policy options. The recommendation on "*Insertion of the economic mission of the patent system in the European Patent Convention*" involves the introduction of a preamble into the legislation that states what the purpose of the legislation is, namely: to promote social and economic welfare. Wording for such a preamble was suggested at the workshop, and is as follows: "The granting of patents serves the purpose of enhancing social and economic welfare by means of encouraging inventions and their diffusion. The protection provided by patents should be sufficient to ensure proper incentives to inventors. This should imply that patents should be granted in a proportionate and transparent manner, so as to ensure legal certainty." The preamble should be placed in the European Patent Convention and if the European Union is able to come forward with a Community Patent that same preamble was proposed to be included in the legislation. The effect of a preamble with regard to for instance, emerging technologies would be to guide legislators and to make the legislator consider whether or not the application of the patent system to an emergent technology makes sense from the point of view of the mission of the patent system.

Mr. Francesco Lissoni, Professor of Applied Economics, University of Brescia, Italy spoke about "*Enhancing governance within the European patent system*". To meet the challenges that the governance of the European patent system is facing because of the emergence of patent thickets, the increasing number of patent applications and patenting for defensive and strategic reasons, three options were recommended. These were: (i) enhancing the patent awareness within the European Parliament; (ii) establishing a European Parliament Standing Committee on Patents, which should be linked with an External Advisory Body composed by experts, practitioners and stakeholders; and (iii) enhancing patent awareness within the Commission. The Standing Committee suggested would gather information from the European Patent Office and other sources related to patent claims and report on the standing issues to the Standing Committee.

This should serve to strengthen the role and expertise of the European Parliament in patent matters on the implication of competition policies, innovation policy issues and help accommodate the rise of public concern for patent matters.

Mr. Wim Van der Eijk, Principal Director International Legal Affairs and Patent Law, EPO, Munich, Germany presented the policy option about "*Improving quality aspects in regard to patentability standards and patent grant procedures*". A look at EPO workloads over the last decades shows a steep upward movement in the number of filings, in the volume of applications and in the number of claims per application. In order to strengthen the patent system and create stronger patents, it was recommended to look at two aspects: (i) the way in which patent offices apply the given standards for patentability, and (ii) the standards themselves. Looking at the standards concerns the question of what is an invention and when is it valuable to be granted a patent for. The Working Group suggested taking a closer look at the concept of inventive step to see if it is still fulfilling the function it is meant to have and concentrate on the concept of who is a person skilled in the art.

The policy option on "*Dealing with emerging technologies*" was presented by Mr. Jens Schovsbo, Professor, University of Copenhagen, Faculty of Law, Denmark. The patenting of emerging technologies gives rise to special concerns about patent quality in regard to both the patent system and in regard to the individual patent. The quality problem at the system level is about setting the standards for patents and deciding on what is going to be considered patentable subject matter and what is not going to be. At the executive level (i.e. the EPO), the quality problem relating to emerging technologies deals with applications of patent standards in individual cases. The special problems in emerging technologies in this regard are that prior art can be limited and hard to find for an examiner. In order to avoid these sorts of problems, the Working Group suggested to boost the executive level by allocating additional resources to EPO examiners to better assess prior art and avoid too broad patents being granted, and finally, to ensure ongoing deliberations between politicians, experts and stakeholders on what is patentable and what is not.

Mrs. Geertrui Van Overwalle, Professor of IP Law, University of Leuven, Belgium spoke about "*Increasing access to patented inventions*". Patents that crowd the market create a patent thicket that makes it difficult for an inventor to enter the market. In order to overcome a patent thicket, negotiations will have to be started with each and every patent owner in order to obtain a legitimate access to the patents and to obtain the necessary licences. The Working Group suggested two different measures, which would facilitate access to patented technology. One is the license of right, which is a legal mechanism by which a patent holder voluntarily chooses to give general access to anyone willing to pay a certain license. The other possibility suggested is to facilitate access to a web of patents by the establishment of collective rights management models such as patent pools and clearinghouses. The Working Group recommended further investigation of these models, and especially in view of current EU competition law.

Questions raised by the audience and discussed with the Working Group:

1. Questions relating to the policy option "*Insertion of the economic mission of the patent system in the European Patent Convention*":

Daniel Alge, Sonn & Partner Patentanwälte and Representative of International Federation of Industrial Property Attorneys (FICPI), raised the issue of whether the proposed preamble is introducing a new patentability requirement, which goes beyond the utility or industrial applicability. Also, he asked if the patent applicant has to prove that the invention enhances the social *and* economic welfare and if the suggestion made by the Working Group is social *or* economic welfare.

