

11 INTELLECTUAL PROPERTY RIGHTS

After studying this chapter, you should:

- *be familiar with the different types of intellectual property that are relevant to information technology and understand their applicability;*
- *understand the rights attached to the different kinds of intellectual property and the way in which these rights can be enforced;*
- *be aware of the issues that are at the root of current debates about intellectual property rights.*

11.1 INTELLECTUAL PROPERTY

If someone steals your bicycle, you no longer have it. If someone takes away a computer belonging to a company, the company no longer has it.

This seems very obvious. In fact, it hides an important and subtle point. If you invent a drug that will cure all known illnesses and leave the formula on your desk, someone can come along, read the formula, remember it, and go away and make a fortune out of manufacturing the drug. But you still have the formula even though the other person now has it as well. This shows that the formula – more generally, any piece of information – is not property in the same way that a bicycle is.

The legal definition of theft involves taking away a piece of someone's property with the intention permanently to deprive them of it. As we have just seen, this cannot apply to a piece of information.

Property like bicycles or computers is called tangible property, that is, property that can be touched. It is protected by laws relating to theft and damage. Property that is intangible is known as **intellectual property**. It is governed by a different set of laws, concerned with **intellectual property rights**, that is, rights to use, to copy or to reveal information about intellectual property.

Intellectual property crosses national borders much more readily than tangible property and the international nature of intellectual property rights has long been recognised. The international law relating to trade marks and patents is based on the Paris Convention, which was signed in 1883. The Berne Convention, which lies at the basis of international copyright law, was signed in 1886.

Rapid changes in technology and the commercial developments that follow them present the law with new problems. The law relating to intellectual property rights is evolving very rapidly and most of this evolution is taking place in a global or regional context. For the UK, European Community law regarding intellectual property rights is critically important, but this law is itself much influenced by developments elsewhere, particularly in the USA.

Software can be very valuable, as the accounts of companies such as Oracle, IBM or Microsoft show. But software is intangible property. The industry can only therefore protect its assets by using intellectual property rights. Hence the importance of the topic for information systems engineers and hence the length of this chapter. Similar considerations apply to films, television programmes and recordings of musical performances.

There are several different rights that relate to intellectual property. In this book, we shall primarily be concerned with those that are relevant to software and the information systems industry. These rights should be looked on as a package; different rights may be used to protect different aspects of a piece of software.

Copyright is, as the name suggests, concerned with the right to copy something. It may be a written document, a picture or photograph, a piece of music, a recording or many other things, including a computer program.

Confidential information is information that a person receives in circumstances that make it clear he or she must not pass it on.

Patents are primarily intended to protect inventions, by giving inventors a monopoly on exploiting their inventions for a certain period.

Trade marks identify the product of a particular manufacturer or supplier.

Any or all of these rights can be used to protect a piece of software. Suppose for example that a company has developed an innovative computer game called Spookcatcher. The game is marketed in packaging that features the name superimposed on the image of a ghost. It comes with an add-on device that the company has invented called a wailer. This attaches to the computer and emits very convincing ghostly wails at suitable points in the action. The software uses some clever data structures developed within the company that make it possible to achieve very high performance.

The law of copyright automatically protects the source code and all documentation of the package from copying. The company might be able to patent the wailer, in which case no one else would be able to produce a similar product. The law relating to confidential information could be used to prevent any employee who left to join a competitor from passing on details of the clever data structure. Also, the name and the logo could be registered as a trade mark to prevent other companies from using it on their products.

In the following sections we shall discuss each of these rights separately and explain the conditions under which they come into existence and what their effects are. The use of internet domain names can conflict with trade marks and, arguably, domain names

are themselves a special type of intellectual property right. We therefore discuss them in the last section of this chapter.

11.2 COPYRIGHT

As the name suggests, copyright is associated primarily with the right to copy something. The 'something' is known as the **work**. There are three categories of work protected by copyright law:

1. original literary, dramatic, musical and artistic works;
2. sound recordings, films, broadcasts and cable programmes; and
3. the typographical arrangement of published editions.

So far as software is concerned, we are primarily concerned with the first category, because the 1988 Copyright Design and Patents Act states that the term 'literary work' includes a table or compilation, a computer program, preparatory design material for a computer program and certain databases. Note the use of the adjective original. Copyright only protects work that is **original** so, even if you did copy the statement $i := i+1$ from someone else's program, you will not have infringed their copyright because there is no element of originality in the statement. However, the development of the internet has made the issue of copyright in recordings, films and other media into a controversial topic that we shall return to in Chapter 14.

As a general rule, the copyright in a work in the first category belongs initially to its author. If the work is jointly written by several authors, they jointly own the copyright. Copyright comes into existence when the work is written down or recorded in some other way. It is not necessary to register it in any way although some jurisdictions, such as the US, provide a mechanism for registering copyright that may make it simpler to take action against any infringement. Although it is not strictly necessary, the copyright symbol (©), followed by the name of the owner of the copyright holder and a year, is very often placed on copyright works (e.g. © Frank Bott 2013). The purpose of this is to draw the copyright status of the work to the attention of anyone who might be contemplating copying the work.

