LAW PUNDITS

OVERVIEW OF PATENTS

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This overview summarises the main considerations relating to the protection and ownership of patents, in various jurisdictions around the world, and the management of a patent portfolio. Key commercial and legal considerations relating to the exploitation of patents are considered, including the licensing and sale of patents, confidentiality, the use of heads of agreement, local law issues, formalities, taxation, and the application of EU and UK competition law.

The rationale of the patent system is to encourage inventors to publish details of inventions and how they are put into effect by providing inventors with a limited monopoly over their inventions so that, after the expiry of the patents protecting them, the inventions are available for the public to use freely. The need for publication in the case of patents can be contrasted with the need to prevent the publication of confidential information, the right which protects trade secrets or know-how. Transactions involving technology transfer often involve, in addition to patents, non-patented know-how relating to the detailed implementation of the inventions. Technology transfer agreements must therefore ensure that the know-how is contractually linked with the related patents so as to provide the technology required to work the invention in the optimum way. This overview deals primarily with the transfer and licensing of patents. However, as many transactions involve both patents and know-how; some aspects of know-how are also considered here.

NATURE OF A PATENT

Statutory Background

National Protection

Despite the importance of international conventions protecting patent rights, such conventions deal primarily with procedural issues, while substantive patent law remains governed by national laws, although a large measure of harmonisation between such national laws has been achieved, especially between the countries belonging to the European Patent Convention.

In most jurisdictions patents are protected by a statute and in most cases patents last for 20 years.

International Protection

Most of the countries around the world is a party to the following international conventions which (with the exception of the Community Patent Convention) are currently in force:

- **Agreement on Trade-Related Aspects of Intellectual Property 1994 (TRIPS).** This requires compliance with the provisions of the Paris Convention for the Protection of Industrial Property (1883) (Paris Convention) (see fourth bullet below) and establishes more stringent current minimum standards for patent protection to which member countries of the World Trade Organisation must adhere. It provides that patents are to be "available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve

an inventive step, and are capable of industrial application" (*Article 27(1)*), but permits countries to apply certain specific exclusions.

- **Patent Co-operation Treaty 1970 (PCT).** This facilitates the process of obtaining patents in a number of different countries by enabling an applicant to file a single application, specifying the countries in which protection is sought although, after a single search and the option of a single initial examination, the application must then be pursued separately in each country

- **European Patent Convention 1973 (EPC).** This also facilitates the process of obtaining patents in different countries but goes further than the PCT by providing a single route to the grant of a European patent. Once granted, the European patent operates as a bundle of national patent rights in each of the countries designated by the applicant, each governed by the domestic laws of each of the designated countries. The EPC has also effected a significant harmonisation of national substantive patent laws throughout Europe. Although the EPC covers the EU and certain other European countries, it is a separate international convention rather than an EU measure. A revised version of the EPC (EPC 2000) is entered into force on 13 December 2007. The European Patent Office (EPO) published a special edition of the *EPO Official Journal* setting out the various new legislation applying following entry into force of EPC 2000. Sections of the Patents Act 2004 (PA 2004) which were enacted to bring UK legislation into conformity with the revisions in EPC 2000 also came into effect on 13 December 2007.

- **Paris Convention for the Protection of Industrial Property 1883 (Paris Convention).** This is the oldest international convention governing patents, and it established minimum standards of patent protection which have now been replaced by those set out in TRIPS. It also established the system of "priority", whereby patent applications filed in Convention countries can claim the priority date of an earlier application, filed in another Convention country less than a year previously, for the purpose of assessing the relevant state of the art.

- **Community Patent Convention 1975.** The object of this Convention, which never came into force, was to provide for the grant of one single patent covering the EU, instead of the bundle of national patents which can be granted under the EPC. Its significance lies in the fact that many of its provisions form the basis for equivalent provisions in national patent laws throughout the EU.

Examples of patents

Patents are available for most industrially applicable processes and devices. They may cover:

- Mechanical devices, for example, a mousetrap.
- Methods for doing things, such as methods for dyeing or bleaching fabrics.
- Chemical compounds, for example, a new drug.
- Mixtures of compounds, for example, an improved hand cream.

Duration

Patents in the UK, India, as well as in the European Economic Area (EEA), have a duration of 20 years from their filing date, subject to payment of renewal fees and not being invalidated.

Supplementary Protection Certificates

In the EEA, there is also provision for granting supplementary protection certificates (SPCs) in relation to patents for medicinal and plant protection products (Regulation (EC) 469/2009 concerning the supplementary protection certificate for medicinal products (SPC Regulation) and Regulation (EC) 1610/96 concerning the creation of a supplementary protection certificate for plant protection products, and provisions extending their effect elsewhere in the EEA). The SPC Regulation consolidated various amendments made to the original Council Regulation (EEC) 1768/1992Regulation 1768/92/EEC. The consolidated version came into force on 5 July 2009.

In respect of those products that have received a marketing authorisation, SPCs have the effect of extending the related patents for up to five years after expiry of the relevant patent or 15 years from the first such marketing authorisation in the EU, whichever is the less. The purpose of the SPC is to compensate for the reduction in the effective patent life of such products caused by the delays inherent in the regulatory approval process. It must be sought within six months of the grant of the patent, or the grant of a marketing authorisation, whichever is earlier.

Nature of patent rights

In contrast to the protection afforded by, for example, copyright or the law of confidential information, patent protection does not arise automatically and the filing of an application for a patent, followed by its grant, is necessary to obtain such protection.

A patent is a negative right that permits the inventor to stop third parties from using the invention. It is not a positive right, in that it does not give the inventor the right to do something which he would otherwise not be able to do.

Patents, and applications for patents, are intangible property rights. Under English law, they are treated as personal property and may be assigned (section 30(1) and (2), *PA 1977*). The proprietor of a patent may also grant licences for all or some of the claims incorporated in the patent, on whatever terms it chooses, subject to competition law considerations (*section 30(4), PA 1977*). Patents can also be mortgaged as security (*section 30(2), PA 1977*). In the UK, as in many other countries, all legal interests in and transactions relating to patents must be registered.

Why seek patent protection?

Protection of innovations as patents or trade secrets

When an innovation is made, it is important to consider how and whether it should be protected before any details are published or any samples are circulated. Failure to do so can severely limit, or even wholly undermine, the scope for protecting the innovation either under patent law or as a trade secret under the law relating to confidential information.

Where an innovation is not capable of being protected under the law of confidential information, a company with a new innovation may consider that it does not need protection by means of patents as it will be able to commercialise an innovation quicker and better than the competition. This is sometimes right, but in many cases it takes time for a new technology to take off, and the benefit of some protection from competitors at the outset is very worthwhile commercially. Some industries traditionally have taken little interest in obtaining patents and the first company to break that mould may be able to achieve considerable benefit.

Most practical innovations can be patented, but patenting may not always be the best route to follow. The choice of protection often lies between patenting and maintaining the innovation as a trade secret under the law of confidential information. There are a number of factors to consider:

- **The nature of the innovation.** Not all innovations can be maintained as trade secrets. For example, a newly improved mouse-trap is unsuitable for protection under the law of confidential information because as soon as one mouse-trap is sold the innovative design will be published to the world. However, in some industries the use of trade secret protection is common. Fermentation technology, which is widely used to make certain drugs and which is very much a "black art" conducted in the privacy of the maker's factory, is a good example of technology which may be better kept as a trade secret.

- **Cost.** Protecting innovation by means of patents is a more expensive route in the short term than seeking to protect it as a trade secret, but it may be the only way to protect many types of innovation. Although protection as a trade secret will be cheaper to start with (there are no formal applications to file, and no official fees to pay), it can be expensive subsequently to enforce such protection, even by comparison with the substantial costs of enforcing patents.

- **Nature of protection.** Protection under the law of confidential information is relatively fragile when compared with patent protection, as it depends on stringent working practices, the honesty of the individuals involved and their respect for secrecy. It is generally advisable to have detailed confidentiality agreements with employees who will have access to trade secrets, and with third parties that from time to time have access to the employer's premises, but such agreements rarely prove completely effective and trade secrets tend to leak out over time.

  While a patent provides more formal protection, the grant of a patent does not guarantee that the patent is valid, nor does it protect the inventor from, for example, regulatory constraints or the possibility that the operation of his invention may infringe another patent belonging to a third party.

The existence of a patent may, however:

- Deter rivals from infringing the patent.
- Cause rivals to find an alternative non-infringing process or product (known as "engineering round" the patent).
- Prompt rivals to approach the patentee for a licence.
  If a rival decides to use the invention and infringe, the only way of enforcing the rights conferred by the patent is to commence legal action against the rival: the policing of a patent is the responsibility of the patentee, not the Intellectual Property Office (IPO). If the rival does not settle quickly, patent litigation is often lengthy and expensive and is best avoided if possible.

Patents as monopoly rights

A patent confers a monopoly right, as it prevents third parties from operating within the scope of the patent claims, even if such third parties developed their own technology wholly independently of the patentee and were wholly unaware of the existence of the patent or of the product or process which the patent protected. In contrast, the law of confidential information cannot be used against independently developed technology and the laws of copyright or unregistered design right can only be used where it can be shown that a third party has copied the relevant work.