The Working Group responded that the preamble should have an effect on how the patent system, overall, is interpreted. This means that the purpose of the patent system expressed in the preamble should be unfolded in the patent law legislation and lead to a settling of the patentability standard. The preamble is not intended to be used on a daily basis as a patentability requirement on the same level as the requirement of novelty and inventive step. It was imperative for the Working Group to state explicitly that the patent system is there to a specific end, which is not only economic welfare but also social welfare. The distinction between social and economic welfare is made because economic welfare may risk being interpreted in a narrow business related sense.

Chris Mercer, President of Professional Representatives before the European Patent Office, pointed to the fact that the Board of Appeal is the main arbiter of what the level of inventive step is and what qualities the skilled person has, and therefore it is very important to be able to influence the Board of Appeal. He asked how this could be done.

The Working Group stated that the preamble should be read by patent users as well as instructing the behaviour of patent practitioners - yet it should also be used by the courts and the Board of Appeal. The preamble is important to all the levels of the patent system that means both at the policy level, the executive level and the legislative level. The Working Group emphasized that it is difficult to address a matter of the office versus the Board of Appeal in regard to the changing of the standards in the EPO. First in the process should be to establish among ourselves as a patent community the standard we would like to have. Then we need to instruct the examiners to change their behaviour in order to comply with this standard. The need to change rules in order to make the Boards of Appeal compliant would be a part of a second phase.

Laurent Ruessmann, Sidley Austin, representing the Association of Competitive Technology, pointed to the consideration of what the rationale for the legal changes are and what impact they may have in regard to Europe not moving in isolation from the rest of the world.

The Working Group agreed with Laurent Ruessmann and underlined that the preamble states the rationales of the patent system and therefore, changes to the patent system should be in line with the purpose established in the preamble.

2. Questions to the policy option "*Enhancing governance within the European patent system*":

Daniel Alge, Representative of International Federation of Industrial Property Attorneys (FICPI), raised the issue on governance of the European patent system and the involvement of practitioners. The European enterprises, inventors and SME's are the ones filing patents and creating innovations, yet the policy option focuses on enhancing governance among European Parliamentarians.

The Working Group argued that the proposal on enhancing the governance of the European patent system and the suggestion to set up the European Parliament Standing Committee on patents serves to establish transparency within the European patent system mainly for politicians and the public at large, including stakeholders. The form of transparency that the report focuses on is based on the recognition that simply making information available does not enable anyone in civil society to see the global picture. The role of the External Advisory Body that was proposed is to systematically gather information on current trends with regard to patenting in the EPO and report on trends within the patent offices. The governance of private companies and stakeholders is therefore introduced with the suggestion on representation in the Advisory Board to the European Parliament and also by the proposal to open up the Standing Advisory Committee at the EPO to other stakeholders and experts besides those that are already there.

Daniel Alge also asked what the political message from the report is and why an overall goal of contributing to the Lisbon agenda was not expressed.

The Working Group stated that the policy options are contributing directly to the Lisbon agenda on European innovation by trying to come up with recommendation as to make a fundamental heart of regulation in Europe working towards the aim of better and more products. That is the fundamental political consideration of the project. The primary objective is to encourage a system that produces good patents and if it is costly to obtain a good patent, so be it. The message from the Working Group was that the cost of obtaining a patent and defending it is not a core issue. Good quality patents aid to improve the economic and social welfare and that therefore, is the core issue.

Benjamin Henrion from FFII Bruxelles, asked what the Working Group thought of the fact that the representatives of the member states at the EPO are seen as representatives of national patent offices and therefore in fact push for more patents because of national interest in renewal fees.

The Working Group argued that the EPO first of all is an inter-governmental organisation and in the end controlled and governed by the member states. It is the member states that appoint their representatives to the government body, the Administrative Council. After the patents have been granted they are no longer European but become national and subject to national administration. From a governance point of view, these conflict of interest issues are indeed a problem because of the patent policy being partly national and partly EU based. Therefore, the Working Group is very clear about the premise of the report, which is the support for the introduction of the Community Patent because it would counter the patchwork of competences that exist today.

The Working Group also noted that the EPO granting procedures in the end has to do with the way in which the EPO examiners apply the given standards for patentability, and that it should be enough to instruct examiners to change their behaviour. The Working Group explained that patent examination practice shows that the pressure for having a patent granted comes from the applicant. The EPO therefore has to resist a trend towards granting more and more patents for small innovations. There is a need for a strong granting authority, with expertise and resources to be able to make a stringent examination. Rigorous application of the standards is important for a good quality system and essentially this means enough time for examiners to fully examine the application.