There is one important exception to the rule that the copyright belongs to the author of the work. If the author is an employee and has written the work as part of their job, then the copyright belongs to the employer, unless there is an explicit, written agreement to the contrary. Note that the copyright nevertheless extends to 70 years after the author (or the last of the joint authors) dies, even though it is very improbable that it will be possible to trace their names!

The employer owns the copyright only if the author is legally an employee. If the author is an independent contractor, they will own the copyright unless there is an agreement to the contrary. For this reason, if a company commissions an independent contractor (freelance programmer) to write software, it is important to have a formal agreement regarding ownership of the copyright in the resulting software.

The rights of the copyright owner

Copyright law gives the owner of the copyright certain exclusive rights. The rights that are relevant to software and, more generally, to written documents, are the following:

- the right to make copies of the work. Making a copy of a work includes copying code from a disc into RAM in order to execute the code. It also includes downloading a page from the internet to view on your computer, whether or not you then store the page on your local disc;
- the right to issue copies of the work to the public, whether or not they are charged for;
- the right to adapt the work. This includes translating it – whether from English to Chinese or from C to Java;
- the right to rent or lend the work to the public;
- the right to perform, play or show the work in public;
- the right to broadcast the work or include it in a cable programme service.

In other words, no one can do any of these things without the copyright owner's permission. In some cases, the permission may be implied rather than explicit. The act of making a document available on the web implies that people are allowed to view it over the internet, which involves copying it into the memory of their own computer; however, it does not necessarily extend to allowing people to store copies on their local disc or to print it. The last three of the rights listed above are primarily relevant to books, plays or music but they would be relevant, for example, to any attempt to set up a library of computer games or to making software available in an internet café.

In general, these rights last for 70 years after the death of the author; there are, however, many exceptions and special cases. In the case of joint authors, it lasts until 70 years after the death of the last of them to die. This is far longer than is likely to be commercially relevant for software, even though there is software still in use that was written over 40 years ago.

It is very important to realise that copyright law does not give the owner of the copyright any power to prevent someone else using or publishing identical material, provided they can show that they did not produce it by copying the copyright work. (This is in marked contrast to patent law.) This means that programmers do not need to worry that they will be breaching copyright if they inadvertently produce code that is identical to that produced by another programmer somewhere else – something that can easily happen.

11.2.1 What you can do to a copyright work

The law specifically permits certain actions in relation to a copyright work and some of these are of particular relevance to software.

First, it is explicitly stated that it is not an infringement of copyright to make a backup of a program that you are authorised to use. However, only one such copy is allowed. If the program is stored in a filing system with a sophisticated backup system, multiple backup copies are likely to come into existence.

Secondly, you can 'decompile' a program in order to correct errors in it. You can also decompile a program in order to obtain the information you need to write a program that will 'interoperate' with it, provided this information is not available to you in any other way.

Thirdly, you can sell your right to use a program in much the same way that you can sell a book you own. However, when you do this, you sell all your rights. In particular, you must not retain a copy of the program.

11.2.2 Databases

Copyright subsists in a database if 'its contents constitute the author's own intellectual creation'. There are many databases that do not satisfy this criterion but which, nonetheless, require a lot of effort and a lot of money to prepare. Examples might include databases of hotels, pop songs or geographic data. In order to encourage the production of such modest but useful databases, regulations were introduced in 1997 to create a special intellectual property right called the database right. The database right subsists in a database 'if there has been substantial investment in obtaining, verifying or presenting the contents of the database'. It lasts for 15 years and prevents anyone from extracting or reusing all, or a substantial part of, the database without the owner's permission. Fifteen years is much less than the protection given by copyright but is, in practice, likely to be longer than the commercially valuable life of the database, unless it is updated. If it is updated, however, a new 15-year period will start.

11.2.3 Copyright Infringement

Anyone who, without permission, does one of the things that are the exclusive right of the copyright owner is said to infringe the copyright. There are two sorts of infringement. Primary infringement takes place whenever any of the exclusive rights of the copyright owner is breached. It is a matter for the civil courts and the usual remedies are available: a claim for damages or an injunction to refrain from the infringement are the most likely. Secondary infringement occurs when primary infringement occurs in a business or commercial context. In the case of software, this could involve trading in pirated software or it could involve using pirated software within a business. This is a much more serious matter and may result in criminal proceedings leading to a substantial fine or imprisonment and the confiscation of the copying equipment, as well as civil damages.

Software and other material distributed in digital form is now often protected against copying by some sort of technical device. Inevitably, information about how to

circumvent this protection has appeared on the internet and ready-made devices to do it are available from certain sources. The 1988 Act provides that anyone who publishes such information or makes, imports or sells such devices will be treated in the same way as if they were infringing the copyright in a protected work.

There are some cases in which it may be difficult to demonstrate that copying has taken place. One technique that is sometimes used to overcome this problem is to insert the occasional statement that had no functional effect. If the code were copied, the presence of such statements would be convincing evidence of the fact. So also would be the presence of identical comments, particularly if the comments included a few deliberate spelling errors.