Deterrent effect of patent applications

The existence of a patent application, even if unlikely to result in the grant of a patent, or if narrow in scope or of uncertain validity, can deter third parties from a technology. This can be highlighted by the use on products or packaging of suitable notices such as "patent pending" which identify the patent applications that protect the relevant technology. It is, however, an offence in the UK for a person to represent that something sold by him is a patented product, or the subject of a patent application, when that is not the case.

Patents as assets

A patent enables its owner to exploit the patented technology exclusively, either on its own account or by licensing the technology to third parties. Patents can be extremely valuable assets, especially in certain sectors, such as pharmaceuticals, biotechnology and industrial chemicals, and increasingly electronics, and particularly if the patentee is prepared to invest the time and money necessary to police them.

Ownership of inventions

The owner of an invention will be the only person entitled to prosecute a patent application. The inventor, or his successor in title, is usually the owner of an invention (section 7*, PA 1977*) and so is generally the person entitled to apply for a patent. However, a number of important qualifications to this are considered below.

Employees

Many inventions are made by inventors as part of their normal employment and, whilst their names will appear on the patent specifications as the inventors, their employers will usually own the patent.
The ownership of inventions as between employers and employees is a matter of national law. In the UK an invention belongs to the employer if either:

- It was made in the course of the normal duties of the employee or in the course of specifically assigned duties falling outside his normal duties.

- It was made in the course of the duties of the employee and, because of the nature of the employee's duties and the particular responsibilities arising from them, the employee had a special obligation to further the interests of the employer's undertaking. (Section 39 (1) (a) and (b)*, PA 1977*.)

In *LIFFE Administration and Management* v. *Pinkava and Another*, [2007] EWCA Civ. 217, the Court of Appeal rejected the High Court's finding that an employee's "normal duties" should be defined by reference to the duties set out in his employment contract and job description. The court said that an employment contract could evolve over time, so that it was unsafe to only have regard to the terms of the written contract. The actions of an employer and employee in performance of the contract could give rise to an expansion or reduction of the duties. Any extra duties so undertaken should not be regarded only as duties "specifically assigned"; they could become "normal" duties in the course of time.

Any attempt by an employer to contract out of these rules is unenforceable (section 42*, PA 1977*). A provision in an employment contract that inventions made outside the course of the employee's duties are to vest in the employer would be ineffective. The use of an artificially broad definition of the "normal duties" of the employee would also be ineffective, as the courts will look to what those duties actually are rather than how they are defined in the employment contract. This clearly limits the scope for dealing with ownership in the contract of employment, although an employment contract should nonetheless clarify the circumstances in which an invention will be owned by the employer. Confidentiality obligations in an employment contract are expressly permitted by section 42 and so, where properly drawn, may assist the employer.

Establishing who is the owner of an invention on the basis of these rules can be difficult in some situations. A straightforward case is that of a research scientist who is employed by a pharmaceutical company to invent drugs and who makes such an invention: that invention will normally belong to the company. But this may not be clear where the invention is made by the employee outside work, where the invention does not have application to the company's business or where it is not clear whether the employee is employed to make the invention that he made.

Academic funding

Academic inventions can also give rise to problems. Bodies that fund academic research, such as charitable foundations, may stipulate as a condition of funding that ownership of inventions arising from the research will vest in them, or at least that they cannot be exploited without their consent.

Commissioned work

In the absence of express contractual provision to the contrary, the legal title to an invention made by an independent contractor will vest in the contractor, unless the court is prepared, on the facts, to imply a term into the contract giving ownership to the party that has commissioned the work. However, the implication of such a term is relatively rare and depends entirely on the facts in any given case. It is important, therefore, before any such commissioned work is commenced, to agree in a written contract that all IP rights in any invention arising out of the work will vest in the party that is paying for the work to be done.

Joint inventions

In some circumstances, two or more parties may be jointly entitled to apply for a patent; for example, where the joint inventors are employees employed by different companies and there is no agreement between the companies vesting all rights in one or other of them. Although there is some variation in the position internationally, the rule in the UK is that, in the absence of an agreement to the contrary between the joint applicants, one cannot assign or license its share of the patent without the consent of the other, although either can use the patent or exploit it without such consent (section 36(3)*, PA 1977*). It is clear that section 36(3) of the PA 1977 could, for example, work in favour of a manufacturer that co-owned a patent with an individual. As the operation of this provision may produce unsatisfactory results, it is advisable to draw up a contract between the joint applicants that regulate their rights and obligations.

Section 36(3) of the PA 1977 is subject to very limited exceptions, including section 37 of the PA 1977, under which one co-owner may refer to the IPO the question of whether it should be allowed to grant a licence under the patent without the consent of the other.

How to obtain a UK patent

What is patentable in the UK?

Patent law in the UK conforms to the standards imposed by the Paris Convention, TRIPS and the EPC. A patent may only be granted for an invention if that invention fulfils all the following criteria:

- It is new.
- It involves an inventive step.
- It is capable of industrial application.
- It is not specifically excluded from protection as a patent.

(Section 1*, PA 1977*.)

Novelty

To be regarded as new or novel, an invention must not form part of the state of the art. This means that it must not have been made available to the public, either by public use or by disclosure other than under conditions of confidentiality, before the priority date of the patent (section 2(1) *and (2), PA 1977*). It is, therefore, vital that an inventor does not make any public disclosure of his invention before the first patent application has been filed. The inventor can file his patent application and the day after filing announce the invention in the scientific press or by sale of an actual embodiment of the invention without invalidating his patent application or any foreign applications claiming priority from it (although as this may compromise the patentability of any subsequent developments, he should ideally wait until the patent application has been published).

If the inventor had, unwisely, announced his invention the day before filing, then the invention will form part of the state of the art at the priority date and he will have invalidated his own patent. This demonstrates the need to consider at the earliest stage what form of protection is to be sought for an innovation. If the inventor has sent off a paper to a scientific journal, or the marketing department have test-marketed some of the goods, the option of patenting will already have been lost. This can come as an unpleasant surprise to inventors who mistakenly think that disclosures that they themselves make will not count against their own later patent application. Like the UK and the other EPC countries, most countries throughout the world operate a harsh rule (known as absolute novelty) which will count against the patent application any disclosure (including oral disclosures) or use anywhere in the world before the priority date.

After the initial filing the inventor has a period of one year to do further work on the invention and to decide whether he wants to proceed further and, if so, in which countries. As long as the foreign applications are on file within a period of one year after the original filing, any disclosures of the material in the first filing made after such first filing will not count, because the original filing date will be the priority date (*section 2, PA 1977*). If, however, the one-year period is exceeded, the applicant will often be unable to obtain a valid patent.

Inventive step

To meet this requirement, the invention must not be obvious to a person skilled in the art (regularly characterised in the case law as the "notional uninventive skilled man"). Whereas it is not possible to patent what is known already because that lacks novelty, the attack of obviousness or lack of inventive step prevents the patenting of trivial variants of what is known already. The inevitably subjective nature of the test means that this attack is the one that is most often advanced in practice.

Industrial application

An invention is capable of industrial application if it can be made or used in any kind of industry (section 4(1)*, PA 1977*). Inventions rarely fail this requirement, which can be equated with that of utility. So merely identifying a new chemical, without more, is not patentable as this lacks industrial application, whereas identifying a new chemical and a practical use for such

chemical, such as treating a disease, or acting as a lubricant, allows that chemical to be claimed in a patent.

Specific exclusions

The following are not regarded as inventions:

- Discoveries, scientific theories and mathematical methods (although patents can be obtained for the practical application of discoveries and scientific theories).
- Aesthetic creations (these are regarded as properly the subject of copyright).
- Schemes, rules and methods for performing mental acts, playing games or doing business.
- Computer programs.
- The presentation of information. (Section 1(2)*, PA 1977, implementing Article 52(2), EPC.*)

The exclusions are construed narrowly, as it is provided that an excluded item will only be prevented from being treated as an invention if a patent or an application for a patent relates to "that thing as such" (*section 1(2), PA 1977*). There are no corresponding specific exclusions in TRIPS, but those responsible for matters of patent policy in the UK within the Department of Trade and Industry take the view that the exclusions are consistent with TRIPS on the ground that they merely exemplify subject matter which is not capable of industrial application and therefore cannot be inventions. Although non-conformity with TRIPS does not, in the UK, provide a ground of challenge in the IPO or the courts, it might do so in other EPC countries where such exclusions are also found, and which, unlike the UK, have "self-executing" constitutions (that is those with provisions that can be given effect without the aid of further legislation).

The following are also excluded from protection as patents, as permitted by Articles 27(2) and (3) of TRIPS:

- Surgical, therapeutic or diagnostic techniques carried out on the human or animal body (but this does not prevent patents being obtained for products or articles for use in such procedures, or certain types of "medical use" claims) (section 4A*, PA 1977, implementing Article 53(c), EPC*).

The EPO Enlarged Board of Appeal has interpreted the term "diagnostic methods" in Article 53(c) (formerly 52(4)) of the EPC narrowly. In February 2010, the EPO Enlarged Board of Appeal ruled on the scope of the exclusion from patentability of surgical methods under Article 52(4) of the EPC.