3. Question to the policy option "*Improving quality aspects in regard to patentability standards and patent grant procedures*".

Gilles Capart, Chairman of Proton Europe and Chairman of the patent policy group of Proton Europe, asked what effect on European competitiveness and the increasing workload at the EPO the setting of patentability standards in Europe is going to have if changes are not made in agreement between the European patent system and the US, China and Japan?

The Working Group agreed that there is an international dimension to patentability standards, strict application and rigid granting procedures. Yet the Working Group argued that we could easily make improvements in these areas on a European level and meanwhile try to persuade our partners in the world to do the same. The Working Group did not agree with the conclusion that we should only make a move when it can be made on a global scale because it would take too long before anything happens. Internationally, Europe already has a spoken reputation for quality and should be in a position to lead the process internationally.

4. Question to the policy option "*Dealing with emerging technologies*":

Adam Gierek, member of the Socialist Group in the European Parliament, mentioned the question of how to define what should be patentable and referred to the discussion 1½ year ago on software.

The Working Group replied that it is not the idea of the group that emerging technologies should not be patentable. The Working Group underlined that emerging technologies give rise to special concerns and that these should dealt with in the system to make sure that the technologies are patented in the right way. Again, attention was called to the preamble, as the effect of a preamble would be to guide legislators and to make sure they consider whether the application of the patent system to an emergent technology makes sense from the point of view of the mission of the patent system.

5. Questions to the policy option "*Increasing access to patented inventions*":

William Davis, Research and Motion, asked how the issue of competition law in regard to the collective rights management model and patent thickets should be overcome.

The Working Group emphasized that the report did not explore the competition law issues and economic issues involved in collective rights models, yet the Working Group explained that when putting the two bodies of legislation together there are at least four prerequisites to make the mechanism legitimate for both the patent pool and the clearing house model:

1. Valid patents
2. Should contain essential patents. An essential patent is a patent to which access is essential in order to make other products.
3. No exclusive licensees to any third parties.
4. The license should be offered on fair, reasonable and non-discriminatory terms.

On competition issues in relation to patent pools, the Working Group explained that cross licensing across companies in the sectors that are affected by standards is simply the result of complex technologies because many patents are needed to produce an innovative product, and in that case, webs of cross licensing occur anyway. Therefore, it is not in the absence of a patent pool that access to individual patents would be uncomplicated. Patent pool policy should aim to avoid that the only entrance to the pool is taking another patent since that would just create an incentive to take as many patents as possible. Instead, patent pools should be made more accessible for those who cannot contribute to cross licensing with patents of their own.

The competition regime in the European Union is structured in a way that makes it unclear how to apply the legislation to the new collective rights management models. The regime is constructed in a way that makes it impossible to determine in advance if a patent pool or clearinghouse is legitimate and it has therefore become quite uncertain to start the whole process. This is an example of why it is important to have a governance system that brings together IP and competition issues. The Working Group recommends that further investigation is made as regards competition and the collective rights mechanism.

The Working Group explained that the preamble is there also to open up a dialogue with bodies that are entitled to deal with competition issues or innovation issues at large beyond the patent system. With a statement like the preamble, it is more straightforward to set up a dialogue on whether patent pools are good. The competition faction would have much more incentive to bother with patents if there is a clear connection between the patent system and overall welfare issues.

In relation to compulsory licensing, which **Laurent Ruessmann** from Sidley Austin pointed at, the Working Group underlined that the report did not tackle this specific question. Instead the report took a broader approach by recommending the introduction of a mission statement in the EPC so that you will always try to weigh up the social and economic welfare benefit. The preamble is the starting point of any deliberations of compulsory licensing and volunteering measures, yet the panel believe that compulsory licenses are only a last resort measure.

Ronald Zink, Microsoft and **Gilles Capart,** Past Chairman of Proton Europe and Chairman of the patent policy group of Proton Europe, asked what could be done to promote the filing of patents by European universities and SME's; should these groups have special access to the European patent system?