11.2.4 Licensing and assignment

It is very common for the owner of the copyright in a piece of software to license other people or organisations to carry out some of the activities that are otherwise the exclusive right of the copyright owner. The copyright remains the property of the owner but the **licensees** (the people to whom the software is licensed) acquire certain rights. We shall look at this topic in more detail in the next chapter.

The owner of the copyright can transfer ownership to someone else completely. This is known as assignment of the copyright and must be done in writing. In this case, the new owner of the copyright has all the rights that the previous owner had.

11.2.5 Where does copyright law come from?

The primary source of law relating to copyright in the UK is the Copyright, Design and Patents Act 1988; important amendments to the Act were made by the Copyright (Computer Programs) Regulations 1992, the Copyright and Rights in Databases Regulations 1997 and the Copyright and Related Rights Regulations 2003. Many of these amendments were made in order to comply with European Union (EU) legislation and the description of copyright given here is broadly valid throughout the EU. A much larger number of countries (121) have signed the Berne Convention, last revised in 1979. Countries that sign the Berne Convention agree to establish national laws protecting copyright along the lines described above. In practice, details such as the length of time for which protection is provided may vary, as may the enthusiasm with which cases of copyright infringement are pursued.

11.3 EXAMPLES OF COPYRIGHT CASES INVOLVING SOFTWARE

Copyright infringement is one of the commonest reasons for litigation in the IT industry. It is instructive for practitioners, therefore, to look at a number of typical cases in order to avoid inadvertently exposing themselves to such litigation.

11.3.1 Perreira and Oroyan versus US Federal Government

A straightforward but widely reported case of software copyright infringement occurred in Hawaii. (Hawaii is a part of the United States.) The two defendants had been buying Microsoft X-box game consoles, which are normally sold without any game or other

software, the purchaser being expected to buy or rent games software, DVDs and so forth, separately. The defendants were installing hundreds of games, as well as music videos and feature length movies, without the permission of the copyright owners, and selling the resulting modified X-boxes at a considerable profit. The defendants could have faced a penalty of five years in jail and a fine of \$250,000. In the event, when they were arrested in 2006, they chose to cooperate with the FBI's investigators and as a result the penalties were comparatively light: one defendant was sentenced to four months imprisonment, four months of home confinement and three years of supervised release; the other defendant escaped a prison sentence but was sentenced to 300 hours of community service, three months of home confinement and five years' probation.

11.3.2 Cantor Fitzgerald versus Tradition (UK) Ltd and Others

This action, which was heard in the High Court of England and Wales in 1999, concerns a system for inter-dealer bond broking, a somewhat esoteric financial activity in which both Cantor Fitzgerald (CF) and Tradition (UK) are involved. The managing director of CF, Michael Howard, was dismissed and obtained employment with Tradition, taking with him Christopher Harland, a senior member of the team that had worked on CF's system, as well as two very capable junior members of staff, who were formally employed as trainees. It took them less than three months to develop a system for Tradition that was a significant improvement on the CF system but had many features in common with it. The claimants alleged that this must have been a copy of their system. They therefore brought an action for copyright infringement (and breach of confidence – see next section) against Tradition itself and against Howard and Harland.

There are many complicating factors in this action and a great deal of effort was needed to establish the facts of the case. In essence, however, it appears that:

- When the staff left CF, they took a copy of the source code of the system with them.
- After he had left CF, Harland logged into CF's system and took a copy of a substantial data file.
- Howard and Harland initially expected to implement a system for Tradition that would have been very largely a copy of CF's system and intended to conceal this copying.
- The system eventually implemented was very different from CF's system in internal structure and substantially better but contained a comparatively small amount (no more than 4 per cent) of code copied from the CF system.
- The programmers used the copy of the CF system that they had taken both for reference and for testing.

The judge ruled that Howard, Harland and the programmers (who were not sued individually) had infringed copyright and that Tradition, as their employer, was also liable. The extent of the liability was, however, very much limited by the fact that only a small proportion of the system had been copied. Many of the claims made by CF were unjustified.

When CF started the action against Tradition, Howard denied that there had been any copying. This led Tradition to spend a great deal of money on a line of defence that

ultimately had to be abandoned. The judge ruled also that, by not telling Tradition about the copying while the system was being developed, he had failed in his duty to his employer. For these reasons, therefore, Howard was obliged to indemnify Tradition against its costs and damages.

The circumstances of this case are not unusual and it serves to demonstrate how easily behaviour which may seem only marginally dishonest can result in expensive litigation.

11.3.3 Navitaire Inc. versus easyJet and Bulletproof Technologies Inc.

In November 1996, easyJet, a successful UK budget airline, purchased a licence from Open Skies Inc to use its 'OpenRes' ticketless airline booking system. The OpenRes system consists of some 780,000 lines of COBOL. In October 1998, Open Skies Inc was acquired by Hewlett Packard who, in November 2000, sold it on to PRA Solutions, a subsidiary of Accenture, one of the world's largest management consulting companies. It was subsequently rechristened Navitaire Inc. By 1999, relations between the two companies had deteriorated, allegedly because of Navitaire's slowness in responding to maintenance requests and a considerable increase in maintenance charges following its takeover by Accenture. As a result, easyJet commissioned Bulletproof to write a replacement system with essentially identical functionality, including the user interface. This new system, known as 'eRes', went live in December 2001.