- Inventions which, if exploited, would be generally expected to encourage offensive, immoral or anti-social behaviour (section 1(3)*, PA 1977 implementing Article 53(a), EPC*). (Directive 98/44/EC on the legal protection of biotechnological inventions gives examples of inventions in the field of biotechnology which are to be so regarded (*OJ 1998 L213/13*).)
- Plant or animal varieties or any essentially biological processes for the production of plants or animals (Schedule A2 Paragraph 3(f), PA 1977, implementing Article 53(b), EPC). (Microbiological processes or their products, which have long been accepted to be patentable, are not excluded.)

Filing an application for a patent

In order to obtain a patent it is necessary to file an application for a patent, normally with the Patent Office of the country where the inventor works. The grant of a patent is not automatic, and in practice an inventor is not entitled to a patent as of right. The expression "registering a patent" is usually, therefore, a substantial oversimplification of what is involved.

When to file a first application

The decision as to when to make the first filing can be difficult. The sooner the first application is made the less likely it is that a competitor will file for a similar invention; a genuine risk given how often companies working in a particular area of technology come up with the same invention, or overlapping inventions, within a few months of each other. The company which files first usually scoops the pool. However, the invention must be sufficiently well developed to allow working examples to be filed within one year of the application (although they would ideally be included at the time of the application itself), so there is a balance to be struck.

An additional factor in favour of an early filing in the UK and other EPC countries is that patent applications filed and eventually published, but not published as at the priority date of a later application, are deemed to form part of the state of the art for the purposes of assessing novelty, although not inventive step, against that later application (section 2(3)*, PA 1977*).

Basic requirements

In the UK, an application for a patent must:

- Contain a request for grant of a patent on the appropriate form.
- Give contact details for the applicant.
- Contain a description of the invention (the specification) or alternatively a reference to an earlier application for the same invention.
- Be accompanied by the requisite fee (which is currently £30). (Section 14(1) *and (2), PA 1977*.)

Without these, the application cannot be given a filing date, which is vital for establishing priority (see Novelty). A UK application can be based on an earlier application made in the UK or abroad within the previous year, and priority can be claimed from such earlier application (section 5*, PA 1977*).

The inventor will normally file his patent application first in his home country. In the UK, he must file first with the IPO where the application concerns military technology, or publication of information in the application might be prejudicial to national security or public safety (section 23*, PA 77*). This is so the government can decide whether to restrict or prohibit publication or communication of the material (section 22*, PA 1977*).

A number of proposed reforms designed to simplify existing procedures under the PA 1977, including filing and application requirements, were implemented by the Regulatory Reform (Patents) Order 2004, which came into effect on 1 January 2005. The IPO has also implemented a system for the online filing of patent applications.

Requirements to be met by the specification

In addition to complying with matters of substantive patent law (such as the invention being novel and inventive):

- The specification must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (section 14(3), PA 1977, implementing Article 83, EPC).
- The claims must relate to one invention only or to a group of inventions so linked as to form a single inventive concept (section 14(5) (d), PA 1977, implementing Article 82, EPC).
- The claims must:
  - define the matter for which protection is sought;
  - be clear and concise; and
  - be supported by the description of the invention.

  (*Section 14(5)(a)-(c), PA 1977, implementing Article 84, EPC.*)

Search

No UK patent will be granted until an examiner (an IPO employee) has made a search to find out what prior proposals in the same general area have been published before the priority date, and so form part of the state of the art. This material is normally referred to as the prior art. Once the examiner has the search results, he considers how wide the patent should be, having regard to the inventor's contribution to the knowledge in the art. Frequently the precise form of the patent is the subject of much argument with the examiner.

Contents of specifications

A patent specification usually contains all of the following:

- An abstract (summarising, in a couple of lines, the nature of the invention).
- A detailed description of the invention (which may include drawings).
- Numbered statements known as the claims (although these do not need to be filed at the outset).

The claims are vital in patent law as they define the boundaries of the monopoly which the applicant is claiming.

Scope of protection

When drafting claims, it is difficult to predict the extent to which potential infringers may be able to "design around" the claims. The test contained in the EPC for determining the extent of protection afforded by a patent is not easy to apply in practice. It provides that:

- The extent of the protection conferred by a European patent or an application for such a patent is determined by the terms of the claims but that, nonetheless, the description and drawings shall be used to interpret the claims (Article 69(1), EPC).

- For the period up to grant of the European patent, the extent of the protection conferred by the patent application shall be determined by the latest filed claims contained in the published European patent application. However, the European patent as granted or as amended in opposition proceedings will determine, retrospectively, the protection conferred by the patent application, in so far as such protection is not extended by the patent as granted or amended in opposition proceedings (Article 69(2), EPC).

This is to be interpreted in accordance with the Protocol on the Interpretation of Article 69 of the EPC which provides that the extent of the protection conferred by a European patent:

- Is not to be understood as that defined by the strict, literal meaning of the wording used in the claims, with the description and drawings being employed only for the purpose of resolving an ambiguity in the claims.
- Should not be interpreted in the sense that the claims serve only as a guideline, so it is not correct to regard the protection as extending to what, from a consideration of the description and drawings by a person skilled in the art, the patentee has contemplated.
- It is to be interpreted as defining a position between these extremes which combines a fair protection for the patentee with a reasonable degree of certainty for third parties.

There are some differences of approach between the courts of different countries in Europe on how these provisions should be interpreted. All tend to start with the position that what is within the literal scope of the claims infringes. It is where one considers variations outside the literal scope that major differences arise. In the UK the approach set out in *Catnic* v *Hill & Smith*, [1982] RPC 183, as rearranged to provide the three-step test in *Improver* v *Remington* [1990] FSR 181, is now accepted as correct, after a short period in the mid-1990's when it was under attack as being too strict. In late 2004 the approach was approved as a guideline for cases in areas of established technology by the House of Lords in *Kirin Amgen Inc and others* v *Hoechst Marion Roussel Ltd and others*, [2004] UKHL 46. In practice, it is the third question which has normally been answered against the patentee, with the result that it is quite difficult in the UK to assert that a patent covers activities outside literal scope, and effectively impossible where the scope is a precisely defined numerical range.

Under EPC 2000 the Protocol on the Interpretation of Article 69 of the EPC has been amended to add an Article 2, headed "Equivalents" which provides that "For the purpose of determining the extent of protection conferred by a European patent, due account shall be taken of any element which is equivalent to an element specified in the claims." It remains to be seen how this will be applied in practice, although the view was expressed in *Kirin Amgen* was that it should make no difference to the UK approach.

The drafting of the claims is a matter of considerable skill, as the draftsman seeks to encapsulate in them the essence of what the inventor has invented. Afterwards, once the patent has been granted, any third party inspecting the claims should, in theory, be able to understand what is the "forbidden territory" of the patent. While the draftsman is usually trying to secure claims of as broad a scope as possible, the examiner will, on the other hand, normally try to ensure that the scope of the claims is commensurate with what the examiner thinks the inventor has invented, and that usually means narrowing the claims. Generally, the inventor of a completely new technology will be able to obtain very wide claims, but as a technology develops the allowable scope of claims tends to become narrower.

Drafting specifications

Drafting a patent specification involves both technical and legal concerns. There is little point in incurring expense on obtaining patents if inadequate measures are taken at the outset to provide the basis for valid claims of useful scope. It is therefore essential that a skilled professional (in the UK, a chartered patent agent) should draft the specification and file the

application on behalf of the inventor, and then deal with the subsequent prosecution of the patent application to grant.

Entitlement to make the application

There is no restriction on who may actually file an application, although within a specified period after filing, the applicant must file evidence that he is the inventor or the successor in title to the inventor. This provides the applicant with time to resolve issues of title.

Priority date

The date of filing of the initial application is also the priority date. This is important as it represents the date after which disclosures can be disregarded in determining novelty and inventive step

Procedure following an application

The procedure in the IPO after the filing of the application (similar procedures are followed in most national offices) is as follows:

- The filing of the initial application establishes the priority date.
- The IPO is requested (on payment of a fee) to carry out searches to enable the applicant to decide whether or not to proceed and, if so, how widely to file.
- Within one year of the initial application:
  - a fuller application is filed, containing more details, the claims, worked examples, the abstract and formal drawings. It is important that none of this additional material is published before filing the fuller application, as only the material in the priority document is assured of benefiting from the priority date. The 20-year term for patent protection in the UK runs from the date of filing of this fuller application; and
  - the fuller application is filed in other countries, such as the US, Japan, and at the EPO.
- If this has not already been requested before the filing of the fuller application, an examiner will (on payment of a fee) make a search of the prior art. This involves establishing what prior proposals in the same general area of technology have been published before the priority date.
- 18 months after the initial application, the fuller application is published, together with the search results, even though it is not known at that stage whether any patent will be granted. Such early publication considerably restricts the possibility of deciding to withdraw an application and do substantial further work before proceeding with a new patent application, so any decision to withdraw should be taken before publication takes place.
- Consideration should be given to any new citations of prior art which arise during prosecution. All the patent offices involved in processing the application should be notified by the applicant of all the prior art cited by the other offices. Although in most countries (apart from the US) there is no sanction for not doing so, failure to do so can make a granted patent more susceptible to attack.
- The applicant must request substantive examination (for which a further fee is payable). At this stage, the ways in which the claimed invention differs from any cited prior art will be discussed and, after negotiation with the examiner as to the scope of the claims, the patent is granted (on payment of a further fee), and published. If the examiner refuses to grant a patent, there is a right of appeal to the Patents Court.