The Working Group replied that many concerns about the contribution of European universities to patenting in Europe are based on incorrect data. Compared to universities in the US, universities in Europe do not contribute to patented inventions that much less (in proportionate terms) to the overall number of patens taken by nations and industries. The difference is that European universities do not hold these patents themselves. In many cases, the ownership of the inventions resulting from research done in universities goes to industrial sponsors that intervene at some point in the research projects. When academic patenting is measured in terms of the origin of the invention, i.e. who is the inventor and not who owns the invention, then it becomes clear that the percentage of academic inventions it is not that low compared to the total number of inventions. The reasons for that would be that legislation over academic inventions has been historically different from one country to another within Europe, and that European universities are much less aggressive when it comes to enforcing their sanctions to disclose the invention to the central office. Creating special incentives for universities to patent involves the risk of more litigation over who owns the patent. Also, many patents owned by universities in Europe are co-owned by the universities and businesses. There would be no big advantage to universities in lowering fees over these co-owned patents because the co-owners are in many cases big companies.

On the question of access for SME's, the Working Group argued that it is an issue outside the frame of the patent system. The report has dealt with the patent system as such and the policy options put forward should automatically benefit SME's. Whether there is reason to encourage SME's, universities and others to take out more patents is a separate issue. If we want SME's to take out more patents, it should be achieved by separate policy initiatives and possibly subsidies for SME's. The Working Group does not believe this to be a core issue of the workings of the patent system.

<u>European competitiveness:</u>

The question about European competitiveness was mentioned several times at the workshop. **Laurent Ruessmann** raised the question about European competitiveness and asked if the focus shouldn't really be on cost and quality.

The Working Group responded that a patent system with easily obtainable patents and low costs is not necessarily a competitive advantage. The Working Group agreed that unnecessary costs should of course be eliminated but making the system cheap or cheaper for users should not be the primary goal. The primary goal of the patent system is to produce good quality patents and if it takes more examiners to decide whether a patent should be granted, it is reasonable to make it more costly. The cost issue is secondary. Furthermore, the Working Group argued that the European Parliament should only be concerned with the overall cost of the system.

In addition to this, **Chris Mercer**, President of the Institute of Professional Representatives before the European Patent Office, pointed out that making the application much cheaper for a European patent could be counterproductive, because more people possibly would apply for a patent, thus increasing the problems associated with the rising number of patent applications. The Working Group agreed, and added that low costs and more easily obtainable patents would lead to an increase in the number of patents and this may lead to more and costly litigation with the result that the overall cost of the system goes up. Focusing too much attention on the cost of obtaining patent grants may thus be misleading.

Final recommendations from the Working Group to the members of the European Parliament:

Following the discussion between the audience and the Working Group, Mr. Malcolm Harbour offered the members of the Working Group one minute to make their final recommendations.

The Working Group pointed at four very important issues:

1. The Working Group strongly recommended the European Parliament to put an effort into the insertion of a preamble in the EPC and a future Community Patent. The preamble is very important because it clearly sets the perspective through which the patent system will be looked at when developing policies on patent issues. The adoption of a preamble would also introduce a dialogue about the competition issues in relation to collective rights management models and in specific emerging technologies. With regard to emerging technologies, the preamble would guide the decision on whether the adoption of a specific technology within the European patent system is suitable from the point of view of the purpose of the patent system.

2. The Working Group called for more political leadership and expressed their wish for the European Parliament to recognise the importance of the patent system. The patent system is an essential policy tool in modern society and the European Parliament should pay attention to the need for a fact based and open discussion about the system. The European Parliament should also consider the group's proposal to introduce a Standing Committee on patents issues and an External Advisory Body linked to such a committee.

3. The Working Group encouraged the European Parliament to deal in more detail with issues of access to knowledge. The European Parliament could do so by further exploring the collective rights management models and by making the competition law framework more flexible in order to promote and enhance those models. From both a civil society and users' point of view, this is of great importance.

4. European universities: The European Parliament should be aware that special incentives for universities to patent more may carry the risk of increased litigation over who owns the patents. Many patents are co-owned by the universities and the business community, and thus lowering fees for these co-owned patents would not be an advantage to the universities because the co-owners often in fact are big companies.

Members of the European Parliament present at the workshop:

Mr. Jorgo Chatzimarkakis, member of the Group of the Alliance Liberals and Democrats for Europe (Germany), Mr. Adam Gierek, member of the Socialist Group in the European Parliament (Poland) and the chairman Mr. Malcolm Harbour, member of the Group of the European People's Party (Christian Democrats) and European Democrats.

Unfortunately Mr. Philip Busquin, President of the STOA Panel and initiator of the project was not able to attend the dissemination workshop. Member of the Working Group Mr. Robin Cowan, professor of Economics at Université Louis Pasteur and the project rapporteur Mr. Matthew Elsmore, Assistant professor from Aarhus Business School-University of Aarhus were also unable to attend.

ANNEX 6: REFERENCES

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