Although Navitaire did not allege that either easyJet or Bulletproof had had access to the source code of OpenRes, it was alleged that copyright in a number of aspects of the system had been infringed:

- user keyboard commands (both individually and as a complete set of commands). The judge ruled that these were not protected by copyright.
- screen layouts and icons. The judge ruled that the GUI screens and the icons were subject to copyright and that this copyright had been infringed. However, Navitaire had suffered no loss as a result of the infringement.
- the 'business logic' of the OpenRes system, that is, aspects of the system such as the relationship between the commands and the screens. The judge ruled that all of these had been copied but that they were not protected by the copyright in the source code. Rather, they were features that were commonplace in airline reservation systems.
- the OpenRes database structure. The judge ruled that although a few instances of direct copying of low-level aspects of the OpenRes database structure were infringements, they did not influence the design of the eRes database. Most of what might be regarded as copying was covered by the interoperability right (see subsection above on what you can do to a copyright work).
- that for the purpose of data migration, various infringing interim copies of the OpenRes database structure were made. The judge found these were either covered by the interoperability right or were infringements that caused no loss.

The judge's rulings in this case were important. Navitaire's action was an attempt to lock customers into using its system by making it very expensive to change. A customer who was dissatisfied with Navitaire's service would have been forced to change to a system

that used a completely different approach, creating very heavy training costs, and would have been faced with great difficulties in migrating data.

11.3.4 Oracle Corp versus SAP AG

The interest of this case, a suit between the Oracle Corporation and SAP AG, two of the top four software and services companies in the world, is that it demonstrates how large the sums involved in corporate copyright infringement cases can be.

Oracle alleged that SAP's subsidiary, TomorrowNow, which provides support for older Oracle products at a discount, had infringed Oracle's copyright by downloading documentation and software from its customer support site, using the credentials of Oracle's customers whose support credentials had just expired or were about to. Oracle took its complaint to the US District Court in the Northern District of California in March 2007. Initially SAP argued that it was entitled to download the material, because TomorrowNow had been contracted by those customers to provide third-party support for their Oracle products. SAP subsequently admitted the infringement and the suit was brought in order to determine the damages payable. Oracle argued that the damages should be based on the amount that a customer would have had to pay in licence fees and support charges to be able to access legally all the material downloaded by TomorrowNow. This amounted to some \$2 billion. SAP argued that Oracle had not suffered any financial loss through TomorrowNow's actions and that the damages should be limited to a very much smaller figure, somewhere between \$28 million and \$409 million. In November 2010, the jury in the case awarded damages of \$1.3 billion to Oracle, essentially accepting Oracle's argument that the damages should be based on hypothetical licence fees. Following further procedural wrangling, however, the judge ruled that the jury was wrong to accept the basis of hypothetical licence fees and adjusted the damages to the much smaller figure of \$272 million.

11.4 CONFIDENTIAL INFORMATION

As we have already explained, information cannot be 'stolen'. Nevertheless, it is possible to take action in a civil court to prevent someone from using or revealing information that they have received in confidence. The critical point is that the information must have been given to that person in circumstances that give rise to what is known as an **obligation of confidence**.

There is an implicit obligation of confidence on employees restraining them from revealing confidential information relating to their employer and his business. In many, if not most, instances this obligation will be reiterated in the contract of employment in order to make sure that the employee is aware of this obligation.

It is common for an obligation of confidence to come into existence as a result of a specific clause in a contract. Contracts for consultancy services or the provision of bespoke software will invariably include specific clauses binding each party to keep confidential any information it obtains about the operations or products of the other.

A non-disclosure agreement (NDA) is an agreement that is specifically intended to set up an obligation of confidence. For example, when two companies are discussing

possible collaboration, each side will sign such a non-disclosure agreement to protect the information that they exchange.

Where there is no specific contractual term that creates an obligation of confidence, such an obligation may still exist if a reasonable person, placed in the position of the recipient of the information, would reasonably understand that the information was being given to them in confidence.

The term **trade secrets** refers to novel and effective techniques that companies develop to enable them to produce goods efficiently or perhaps to produce goods that are uniquely attractive to their customers. Secret ingredients in soft drinks or cat foods fall into this category, as might the use of a novel data structure in the implementation of a database management system. Such trade secrets are, obviously, likely to be protected by an obligation of confidence, as are ideas that might be the subject of a patent application. Because the application may be rejected if it can be shown that the ideas had already been made public, it is important that the inventor only discusses them in conditions where an obligation of confidence exists, whether this is through the signing of a non-disclosure agreement or otherwise.