- Third parties may write to the examiner with observations on the patent application and draw his attention to prior art of which he was previously unaware. The examiner is not obliged to take account of such observations or to give reasons as to why he does not do so.

From application to grant: timetable for obtaining a patent

The timetable below sets out the timetable from application to grant of a UK patent. While the timetable indicates the point at which international applications or other national applications should be made, the timetable is not intended to cover the timescale for grant of such patents and only sets out the timescale from application to grant of UK patents.

Validity

An examined and granted patent is not guaranteed to be valid. The IPO examination is in the nature of a "coarse sieve", with the validity (or invalidity) of a patent ultimately being determinable only by the courts. Following the grant of a patent, third parties may instigate proceedings for the revocation of the patent either before the IPO or in the courts. In many countries (but not the UK), a special opposition procedure is available for a certain period after the grant of the patent, which enables third parties to seek the revocation or amendment of the patent on the grounds that it ought not to have been granted at all, or not in its then existing form.

Invalidity can arise in a number of ways, including:

- No search is perfect, and there may be other more relevant items of prior art which the examiner did not find or know about. Further, the examiner is normally looking only at published material and he has no knowledge of commercial operations which could amount to a prior use of the invention.
- The draftsman of the patent claims will not have followed to the last letter the precise embodiments worked out by the inventor. If he had done so (as inventors who are unwise enough to do their own patent drafting often do) the claims would probably have a better chance of being valid, but would be unlikely to catch other competitors that, by making non-essential variations to an invention, can operate outside the scope of the claim while still benefiting from the invention. If, on the other hand, the draftsman has made the claims very wide, and very general in their terms, he will have made it much easier to catch would-be infringers. However, at the same time he runs a greater risk of covering something which is old, or lacks enablement, and so rendering the broader claims invalid. This is why, in practice, nested sets of claims are drafted, with narrower claims expressed to be "dependent" on the broader ones. The narrower claims may be able to survive the invalidity of the broader ones, and in the UK such a patent is said to be "partially valid". It may then be possible to amend such a patent by deletion of the invalid claims. There are considerable variations between different countries in the extent to which the invalidity of one or more claims of a granted patent may render the whole patent invalid, and how far it is possible to amend the invalid claims of a granted patent in order to save the other valid claims.

Territorial limitation of grant

A UK patent only provides protection in the UK. If a patentee wants protection in a number of countries then, in general (unless the PCT or EPC procedure is used), a separate application has to be made in each country in which protection is desired, and the applications filed within

a year of the original filing. This means that a considerable investment in terms of filing and translation fees has to be made at a very early stage of an invention, before the prior art has been properly explored and perhaps before the actual commercial potential of the invention has been worked out. The IPO now offers a fast-track service that enables an applicant to receive search results before the one-year period has expired, which is helpful in reaching a decision as to whether to file in other countries within the one-year period.

Timescale and costs

The process of obtaining a granted patent can take up to several years. However, if special procedures which are available in the UK and some other patent offices are followed at the outset (such as seeking both search and examination at the same time), a patent can be obtained in as little as a year. In September 2007, the IPO issued a consultation on introducing new process for fast-tracking the grant of a patent in the UK according to which, for an additional fee, office actions would be accelerated so that a patent could be granted within a year from the date of filing

In December 2008, the IPO published the results of the consultation. Responses to the proposal were mixed, but overall there was greater support for retaining the current accelerated services system than for a system similar to that proposed in the consultation document. Accordingly, the IPO decided not to introduce a fast-track system, but instead to issue improved guidance about accelerated services for patents

In some other countries, patent-type rights (sometimes called "utility models" or "petty patents") can be obtained without examination and, therefore, rapidly. However, such rights tend to be of shorter duration and are naturally more susceptible to attack than examined patents.

How to obtain patent protection internationally

Although the expression "international patents" is often used, no such thing yet exists. What is usually meant is that the patentee has, or is seeking, patents in a large number of countries. There have, however, been a number of developments designed to make it easier to obtain patent protection in different countries.

The process of obtaining a patent comprises three separate phases:

- Filing the application with a local or regional patent office.
- Searching the prior art.
- Substantive examination of the application in the light of the search results, leading to the grant of a patent.

Previously, it was necessary to go through all three stages in each country where patent protection was sought. The object of the international treaties or conventions referred to below is to eliminate one or more of these stages.

Patent Co-operation Treaty (PCT)

The object of the PCT, which is administered by the World Intellectual Property Office (WIPO) in Geneva, is to eliminate the need for a separate application and search to be made in each country. WIPO maintains a of parties to the PCT

Under the PCT:

- The applicant (who must either be a national, or resident of a PCT contracting state) files a single application with its local patent office or regional office (for example the EPO). This constitutes a designation of all the countries within the PCT on the date that application is filed.
- A single publication takes place.
- A single search is carried out by an internationally recognised searching organisation, which provides the applicant with an international search report and a written preliminary opinion on patentability.
- The applicant has the option of having the application papers together with the search report and written preliminary opinion forwarded to the various designated national (or regional) patent offices.
- Each national (or regional) application then proceeds separately and the various examiners complete the substantive examination.

Application under the Patent Co-operation Treaty (PCT): advantages and disadvantages

The PCT system reduces the number of searches that need to be done (and paid for), and also has the merit of delaying the decision point at which payment must be made and a choice made as to the countries in which to proceed. Not all countries belong to the PCT (although most of interest now do), and the rules that govern the PCT are complex and technical, but the PCT is now very widely used.

European Patent Convention (EPC)

The object of the EPC, which has now been running for over 20 years, is to provide a single route to the grant of a European patent, which then operates as a bundle of national patent rights in each of the member countries designated by the applicant. It is therefore a more ambitious scheme than the PCT.

European Patent Convention (EPC) member countries

As at 1 October 2010, the EPC member countries were:

Albania	Hungary	Poland
Austria	Iceland	Portugal
Belgium	Ireland	Romania
Bulgaria	Italy	San Marino
Croatia	Latvia	Serbia
Cyprus	Liechtenstein	Slovakia
Czech Republic	Lithuania	Slovenia
Denmark	Luxembourg	Spain

Estonia	Macedonia	Sweden
Finland	Malta	Switzerland
France	Monaco	Turkey
Germany	Netherlands	United Kingdom
Greece	Norway	

The EPC has extension agreements permitting patents prosecuted through the EPO route to be extended to:

Bosnia and Herzegovina Montenegro (from 1 March 2010)

Outline of procedure

Under the EPC, a single supranational patent office, the EPO in Munich, deals with all three phases in the grant of a patent:

- A single application is filed, designating the various European countries belonging to the EPC in which protection is sought.
- The application is searched by the EPO and then a single examiner deals with the examination.
- If the examiner decides to grant a patent, the effect is that a separate national patent is issued in each of the designated countries.
- Once granted, European patents may be opposed in the following ways:
  - at the EPO within nine months of grant;
  - if an opposition is already under way at the EPO, by a person who is the subject of infringement proceedings under the patent, provided that he intervenes within three months of the institution of such proceedings; or
  - in separate proceedings brought in national courts to revoke the resulting national patents in the designated states.

  The only grounds of opposition in the EPO are that:
  - The subject matter of the European patent is not patentable within the terms of Articles 52 to 57 of the EPC (lacks novelty, inventive step, industrial application or is otherwise unpatentable).
  - The European patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (this is equivalent to Article 83 of the EPC as it applies in patent prosecution).
  - The subject matter of the European patent extends beyond the content of the application as originally filed (*Article 100, EPC*).

  These grounds are also available in national courts, together with additional grounds as to the protection having been extended by amendment beyond the patent as granted, and as to the patent having been granted to the wrong person, although this ground can only be advanced by a party claiming to be the rightful owner.

Once an application under the EPC is granted a bundle of separate national patents are issued. Any litigation concerning these patents must generally be brought before the courts of the individual countries. Although some courts have been prepared to grant cross-border injunctions to prevent infringement of European patents where there is a connection between

the infringers, an ECJ ruling of July 2006 suggests that this practice can no longer be regarded as valid. However, the ECJ has confirmed the ability of national courts to grant interim pan-European injunctions against infringement of patents granted by the European Patent Office.

Application to the European Patent Office (EPO): advantages and disadvantages

The EPC procedure is obviously simpler than making a number of separate applications and avoids much duplication of work. It also enables the expense of translation costs to be deferred until the applicant knows that a patent is to be obtained (although there are generally benefits in filing translations of the application in terms of availability of back damages as from publication of the application). The disadvantage is that the applicant is dealing with one examiner, who could be unreasonable and (subject to appeal) may refuse to grant any patent at all. This would have a much more serious effect than that of a single awkward national examiner. The system for examining and granting patent applications seems to work reasonably well, although rather slowly.

European patent with unitary effect

Under current plans, applicants are due to have the option of applying for European patents with unitary effect.

United States

Patent law in the US has had some significant differences from that in the rest of the world, but recent changes have removed or lessened many of these differences.