Allegations of breach of confidence were made in the *Cantor Fitzgerald v. Tradition* case discussed in the previous section. It was alleged by the claimants that a novel inter-process communication technique, which the programmers had developed while working for the claimants, constituted a trade secret and that the defendants had breached confidence by using this in their system. The judge ruled that the mechanism was a programming technique of general application. Since it had been developed by the programmers while they were working for the claimants, its disclosure at that time would have been a breach of the employment contract and a breach of confidence. However, it was not a true trade secret, but the kind of useful technique which an ex-employee could not be prevented from using after the cessation of his employment unless there was an explicit agreement to this effect. He also ruled that the use of the *Cantor Fitzgerald* source code as a reference was a breach of confidence.

In practice, not many software companies have the type of trade secrets the disclosure of which would cause them serious damage. However, at any time, nearly all of them will be engaged in sales negotiations with a range of prospective customers and a knowledge of the content of these negotiations could certainly enable a competitor to gain a considerable advantage. If a member of the sales staff of company X gives notice of the intention to leave and join a competitor Y, it would be unwise to rely purely on the obligation of confidence, however clearly this is spelt out in the contract of employment. This is because it might be very difficult to prove that he or she had revealed crucial information that subsequently enabled Y to win a contract that X was expecting to win. For this reason, it is common for sales staff, and other staff who are likely to have sensitive knowledge about sales negotiations, to be employed on contracts of employment that specify comparatively long periods of notice – typically three or six months. When such employees give notice, they are immediately removed from the sensitive work and assigned to such important and worthy tasks as reorganising the company's technical library.

Confidential information is not at all the same thing as professional skill and expertise. If, as part of your employment, you learn to program in Perl or to design using UML you take these skills with you and you are entitled to use them in your new employment.

11.4.1 Public interest disclosure

An obligation of confidentiality is not absolute. A court may rule that it is in the public interest that certain confidential information is disclosed. Although this rules out an action for breach of confidence, it does not prevent an employee who discloses such information from being dismissed. Over the years, there have been a number of well-publicised instances in which employees have disclosed confidential information about malpractice on the part of their employer; they have done this because they felt strongly that the malpractice – be it illegal price fixing or serious environmental damage – should be stopped. For a long time there was nothing to protect such employees, who are often known as ‘whistle-blowers’, from being fired by their employers, often in such circumstances that it was difficult or impossible for them to get another job. Surprisingly, there are also many instances in which employees have been victimised for drawing their employer’s attention to matters that the employer would rather not be told about. The author knows of one instance in which an employee was effectively dismissed for drawing his employer’s attention to a systematic fraud going on in the organisation.

In 1998, Parliament passed the Public Interest Disclosure Act (PIDA), which amends the Employment Rights Act 1996 so as to provide some protection for employees in these circumstances. First, the Act defines what sort of disclosure of information is covered. A ‘qualifying disclosure’, that is a disclosure to which the Act applies, means any disclosure of information which the person making the disclosure reasonably believes shows that one or more of the following has occurred or is about to occur:

- a criminal offence;
- failure to comply with a legal obligation;
- a miscarriage of justice;
- danger to health and safety;
- environmental damage;
- information showing that any of these has been concealed.

A worker making a qualifying disclosure will only be protected against victimisation if the disclosure is made in the right circumstances. In this case, the disclosure is known as a protected disclosure. The rules defining the circumstances in which a disclosure become protected are complicated but they encourage the worker first of all to raise the matter internally – many employers have produced Codes of Practice on Public Interest Disclosure, which specify who the worker should make the disclosure to and the procedures for handling it. In more serious cases, or if the internal route has proved ineffective, it may be appropriate to disclose the information to a professional body or to a public official. Only in the most serious of cases will disclosure to the media be protected.

The Enterprise and Regulatory Reform Act 2013 added the requirement that a disclosure is only protected if the employee reasonably believed that it was made in the public

interest. Further, if an employee is harassed or otherwise victimised by a co-worker for making a protected disclosure, the employer is made liable.

Despite support from government ministers, PIDA has proved ineffective, particularly in the public sector, most notably in the National Health Service. The final report into the care provided by Mid Staffordshire NHS Foundation Trust (the Francis Report, 2013) makes it clear that many staff had been reluctant to voice their concerns about poor standards of care because they had seen how badly staff who did voice such concerns were treated.

Anyone who is considering relying on PIDA when disclosing confidential information would be well advised to consult a lawyer specialising in the area, because the law is confusing and complicated.

11.5 PATENTS

11.5.1 What is a patent?

A patent is a temporary right, granted by the state, enabling an inventor to prevent other people from exploiting his invention without his permission. Unlike copyright, it does not come into existence automatically; the inventor must apply for the patent to be granted. Applying for a patent is expensive and requires a significant amount of effort. However, the protection it gives is much stronger than copyright, because the grant of a patent allows the person owning it (the **patentee**) to prevent anyone else from exploiting the invention, even if they have discovered it for themselves.

Patents were originally intended to encourage new inventions, and in particular to encourage the disclosure of those new inventions. Inventors are often hesitant to reveal the details of their invention, for fear that someone else might copy it. A government-granted temporary monopoly on the commercial use of their invention provides a remedy for this fear, and so acts as an incentive to disclose the details of the invention. After the monopoly period expires, everyone else is free to exploit the invention. And because of the disclosure made by the inventor, it is very easy to do so.

The temporary monopoly also gives inventors a chance to recoup the investments they made during the development of their invention. They could for instance use the patent to monopolize the market, excluding possible competitors by enforcing their patent. They could then set a high price and make a nice profit. They could also request money from others in return for a license to use the invention. The licensing income then provides extra income. Licensing a patent can be a very lucrative business.

11.5.2 What can be patented?

In Europe, the law relating to patents is based on the European Patent Convention. This was signed in 1973 by 27 European countries, and came into force in 1978. The UK's obligations under the Convention were implemented in the Patents Act 1977, although this has now been superseded by the Copyright Design and Patents Act 1988, itself the subject of later amendments. The Act states that an invention can only be patented if it:

- is new;
- involves an inventive step;
- is capable of industrial application;
- is not in an area specifically excluded.

Similar criteria apply in all the countries that are signatories to the Convention.

The requirement that the invention must be new means that it must not have been disclosed or used publicly before the date on which the patent application was made. This applies as much to publication or use by the inventor as by anyone else. Thus if Alexander Graham Bell had demonstrated the telephone or written an article about it before he applied for his patent, the patent would not have been granted.

When a patent application is filed, officials at the Patent Office will search existing patents as well as the literature in the area to see whether the invention has been described before. The searches will not be limited to the literature published in the country where the application is made and they may go back many years. Provided it is publicly available (even if only with great difficulty) any publication describing the invention, no matter how obscure the source, will lead to the rejection of the application.

The requirement for an 'inventive step' means essentially that the invention should not be obvious. In other words, it must not be something that anyone reasonably competent in the field would have produced if faced with the same requirements. Thus, leaving aside any other considerations, a program to print invoices for a company is unlikely to satisfy the requirement for an inventive step, even if no one has ever written precisely the same program before, because any competent programmer would have written very much the same program.

The requirement that the invention is capable of industrial application is simply a requirement that the invention must have a practical application (sometimes referred to as a 'technical effect').



Following the European Patent Convention, the 1988 Act excludes the following:

- scientific theories. The theory of gravity cannot be patented although a machine that uses it in a novel way could be.
- mathematical methods. This means, for example, that the methods used for carrying out floating point arithmetic cannot be patented. A machine that uses the ideas can however be patented.
- a literary, dramatic, musical or artistic work or any other aesthetic creation: as we have already seen, these are protected by copyright.
- the presentation of information: again this is covered by the law of copyright.
- a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer.

The last of these exclusions is the one that is by far the most important for the readers of this book and we shall discuss it at length in the section below on software patents.

11.5.3 Obtaining a patent

Unlike copyright, which comes into existence automatically when the protected work is recorded, whether in writing or otherwise, a patent must be explicitly applied for. Applying for a patent can be an expensive and time-consuming business.

Patents are granted by national patent offices. Inventors who want protection in several different countries must, in principle, apply separately to the patent offices of each country. In practice, there are schemes run by the European Patent Office and the World Intellectual Property Organization (WIPO) that provide some assistance by simplifying the process of applying for patents in several countries simultaneously and by reducing its cost.

The requirement that an invention must be new if a patent is to be granted means that the date at which the patent application is first filed is critical, because it is at this date that the invention must be new. If someone else filed a similar application the day before, then that one will have priority. An initial application to one national patent office is enough to establish priority, provided it is followed within 12 months by the submission of a full patent specification to the national patent offices of all the countries in which a patent is sought, possibly through the European Patent Office or through WIPO.

The full patent specification needs to be prepared by a specialist patent attorney and it can take up to four years for the process of obtaining patents to be completed.

Because computing is a global industry, any patents relating to computing need to be taken out in enough countries to make sure that the market in which the invention is not protected is too small to attract a competitor.

11.5.4 Enforcing a patent

The grant of a patent is not a guarantee that it can be effectively enforced. If you own a patent and you find that someone is infringing the patent you may have to go to the courts to enforce your rights. In the court hearing, the offender can challenge your patent on the grounds that it does not satisfy the criteria listed above. The commonest challenge is on grounds of 'prior art', that is, that the invention is not new. The other likely challenge is that it does not involve an inventive step, in other words, that anyone of reasonable competence in the field could have produced the invention simply by following established practice.

The problem is that enforcing a patent that you own or challenging a patent held by someone else is a time-consuming and expensive process. This means that if a large company finds that a small competitor is producing a product that successfully competes with one of its products, it can threaten action for patent infringement which, although it is unlikely to be successful, the smaller rival cannot afford to fight in court. It also means that if an individual or a small company owns a patent, a large company can challenge that patent or even blatantly infringe it, knowing that the holder of the patent cannot afford to contest the challenge effectively.