Options for UK applicants when seeking international protection

If a UK applicant wishes to obtain international patent protection, the first application must be made either to the IPO or the EPO (excluding applications containing information relating to military technology or that might be prejudicial to national security, which must be filed with the IPO unless the IPO permits otherwise). By the end of the one-year period, the applicant can choose between using the EPO (designating, if so desired, the UK as one of the countries in which protection is sought) or the PCT route (in which case the applicant can, in turn, designate the PCT member states in which protection is sought, having the option, in relation to EPC member states, of seeking national protection or protection via the EPC). The applicant can also proceed with the UK application if, for example, he requires an extremely fast prosecution to grant.

Costs

Filing and prosecution costs

Obtaining patents is not cheap, but there are ways of managing the costs. The initial filing of an application in the UK involves no translation costs and, if a search is done quickly, it should be possible to decide whether to go ahead with the fuller application within the one-year period. If the prior art disclosed by the search is very close to the matter disclosed in the application it may be sensible to drop the case completely, although it is rare that a granted patent (even if with very narrow claims) is totally without commercial value.

If the prior art is not too similar, the decision must be made whether to proceed only in the UK or, if foreign protection is contemplated, in which countries it should be sought and by which

route. There is no generally applicable list of countries to use, but in most areas of industry protection should be obtained in the US, Japan and the EU.

The US fortunately involves no translation costs for an English applicant, although professional costs to grant can be high.

Japan is a very expensive country, as it involves translation into Japanese at the outset, as well as the professional and official costs involved in prosecuting the application to grant.

Using the EPO, on the other hand, can be relatively cheap, at least to begin with. The EPO will accept the specification in English and prosecution to grant can be in English. Only once the EPO has agreed to grant the patent is it necessary to provide translations. A translation of the claims into both French and German must be provided even if one is not applying in those countries. For those countries where protection is sought which have different languages, further translations of the entire specification and claims into the relevant languages will be required on grant. Translation costs can thus be deferred until it is established that a patent is to be granted, but these costs increase the overall costs to a level far in excess of those incurred in the US. However, it is usually necessary to file translations of applications to preserve one's right to claim damages for infringement for the period from publication of the application through to grant.

However, an amendment to the EPC called the London Agreement was introduced in order to simplify the language regime and reduce translation costs

The London Agreement came into force on 1 May 2008. The European Patent Office has published an overview of the requirements for post-grant translations in each of the participating states in light of the London Agreement.

The pre-grant requirements for an application for a European Patent remain unchanged.

The nature and complexity of the technology involved will also affect the level of professional costs. The costs of a patent application for a simple mechanical device, which may only involve a relatively short specification (say up to ten pages, and six claims) and a few drawings, will be relatively modest. At the other end of the scale, an application in biotechnology can often involve a very lengthy specification (say 100 pages or more, and possibly 40 to 60 claims), together with 10 to 20 drawings and a lengthy sequence DNA listing. The time and level of technical skill involved in the two cases will also, of course, differ greatly.

Renewal fees

Following the grant of a patent, it will in most countries be necessary to pay ongoing fees (called renewal fees or annuities) to keep the patent in force. In the UK these become progressively higher as the patent approaches the twentieth year of its term: the rationale is to discourage patentees from maintaining in force patents which are in fact of little use to them.

Conclusion

As a rough guide, the professional, official and translation fees incurred in patenting a complex invention in the 20 main countries can approach £200,000. This is so even if proceeding with the PCT route and then, for all the European countries, the EPO route. Renewal fees and the costs associated with resisting oppositions, or of enforcing patents once granted, are additional to this, but the costs of litigation can be much the same again in each country in which enforcement is undertaken.

Managing a patent portfolio

Renewal fees must be paid in order to maintain a patent in force. As mentioned in *Costs*, these typically increase towards the end of the life of a patent (in the UK, from £50 in the fifth year to £400 in the twentieth year) and so can be substantial for a large portfolio filed internationally. A patentee should therefore keep its patent portfolio under review and consider whether it contains patents which are no longer of commercial value. Before allowing such patents to lapse, it may wish to establish whether they might have value to a third party, in which case they can be assigned or licensed. Indeed, a failure to exploit a patent can leave it susceptible to an application for a compulsory licence (an application for which may be filed in the UK after the expiry of three years following the grant of the patent), although in practice these are rarely granted in the UK (section 48, PA 1977).

Marking of products

No purpose is served by merely marking goods with the word "patent" or "patented". However, the **number** of the patent application or patent should be marked on the products which are the subject of such application or patent. In the UK, this can serve to rebut a defence by which an infringer can avoid liability for damages or an account of profits if he can show that he was not aware, and had no reasonable grounds for supposing, that the patent existed (section 62, PA 1977). In May 2013, the government published the Intellectual Property Bill, which includes an amendment to section 62 permitting patent owners to mark their products via internet links.

The patentee must, however, be careful not to represent that an application for a patent has been made if that is not the case, or if such an application has been refused or withdrawn, as to do so is an offence in the UK (section 111, PA 1977). It is also an offence to suggest that a product is patented if that is not the case (section 110, *PA 1977*).

Policing

The mere existence of a patent does not prevent other parties infringing it. The patentee should take steps to police the patents. This will start by establishing whether or not anyone is operating within the scope of the claims of a patent. Care must be exercised before threatening proceedings against anyone believed to be infringing as, in the UK, a person aggrieved by unjustified threats (who need not be the person against whom the threats are made) may bring proceedings to stop the threats and to seek damages for them (section 70, PA 1977).

The results of the IPO's recent consultation on a number of proposed amendments to the PA 1977 showed a general consensus that the current threats action provided for by section 70 discourages attempts to settle disputes by negotiation before litigation is commenced. Section 12 of the PA 2004 (which came into force on 1 January 2005) states that it is possible to make

enquiries of anyone for the sole purpose of discovering whether, or by whom, a patent has been infringed, without being regarded as making a threat.

Litigation

If a third party is infringing and refuses to stop, it will be necessary to commence legal proceedings. Usually it will only be possible to stop infringement after the case has got to trial (which can take some time) and the infringer can continue infringing in the meantime. If damages at trial cannot compensate for continuing infringement pending full trial, interim injunctions pending full trial may be available. Thus in practice they tend to be limited to the pharmaceuticals sector where the massive and rapid price erosion on generic entry can never be reversed.

Injunctions

An interim injunction must be sought without delay and the claimant must give a cross-undertaking as to the damages which will be payable to the defendant if the claimant loses at full trial. Assuming no grant of an interim injunction but success at trial, damages are likely to be awarded to cover this period of infringement. The decision in *Les Laboratoires Servier and another v KRKA POLSKA SP. Zo.o [2006] EWHC 2453 (Pat)* is of particular interest because the judge granted the interim injunction even though he found the patent to be of questionable validity. In *Les Laboratoires Servier and another v Apotex Inc and others [2008] EWHC (Ch) 2347* the High Court assessed the amount payable on a cross-undertaking given when the patentee was granted an interim injunction against a generic pharmaceutical manufacturer in respect of a patent that was later held invalid. The decision is important since it sets out an approach to the assessment of compensation for a wrongful injunction to the generic manufacturer who would otherwise have been the first competitor on the market.

In deciding the balance of convenience when granting an interim injunction, it is clear that the burden of clearing the way before the launch of a drug is on the generic competitor rather than the patentee, and that this process must be timed to allow for appeals (see *Novartis AG* v *Hospira UK Ltd* [2013] EWCA Civ 583).

Proceedings only after grant

In the UK and most other countries, a patent action cannot be commenced until the patent has actually been granted. If the prosecution of an application takes a long time this can be detrimental to the commercial position, although (subject to the filing of translations) after the patent application has been published, damages can often be recouped for infringement occurring during the period of prosecution of the application.

Risk of revocation

In order to succeed at trial, the patentee not only has to prove that the infringer is in fact infringing, but will usually also have to resist a defence that the patent is invalid. The patentee will therefore need evidence not only of what the infringer is doing, but must also be prepared to demonstrate the significance of the invention and to distinguish it from any prior art.

Speed and cost of proceedings

Patent litigation typically involves factual issues of a complex nature. It therefore tends to be expensive, not only in terms of legal costs, but also (and often more importantly) in terms of the time which the inventor(s) and senior officials of the company need to devote to the matter, which in major disputes may involve proceedings in parallel jurisdictions. The costs will also depend on the technology involved: taking legal action in respect of an infringing mousetrap will cost much less than in respect of an infringing mono-clonal antibody.

In recent years, the English courts have done much to speed up patent litigation; actions typically come to trial within a year and can cost several hundred thousand pounds on one side. Higher costs do, however, remain the norm, especially in the higher technology fields where the costs on one side can be an two or three times greater.

In *Research in Motion UK Ltd v Visto Corporation [2008] EWHC 3026 (Pat)*, Arnold J ordered the parties to a patent case to provide information about costs incurred to date and estimates of future costs to the end of trial. In a previous case between the same parties, the plaintiff had spent about four times more than the defendant, and the trial judge had held this to be unreasonably disproportionate. Arnold J stated that in these circumstances, the usual after-the-case cost control was insufficient. The decision shows a new attempt by the judiciary to exert control over the costs of patent litigation. It is likely that other patent litigants facing a much wealthier opponent will seek similar orders. It remains to be seen whether these will be followed up by costs-capping orders, but the mood of the patents judges suggests that in appropriate circumstances they would be granted. Costs capping is however automatic in the Patents County Court, which has simplified and streamlined procedures that limit the scope for expense in smaller cases. This limits the recoverable costs to £50,000 for the liability phase and £25,000 for the damages phase, although its damages awards are capped at £500,000. Although its procedures are intended to make patent litigation more accessible to SMEs, there is no restriction as to the nature of those who can use it.

IPO opinions

The PA 2004 also introduced (by adding new sections 74A and B to the PA 1977) a procedure whereby the IPO can be requested by anyone to give an official, but not binding, opinion on the issues of validity or infringement. It was hoped that this would help potential claimants to gauge whether the potential costs of litigation would be merited in a particular case. In order for the opinion to be useful, the cases suggest that it is important to provide sufficient documentary evidence to the IPO.

The opinions issued by the IPO may be subject to review by an IPO hearing officer in certain circumstances, such as where it is argued that by reason of its interpretation of a patent specification, the IPO wrongly concluded that a particular act did not infringe the patent. In *re UK Patent No. 2 394 175 B* and an appeal by DLP Limited in relation to the Decision of a Hearing Officer of the UK Intellectual Property Office dated 26 April 2007 pursuant to section 74B of the PA 1977 [2007] EWHC 2669 (Pat), the High Court accepted that it had jurisdiction to hear appeals from decisions given by IPO hearing officers under the review procedure. However, the court held that the only issue that could be decided was whether the hearing officer had failed to recognise that the IPO examiner had made an error of principle or had reached a clearly wrong conclusion.

Statistics from the first year in which non-binding opinions were available suggested that the procedure was not proving to be particularly "patent-friendly", with relatively few patents being found to be valid or infringed.

In June 2012, the IPO issued a consultation on proposals to extend the opinion service. The proposals included:

- Expanding the questions relating to validity that could be the subject of an opinion to cover all the grounds for revocation of a patent.
- Offering opinions as to whether a supplementary protection certificate was valid infringed.
- Giving the IPO the power to initiate a revocation action against a patent that an opinion concluded was invalid.

In April 2013, the IPO published the responses to the consultation, which were almost completely favourable, and the government stated that it intended to legislate to implement the proposed expansion of the service. In May 2013, the government published the Intellectual Property Bill which seeks to implement the proposals.

Insurance

In the UK it is possible to obtain insurance to cover the costs of instituting or defending patent actions, although it is important to ensure that the degree of cover is realistic in comparison to the legal costs at risk, including those of the other side, as the loser will typically be ordered by the court to pay a large proportion of the winner's legal costs. Such cover does not extend abroad and, as with all insurance policies, the small print needs careful consideration.

Harmonisation of enforcement measures

Previously, the laws relating to the enforcement of patents and other IP rights differed across the EU. However, as part of the European Commission's plan to standardise various aspects of IP law, in April 2004 the EU Council of Ministers adopted *Directive 2004/48/EC* on the enforcement of IP rights (IP Enforcement Directive). The object of the IP Enforcement Directive was to harmonise national laws as to civil remedies relating to the enforcement of those IP laws which have already been the subject of EU legislation and so create a "level playing field".

The IP Enforcement Directive was adopted in the form in which it was approved by the European Parliament in March 2004. Member states had until 2 June 2006 to implement this Directive. The regulations implementing the IP Enforcement Directive in the UK came into force on 29 April 2006.

Exploitation of patents: commercial considerations

(For the most part, the commercial considerations set out below apply to the exploitation of know-how as well as patents, but issues that relate exclusively to know-how are also dealt with under the relevant heading.

General principles

Direct exploitation

The most direct method of exploiting a new technology is for the inventor or the company which owns the invention to put it into practice and sell products or carry out a process which makes use of the technology. However, that may not be practical, particularly for a new venture, or if it involves heavy capital expenditure, nor will it necessarily be the most profitable means of exploitation. The extent of the financial and other resources available to the inventor will be a major factor in deciding upon the appropriate method of exploitation. It is assumed for the purpose of this overview that the inventor is either an individual or a small company, without the financial resources of a large employer for whom direct exploitation may be the preferred route.

Availability of protection

In deciding how to exploit a new technology, a key consideration is the extent to which the technology can be protected by IP rights. Obtaining protection would offer the following advantages:

- It will be much easier to obtain financial backing if protection is obtainable. Many venture capitalists would not consider a project for which no protection was available.
- Protection may offer the possibility of licensing, which can diversify the ways in which the technology can be exploited.
- Protection should offer the inventor some means of resisting competition from third parties.

A brainwave is not enough. It does not entitle the inventor to stop others making use of his idea since, generally, mere ideas are not readily protected, even by the law of confidential information, which requires something more developed, although not as developed as is required by patent law. Some form of IP protection must be obtained and, in the context of inventions, patents and trade secrets (protected under the law of confidential information) are the most likely possibilities. The inventor's brain wave should be examined at an early stage to see whether a patent might be obtained or whether it might be better kept as a trade secret. If the first thing that the inventor did was to send off a communication to a scientific journal, both of these options may already have been lost. If it is decided to keep the idea as a trade secret, part of the price of that decision is that no papers can be published. If, on the other hand, a patent is to be applied for, a paper can be published but the patent application must be made first.

The relative merits of protecting inventions as patents or trade secrets have already been considered. Where exploiting the invention of itself discloses its nature to the public, there is really no option other than to seek patent protection. Otherwise, however, cost is likely to be an important consideration: obtaining patents is expensive, and the filing fees and translation costs for the various countries where protection is sought will be incurred at a relatively early stage, with little scope for deferral. Once patents are obtained, their policing and defence is also very expensive, but the policing and defence of trade secrets can be expensive as well. Rather than trying to do all this himself, a small inventor will often be better advised to do a deal with a larger company which will able to maximise the potential of the relevant technology.

Exploitation through third parties

It is not only individual inventors who may lack the resources to exploit new inventions. This can also be a problem for large companies, either because their resources are already stretched, or because their geographical spread does not enable them to exploit their inventions overseas without finding a local company to do so on their behalf. The following considerations may be relevant in locating a suitable company to exploit the invention and interesting that company in doing so:

- While a well established company in the relevant sector may seem an attractive target, the new technology may compete with the licensee company's own existing technology, and the inventor may be better served by choosing a company with sufficient resources but which is trying to break into that sector.
- Some organisations specialise in technology transfer, and in identifying suitable business partners to exploit a new technology. One of the largest and best known is BTG plc (formerly the British Technology Group), which had its original roots in the exploitation of inventions originating in British universities. Inventors should, however, be wary of certain other organisations that purport to offer "invention brokerage" services, as some of these survive on taking fees from inventors without successful brokerage in return.

Sale or transfer

There are two main types of agreement that an inventor could make with a company chosen to exploit his technology, if it is protectable:

- An outright sale of the technology by assignment to the company.
- The grant of a licence to the company to make use of the technology.

Assignment

Assignment may be appropriate on the sale of a business, or when a rights owner wishes to withdraw from a specific field of exploitation, and enables the rights owner to avoid the ongoing costs of prosecuting and maintaining patents. The inventor will lose his security in the technology, but will at the same time shed the responsibilities of paying for it, while receiving a larger immediate payment.

An assignment of patent rights will usually be a fairly straightforward document, simply identifying the rights to be transferred and the price payable. The somewhat unclear legal status of confidential information means that when "assigning" trade secrets a formal information transfer should be used, coupled with a non-use and secrecy agreement, which has a similar effect to an assignment of a property right.

While an assignment may seem superficially attractive, the following points should be borne in mind by a potential assignor:

- An inventor who assigns his rights in an invention to a buyer will generally cease to be involved in the exploitation of the technology after receiving the purchase price, except perhaps as a

consultant. In the case of an outright sale, the buyer may wish to incorporate non-compete covenants in the assignment, although these must be of reasonable duration (generally, even where there is technology involved, no longer than five years).

- Fixing a price for an assignment of rights in technology can be a gamble. In the case of a new technology, it will be very difficult to determine an accurate value at the time of the sale; the technology may later prove much more valuable and of much wider application than the inventor had appreciated. Alternatively, it may turn out to be a flop. However, the consideration for the assignment need not necessarily be payable on signing: the buyer could agree to pay the price in, say, annual instalments, or all or part of the price could be satisfied in the form of royalty payments which are geared to the actual use of the technology made by the buyer which may far exceed what it would have paid for an outright assignment before the technology was established.
- Taking royalties as a price for the assignment eliminates some of the guesswork involved in valuing the technology, but it does not solve all the assignor's problems. The effect of the assignment is to transfer all rights in the technology to the buyer, so that the inventor will be unable to recover the rights if the buyer proves to be ineffectual in exploiting the technology (and so in generating royalty income for the inventor), dishonest or becomes insolvent. In the case of insolvency, not only will the inventor have lost his rights in the technology for good, but his right to receive royalty income from the exploitation of the technology may be unenforceable against a liquidator. It will also be necessary to define in the assignment what royalties are payable, and in respect of which products (removing the benefit of having a simple document).

Grant of licence

Compared to an assignment, licensing is much more complicated. A licence agreement is complex, as it must deal not only with the rights to be licensed but also with the exact nature of the licence, how royalties are payable and the conditions under which the licence can come to an end.