11.5.5 Software patents

As we have seen, the European Patent Convention and the Copyright, Designs and Patents Act 1988 both state unequivocally that a patent cannot be granted for a computer program. Despite these provisions, the European Patent Office has been granting patents for software since 1998, as has the UK Patent Office. Patent offices in the different European countries have adopted different policies towards the patenting of software, with the result that there is much confusion about what is and what is not patentable. The result is that there is a conflict between the law and practice, a very undesirable situation. Attempts by the European Commission to create a legal basis for software patents in limited circumstances were rejected by the European Parliament.

It should be said that some large companies have a policy of defensive software patenting. This means that they take out large numbers of software patents, which they have no intention of enforcing. They do this in order to prevent other, unscrupulous companies from taking out similar patents and then suing for infringement.

The question of software patents has proved to be extremely controversial. There are many websites and many organisations dedicated to opposing the idea of software patents. The arguments for and against the patenting of software can be summed up as follows:

On the one hand, it is illogical and unfair that something that would be clearly patentable if implemented completely in hardware should not be patentable if implemented in software. Furthermore, patents encourage investment because:

- A patent is a well-defined asset that allows shareholders and, in particular, venture capitalists to be confident that their investment is producing something of value.
- Patents ensure that the benefit of research and development accrues to the people who financed it.

On the other hand, the IT industry has been immensely productive and successful. Much of its success is due to the efforts of small companies. Patents are not helpful to small companies, which, even if they can afford to file for patents, cannot afford to defend their patents or defend themselves against invalid claims for patent infringement coming from large companies. Anyway, the industry has done well enough without patent protection.

Many of the patents granted are 'bad' patents because they are not new or because there is no inventive step. A very great deal of software was written before software patents were thought possible. This means the records of prior art are very patchy. Although such patents could not be successfully defended in court, the threat of patent litigation, which is always likely to be both expensive and protracted, could restrict the activities of many smaller companies or even force them out of business.

Although patent law is more or less harmonised across the EU, there are important differences between EU patent law and the patent law that operates in the USA, in Japan and in many other countries.

For many years, the US Patent and Trade Mark Office (PTO) refused to grant patents for any invention that involved a computer program. In 1981, however, it was ordered by the Supreme Court to grant a patent on a method for 'curing rubber', the novel element of which was a computer program to calculate the optimal way of heating the rubber. Following this ruling by the Supreme Court, more and more software patents were granted, many of which did not involve any physical process and many of which should have failed the test for novelty. From the 1990s onwards, US patents were also granted for 'business methods', for example, novel ways of conducting auctions. However, a decision of the US Federal Circuit on 30 October 2008 in the case *In re Bilski* called into question the validity of most of these patents; this decision was partially reversed by the Supreme Court in June 2010. The situation remains confused.



Attempts to harmonise the law more widely have been going on since the end of the 1990s, under the auspices of WIPO, a United Nations organisation established in 1970. Little progress has so far been made, although the passing of the Leahy-Smith America Invents Act in 2011 has made major changes to US law and thus removed a number of obstacles to the harmonisation process.

11.6 TRADE MARKS

The law regarding trade marks in the UK is based on the Trade Marks Act 1994, which consolidated and updated existing legislation. The Act defines a trade mark as:

... any sign capable of being represented graphically which is capable of distinguishing goods or services of one undertaking from those of other undertakings. A trade mark may, in particular, consist of words (including personal names), designs, letters, numerals or the shape of goods or their packaging.

Some of the best known examples of trade marks include the name Coca Cola, the characteristic shape of the Coca Cola bottle, and the large M that serves to advertise McDonalds hamburger outlets. Microsoft is a trade mark as are the names of many Microsoft products such as Outlook.

Provision is made for registering trade marks and most trade marks are now registered. In the UK this is done through the UK Intellectual Property Office (UKIPO). The UKIPO maintains a database of registered trade marks and their owners that can be searched over the internet. Trade marks are associated with particular classes of products so that it is quite possible for the same trade mark to belong to several different owners because each has registered it for a different class of product. They are also specific to the jurisdiction in which they are registered, so a trade mark registered in the UK is not protected in the USA unless it is also registered there. There are comprehensive rules limiting what can be registered as a trade mark. For example, trade marks must not describe the service or product being sold nor must they be offensive.

The primary purpose of trade mark legislation is to stop the sale of bogus or counterfeit goods, that is, goods that claim to have been produced by someone other than the actual

producer. There is, for example, a flourishing trade in luxury goods that imitate the products of such well-known houses as Gucci or Rolex.

The 1994 Act makes it an offence to

- apply an unauthorised registered trade mark (that is, a registered trade mark that you do not own or do not have the owner's permission to use) to goods;
- sell or offer for sale (or hire), goods or packaging which bear an unauthorised trade mark;
- import or export goods that bear an unauthorised trade mark;
- have in the course of business, goods for sale or hire goods (or packaging) which bear an unauthorised trade mark.

In other words, anyone who sells or imports goods bearing an unauthorised trade mark, such as Gucci or Rolex, will be in breach of the Act. In most circumstances, the offence will be criminal and punishable by a fine or up to two years imprisonment. However, the trade mark owner can also bring civil proceedings to claim for the financial damage he may have suffered.