However, it allows the inventor to retain the security of the underlying rights over which he maintains control, while participating on a continuing basis in the exploitation of the patent through royalty income. The licensed rights will revert to the inventor on expiry of the licence or earlier termination, for example, upon the licensee's insolvency.

If the inventor wants to obtain royalties, it will be preferable for him to grant a licence, because of the greater security provided by a licence, given the risks involved with taking royalties for an assignment. A licence will mean that the inventor will normally be left with the responsibility and cost of prosecuting patent applications and maintaining patents in force, but this may be offset to an extent by requiring the licensee to make a down-payment upon execution of the licence.

Licensing

There is no standard form for a licence, as each deal tends to have its own peculiarities. In theory, an inventor who chooses to license his patent or know-how can impose whatever terms he chooses, but if the licensee is a much larger entity with financial muscle it will be the licensee that can substantially dictate the terms. Even as between parties of comparable

bargaining power, negotiations may fail if the inventor takes an unreasonable position. The choice of licence terms may also be affected by competition law constraints.

Nature of licence

The first question is to determine which of the following types of licence to use:

- **Exclusive.** The inventor agrees not to grant any other licences and not to operate the licensed technology himself.
- **Sole.** The inventor agrees not to grant any other licences but may still operate the licensed technology himself.
- **Non-exclusive.** The inventor can grant as many other licences as he wishes and may operate the licensed technology himself.

The value of a licence depends on the degree of exclusivity conferred: a licensee will not be willing to pay as much for a non-exclusive licence as for an exclusive or a sole one. In relation to a new technology where the licensee will be making substantial capital investment, it will be unlikely to take anything less than an exclusive licence.

Licensing can allow the licensor both to exploit the technology directly himself and at the same time have licensees that are also exploiting it and paying him royalties. For example, a company may well grant non-exclusive licences (with no power to sub-license) in its home territory, where it is familiar with the market and the typical level of royalty rates. However, for an overseas territory, such as Japan, it may appoint a single exclusive licensee, preferably a large company, which will carry out sub-licensing and deal with the task of policing the sub-licensees.

Where two companies own rights to complementary technologies, they may enter into a cross-licence so that each is authorised to use the other's technology. Cross-licences may also be used to avoid litigation between the owners of directly competing technologies. They are, however, likely to give rise to competition law difficulties.

Scope of licence

It may be possible to divide licensed rights between different fields of application. For example, a licensor with a patent for a new drug could licence one company for veterinary medical applications and another for human medical applications, although competition law considerations may restrict the extent to which this is possible.

Licences may deal in different ways with the right to manufacture the licensed products, and the right to sell them (although there is less scope for this with know-how than with patents, as know-how cannot protect commercialised products, but only the process for their manufacture. A patent licence will often appoint an exclusive manufacturer for, say, the UK, but provide for the scope of the licence vis-à-vis sales to be non-exclusive in relation to all countries where patents subsist. This offers good export possibilities to the licensee, but it may not have the UK market to itself as its fellow licensees elsewhere in Europe may choose to export there.

Before the grant of such a licence, consideration should therefore be given to the likelihood of such possibilities, as well as that of parallel importation, which limits the extent to which either the licensor or a licensee can isolate any sales territory within the EEA. This is because of the doctrine of "exhaustion of rights", which means that a patentee is only permitted "one bite at the cherry" by way of royalties within the EEA for use of its patented invention. Therefore, attempts to use a corresponding patent abroad to prevent importation of goods on which the patentee or its licensee has already enjoyed royalties do not work.

A mixed patent and know-how licence may be appropriate where there are doubts as to the strength of the patent protection obtainable. In this case it is essential to include confidentiality provisions in order to protect the know-how.

Level of royalties

A down-payment is typically made when the licence is signed. For an exclusive licence, this ought, at the least, to reflect the level of investment that the licensor has made in the patent, such as professional and official fees. Then, royalties (which may sometimes be set against the down-payment) are payable on products in respect of which the technology is used. In addition to the degree of exclusivity conferred by the licence (see Nature of licence), there are many factors to be taken into account in negotiating an appropriate royalty rate, including:

- The anticipated commercial benefits which the potential technology confers on the licensor. If it is possible to calculate the likely profits attributable to the use of the patented technology, it is common to fix a royalty rate that gives the licensee, which takes the greater risk, the larger share (typically 75%) of such profits.

- Royalty rates vary from one sector to another. Traditionally, those in the pharmaceuticals sector are the highest, those in the electronics sector the lowest, and those relating to mechanical inventions somewhere between the two.

- Research has shown that the royalty rate associated with patented inventions is 10% or less 90% of the time, and 5% or less 50% of the time.

- Different rates can be applied to different turnover bands, often with the royalty rate dropping at higher levels of turnover.

Calculation and structure of royalties

The basis for calculation of royalties may be dealt with in a variety of ways:

- **Arm's length sale price of the licensed product.** This is the usual approach for how the agreed percentage royalty is to be paid, as this is objective, readily ascertainable and adjusts to changes in the value of money.

- **Fixed payment per licensed product.** This option could be coupled perhaps with an indexation provision to take account of inflation. This may be a sensible provision for a licensor also operating in the same market, which fears that a licensee might engage in price-cutting and does not wish to see such price-cutting subsidised by reduced royalties.

Other approaches are possible, such as a share of the licensee's profits from the sale of the licensed product, but these are complex, both to structure and administer, and so are appropriate only for special cases, such as those in which the costs of manufacture are not yet known.

The licensor will be concerned to ensure that the licensee does not sit back and fail to exploit the technology. This will be particularly damaging if the licence is exclusive. Provisions may therefore be included requiring the licensee to pay specified minimum royalties irrespective of the quantities actually sold and to use its best endeavours to exploit the technology. Failure to pay the minimum royalties or to exercise best endeavours could entitle the licensor to make the licence non-exclusive or terminate it.

Royalty "boilerplate" provisions will also be needed, dealing with:

- The frequency of payment and reporting.
- The method of converting turnover which arises in foreign currencies.
- The location where and currency in which payment of royalties is to be made, and taxation and exchange control matters.

Other licence provisions

Other matters that should be considered include:

- The duration of the licence.
- Whether the licensee is entitled to sub-license.
- What happens to improvements made by either side.
- The licensor's rights to terminate if the licensee fails to pay royalties or commits other breaches.
- Policing: a request from the licensee that the licensor should be obliged actively to police the licensed patent, possibly to the extent of commencing and financing full-scale patent litigation, needs very careful thought. From the licensor's point of view, it is usually better to leave such matters for discussion between the parties when an infringer appears.
- Validity: licensors should decline any request for a warranty that a patent is valid; the fact that a patent has been granted is no guarantee that it is valid.
- The general terms of the licence must correspond with the rights that are being licensed. Competition law difficulties are likely to arise where, for example:
  - the licence continues after the expiry of the patent, or after any licensed know-how comes into the public domain (at which time there is nothing left to license, and so to justify payment of royalties); and
  - there is a tie-in whereby the licensee is required to buy a product from the licensor which is not subject to the patent covered by the licence, or necessary for the exploitation of any know-how covered by the licence.

Exploitation of patents: legal considerations

Confidentiality

Before commencing negotiations, the licensor may require a confidentiality agreement with, or letter from, the licensee. Whether it is appropriate to request this will depend upon the extent to which information is to be disclosed which is properly the subject of a relationship of confidence, such as:

- Features of the technology to be licensed, including unpatented information, or information contained in patent applications which have not yet been published.

- Information of commercial value, such as sales projections.

Heads of agreement

Once the commercial details of the licence have been agreed, the parties may wish to record the significant terms in heads of agreement. However, as they will usually wish to govern their relationship in a more formal way, the question will arise as to whether the heads of agreement should be binding. Given that there are likely to be many points of detail to discuss, it may indeed not be possible to draft heads of sufficient certainty as to constitute a binding contract.

Often the best that can be done is the provision of a lock-out for a period which precludes negotiation with other parties over the subject matter of the licence. As this will tend to tie the hands of the licensor rather than the licensee, the licensor may require the prospective licensee to pay for such a benefit, which will effectively turn the heads of agreement into an option agreement.

Local law

Advice under local law should be taken as to the specifics of a proposed transaction with an overseas party. This could include matters such as:

- The adequacy of protection of the licensor's patent under local laws.
- The existence of conflicting local third party patents, as established by searches.
- The availability of local grants or loans.
- Any particular local law considerations, formalities (including any local registration requirements) or constraints, such as the need for local consents (which may, for example, be made a condition precedent to the grant of the licence).
- Local competition law, and the scope for competition from parallel imports.
- Product liability.
- Notice, and compensation on termination.
- Taxation, currency regulations and exchange controls.
- Enforceability of patents in the local jurisdiction.

Competition

Competition law considerations impose constraints on any patent licence.

Formalities

Assignments

The following formalities apply to assignments:

- **Writing.** Before 1 January 2005, an assignment of a patent or patent application was void unless it was in writing and signed by or on behalf of **both** of the parties to the transaction (section 30(6), *PA 1977*). However, the need for assignments to be signed by assignees (in addition to assignors) was removed by the *Regulatory Reform (Patents) Order 2004 (SI 2004/2357)* as of 1 January 2005. Article 72 of the EPC nonetheless requires an assignment of a European patent application to be signed by both parties, and there is no proposal to amend this.
- **Provisions in assignments.** It is usual to include an express covenant for further assurance in a patent assignment. Such a covenant (that the assignor "will, at his own cost, do all he reasonably can to pass title to such property") is implied in assignments of patents and patent applications which are expressed to be "with full title guarantee" (section 2, Law of Property (Miscellaneous Provisions) Act 1994).

  Patent assignments should also include an assignment of the right to bring proceedings for any previous infringements (section 30(7), PA 1977).
  Express warranties are rare given that the assignee will be expected to check the position on the Register of Patents.
- **Registration.** An assignment should be registered as soon as possible after execution, for two reasons:
  - registration of such a transaction gives notice to third parties, which are otherwise not bound by it unless they actually knew of the transaction (section 33, PA 1977). Therefore a person with an unregistered right could lose priority to a holder of a subsequent inconsistent right; and
  - a patent owner that does not register a transaction within six months of its taking place cannot claim costs or expenses in proceedings for an infringement that occurred before registration of it, unless he can satisfy the court that it was not practicable to register it in that period and that the transaction was registered as soon as practicable afterwards (section 68, PA 1977). The Supreme Court has held obiter that the effect of section 68 was that, where a licensee successfully claimed damages or an account of profits for infringement of a patent, it could not recover its costs insofar as they were attributable to the claim for damages or an account in respect of infringements pre-dating the registration of the licence. However, it could recover costs attributable to such relief in respect of infringements post-dating the registration. The decision concerned licence transactions, but the same principle applies to assignments.

- **Stamp duty.** Stamp duty is not payable on transactions in IP evidenced by documents entered into on or after 28 March 2000. Accordingly, no stamp duty is now payable on documents by which patents are assigned.

Licences

The following considerations apply in the case of licences:

- **Writing.** Although there is no requirement for licences to be in writing, they should in practice be in writing in order to confer certainty about their terms and to enable the parties to secure the benefits of registration.
- **Provisions in licences.** Patent licences will often include a provision whereby each party will, if required by the other, execute a short formal licence for local registration purposes. The benefit

of having a separate document is to make it easier to keep confidential financial terms off any public registers.
Although it is possible to confer upon an exclusive licensee the right to bring proceedings for any previous infringements, this is not usually done in an arm's length exclusive licence.

- **Registration.** Licences, whether or not exclusive, should be registered at the IPO as soon as possible after execution to put third parties on notice. For exclusive licences, lack of registration within six months poses the same risk as for unregistered assignments.

The United States

The US has some significant differences in patent law from that in the rest of the world. These differences bear particularly on the procedural aspects of patent prosecution, although they will lessen when all the provisions of the America Invents Act 2011 (AIA) have come into effect. The following differences are important:

- **First to invent, not first to file.** The position in the US has been that a patent should go to the first person to make the invention. In recent times the US is the only significant country to use the "first to invent" rule. All others give the patent to the first to file, unless it can be shown that the applicant wrongfully derived the invention from the true inventor. Using the first to invent rule means that when there is a dispute between applicants as to who made an invention first (determined in US Patent Office proceedings called "interferences"), an inventor can rely on a date earlier than the priority date if he can show by evidence that the invention was conceived and first reduced to practice at a date earlier than the priority date. This in principle permits the earliest inventor to benefit, rather than the first inventor to file an application.

  Each system has its advantages: the use of official filing dates is simple and allows a reader to know the earliest possible priority date for an invention just by reading the date on the printed specification. First to invent in theory seems to be fairer, but the task of establishing rights to the priority date can therefore resemble the litigation process in terms of the need to produce documents and evidence and can be a very expensive process. Further, any US entity wishing to obtain patent protection in other countries will have to be the first to file in those countries, so there is danger in delaying filing the first application, which will almost always be in the US. The US has now decided to change to the first to file system. The AIA provides that, for all US patent applications filed on or after 16 March 2013, the first to file system will apply. As a result, the AIA also abolishes interference proceedings for those applications. Instead, it provides for a derivation proceeding in the United States Patent and Trademark Office (USPTO), in which a claim can be made that the applicant is not entitled to apply for a patent because he derived the invention from the claimant. This proceeding has to be started within one year from the date of publication of the application. Although interference proceedings have not been abolished for applications filed before 16 March 2013, the USPTO has indicated that it may issue rules requiring such interference proceedings to be dismissed in favour of post-grant review proceedings.

- **Prior art.** The change to first to invent under the AIA means that the relevant date for art to be prior to an application filed on or after 16 March 2013 is the first effective filing date rather than the date of invention. Another change that broadens the scope of available prior art is that, for

applications filed on or after 16 March 2013, a non-US public use or sale can be prior art. Previously non-US use or sales were not prior art to a US application, although non-US patents or printed documents were. For prior art purposes, US patents and patent application publications are available as prior art as of any foreign priority date, provided that the subject matter being relied upon is disclosed in the foreign priority application.

- **Prior disclosure.** An inventor's own prior disclosure will not count as invalidating prior art to his US patent provided it is made no earlier than one year before the date of filing in the US. This provision, however, (which is often known as the "grace period") only operates within the US, which means that the inventor will still not be able to obtain valid patents in most countries outside the US. The one-year period is retained by the AIA, although it may only cover a more limited group of types of disclosure. Most other countries, in particular all European states, operate a harsher rule (known as "absolute novelty") which will count against the patent any disclosure or use anywhere before the priority date, including oral disclosures.
- **Publication of patent applications.** The UK, along with most other countries, publishes patent applications at 18 months, so that even though the patent is not yet granted, the public is aware of what is in the pipeline. In the US, on the other hand, there used to be no early publication and a patent application remained secret until it was granted. These long submerged patent applications which suddenly surface are known as "submarines" and can cause havoc in an industry. However, most applications filed since 29 November 2000 are published at 18 months. The main exceptions to this are where the invention is to be kept secret for national security reasons and where the applicant has requested non-publication and certified that no corresponding application will be filed in another country. It is likely that by now there are very few unpublished US applications, apart from these exceptions.
- **Detail of the application.** In all countries, a patent application must contain sufficient detail to allow another skilled worker in the technology in question to be able to repeat the invention. The precise burden of this obligation varies somewhat from country to country and it is particularly stringent in the US, where the importance of a full and detailed description cannot be over-emphasised. In the US, the inventor is also bound to disclose in his specification the best method which he has devised for carrying out his invention (known as the "best mode" requirement). The rationale is that it is not equitable for an inventor to obtain a monopoly while giving the public only second-best methods of using the invention. Until now, failure to disclose the best mode was a ground for invalidation, but this was abolished by the AIA for all actions commenced on or after 16 September 2011.
  The applicant is also under a "duty of candour", requiring the disclosure to the US Patent Office of all prior art known to the applicant that could be material to the decision to grant the patent. Failure to do so may be the basis for an attack on validity, although case law has provided fairly strict tests for what constitutes a sufficient breach of the duty to invalidate the patent.

Reform of the US patent system

The amount and cost of patent litigation in the US has been rapidly increasing in recent years. In particular, the phenomenon of so-called "patent trolls", companies which have no other business than to make money by purchasing and then asserting patents, often with broad and vague claims which they claim to read on widely adopted technologies, has caused pressure for patent law reform. In response, extensive reforms of the US patent law, to bring it more into line with the rest of the developed world and to reduce the costs of litigation, were proposed

first in 2005. After several unsuccessful attempts, patent reform legislation was finally signed into law on 16 September 2011 as the AIA .
Major provisions of the AIA include:

- First-to-file rather than first-to-invent (and consequent abolition of the interference procedure).
- A simplified application procedure, in particular relating to inventor's oaths.
- A simplification of what constitutes prior art (while retaining the one-year grace period).
- Introduction of a 12-month period post-grant for challenging the patent, called patent review (similar to the EPO opposition procedure).
- Replacement of the current *inter partes* re-examination procedure with an *inter partes* review proceeding. This can only be instituted after the post-grant review period has expired and is based on narrower grounds than the current procedure.
- An attempt to define when royalty damages should be based on an entire product and when on the proportional contribution of a patented component, and requiring the court to identify the appropriate basis for the determination of damages in a particular case, which the judge or jury must then use.
- Providing a stricter test for "willful" infringement (which can trigger treble damages) and the procedure for determining this.
- Setting up a 10-year pilot program in which six district courts (chosen from the 15 district courts which hear the most patent and plant variety cases) will designate specific judges (volunteers) to try patent and plant variety cases.
- A transitional post-grant procedure for business method patents.
- The patenting of human organisms and tax strategies is forbidden for any application pending on or filed on or after September 16, 2011.
- A new procedure allowing third parties to submit potentially relevant information in writing to the USPTO while the application is being examined.
- Failure to disclose the best mode will no longer make a patent unenforceable.
- A stricter test for "willful" infringement (which can trigger treble damages) and the procedure for determining this, codifying recent appellate decisions.
- The prior commercial user defence, introduced for business method patents, is extended to include manufacturing processes.
- Amendments to the patent marking requirements making it easier to comply by using a web site, and from 16 September 2011 only the US government my sue to recover statutory damages, and only a person who suffers competitive injury from false marking can sue to recover actual damages.
- Joinder of defendants is limited to where infringement is based on the same transactions or where there are questions of fact common to all defendants. Up to 16 September 2011 defendants could be joined simply because they were all infringing the same patent.