Under the General Agreement on Tariffs and Trade (GATT), to which most countries are signatories, countries that do not have suitable laws to protect trade marks (or intellectual property rights more generally) or where such laws are not effectively enforced will face trade sanctions. It is hoped that this will stamp out the flagrant piracy that exists at present.

Trade marks are an effective way of protecting retail package software from piracy. Given, however, that pirated software can be distributed over the internet with no physical packaging, it is desirable to display the trade mark prominently when the software is loaded, as well as displaying it on the packaging. This means that anyone who sells pirated copies of the software will be in breach of the Act and subject to its penalties, since the software will display the trade mark without authorisation. It also means that anyone who applies someone else's trade mark to software they have written will also be in breach of the Act.

Even where a trade mark is not registered, action can be taken in the civil courts against products that imitate the appearance or 'get up' of an existing product. This is known as 'passing off'. However, it is usually better to register the trade mark than to rely on protection under civil law, because the legal action involved in defending it will be much more straightforward.

11.7 DOMAIN NAMES

Internet domain names are ultimately managed by the Internet Corporation for Assigned Names and Numbers (ICANN). ICANN is an internationally organised, non-profit making corporation, with headquarters in Los Angeles; it was founded in 1998. Its main responsibility is ensuring the 'universal resolvability' of internet addresses, that is, ensuring that the same domain name will always lead to the same internet location

wherever it is used from and whatever the circumstances. In practice, ICANN delegates the responsibility for assigning individual domain names to other bodies, subject to strict rules.

Domain names were originally meant to be used just as a means of simplifying the process of connecting one computer to another over the internet. However, because they are easy to remember, they have come to be used as a way of identifying businesses. Indeed, they are frequently used in advertising. Conversely, it is not surprising that companies should want to use their trade marks or their company names as their internet domain names.

The potential for conflict between trade marks and domain names is inherent in the two systems. Trade marks are registered with public authorities on a national or regional basis. The owner of the trade mark acquires rights over the use of the trade mark in a specific country or region. Identical trade marks may be owned by different persons in respect of different categories of product. Domain names are usually allocated by a non-governmental organisation and are globally unique; they are normally allocated on a first come, first served basis. This means that if different companies own identical trade marks for different categories of product or for different geographical areas, only one of them can have the trade mark as domain name, and that will be the first to apply.

The inconsistencies between the two different systems of registration have made it possible for people to register, as their own domain names, trade marks belonging to other companies. This is sometimes known as **cyber squatting**. They then offer to sell these domain names to the owner of the trade mark at an inflated price. It is usually cheaper and quicker for the trade mark owner to pay up than to pursue legal remedies, even when these are available.

In 1999, WIPO published a report entitled *The management of internet names and addresses: intellectual property issues*. WIPO is an international organisation with 177 states as members. The report recommended that ICANN adopt a policy called the Uniform Domain Name Dispute Resolution Policy (UDRP), which includes specific provisions against cyber squatting. This policy has proved reasonably effective. Within two years, over 3,000 complaints had been dealt with by one of the arbitration centres alone, with 80 per cent being resolved.

In 2001, WIPO published a second report, *The recognition of rights and the use of names in the internet domain system*. This addresses conflicts between domain names and identifiers other than trade marks. Examples of such conflicts are the use of personal names in domain names or the use of the names of particular peoples or geographic areas by organisations that have no connection with them. These conflicts are more difficult to deal with than conflicts between trade marks and domain names because the international framework that underlies trade marks is missing in these other cases.

FURTHER READING

The UK Intellectual Property Office contains a great deal of information about intellectual property in a readily accessible form, including the Hargreaves Report:
www.ipo.gov.uk

The two reports on domain name issues produced by WIPO can be found at:
<http://wipo2.wipo.int>

Fairly comprehensive discussion of the cases described in the section on copyright can be found at the following addresses:

Cantor Fitzgerald v. Tradition (UK)
<http://rpc.oxfordjournals.org/content/117/4-5.toc>

Access to the full text is only available through subscribing institutions. A summary of the judgement can be found at:
www.humphreys.co.uk/articles/software_1.htm

Navitaire Inc. v. easyJet and Bulletproof Technologies Inc.
www.5rb.com/docs/Navitaire-v-Easyjet%20Airline%20Co%2030%20Jul%202004.pdf

Oracle Corp v. SAP AG
http://en.wikipedia.org/wiki/Oracle_Corporation_v._SAP_AG

The report of the Mid-Staffordshire NHS Foundation Trust Public Enquiry (the Francis report):
www.midstaffspublicinquiry.com/report

Intellectual property rights in software are highly controversial and it is very easy to be misled by material found on the web. Much of this material, on both sides of the argument, is biased, selective, misleading or just plain wrong. Even when an article is objective and accurate, it will often be misleading because it fails to state explicitly to which jurisdiction it is referring or to what point in time.

A clear statement of the position regarding software patents in the USA can be found at:
www.bitlaw.com/software-patent/index.html

In particular, the following page gives an excellent description of the confused situation as it stood at the beginning of 2012:
www.bitlaw.com/software-patent/bilski-and-software-patents.html