

CHAPTER 1

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INTRODUCTION

This chapter provides an overview of technology transfer in the UK and overseas: the definition of ‘technology transfer’; who is involved in it; how it is funded; who benefits from it; and the role of lawyers in these activities.

Later chapters of this book will consider legal and commercial topics that affect the drafting, negotiation and interpretation of technology transfer agreements. The remainder of this first Part will consider other commercial-practice subjects, including how technology transfer agreements are structured, and the main commercial issues that are addressed in technology transfer agreements. Relevant areas of law, and their practical application to technology transfer agreements, are considered in detail in Part B, whilst Part C considers regulatory and competition law controls on technology transfer. Part D addresses how intellectual property is valued and taxed.

WHAT IS ‘TECHNOLOGY TRANSFER’?

The term ‘technology transfer’ is understood as having specific or wider meanings, depending on the context. The specific meanings include:

- For the purposes of the EC Technology Transfer Agreements Block Exemption Regulation,¹ technology transfer effectively means patent, software protected by copyright (but not other forms of copyright) and know-how licensing.²
- The term is sometimes used to refer to the transfer of up-to-date technology and products from advanced, industrial nations to poorer countries, sometimes on preferential financial terms, and with a view to enabling the poorer countries to take advantage of modern techniques for producing goods and services.

In this book, the term is used in a broader sense, to include any activity where technology is created and/or made available by one organisation to another. This can best be illustrated by explaining how the term 'technology transfer agreement' will be used. This book discusses a wide range of agreements that are concerned with the creation, transfer or exploitation of technology and related intellectual property rights. Research and development (R&D) agreements, and intellectual property licences and assignments, are two of the main subjects covered. At appropriate points the discussion will extend to related types of agreements, including employment contracts (particularly intellectual property and confidentiality terms), sub-contracting agreements, manufacturing agreements, trials and testing agreements, material transfer agreements, and confidentiality agreements. Occasionally, the term 'technology-related agreements' will be used, particularly in the chapter on EC competition laws, where 'technology transfer agreement' might be confusing, in view of the narrower meaning of that term that is found in the Technology Transfer Agreements Block Exemption Regulation.

In some areas, it is not easy to find a clear dividing line between the law relating to technology transfer and the law relating to other activities such as production, distribution or sales. Two examples, both in the context of EC competition law, come to mind:

- Where a distributor sells software that has been supplied to it by another company (the supplier), it may either do so by simply re-selling copies of the software that have been made and packaged by the supplier, or it may be given a master copy of the software and be licensed to make copies, package them (perhaps with a licence to include the supplier's trademarks on the packaging) and sell them on to purchasers. The former method falls outside the category of technology transfer, the latter method may sometimes fall within that category. For EC competition law purposes, the former method may qualify for block exemption under the Vertical Agreements Regulation whilst the latter method may be regarded as technology transfer. Another example in the software

1 Commission Regulation (EC) 772/2004 ([2004] OJ L123/11) on the application of Article 81(3) of the Treaty to categories of technology transfer agreements.

2 See ch 13 under 'Types of intellectual property covered by the TTR'.

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field that is likely to be within the category of technology transfer is where a software author produces a set of tools or a program which needs to be turned into a developed, finished product whether alone or with other programs and the licence to carry out the development also provides the right to sell the finished product incorporating the licensed program or tools, etc.

- Where the parties to a research collaboration project conduct it via a joint venture company, and if that joint venture is a *full-function* joint venture with a *Community dimension*, it will be treated as a corporate merger for competition law purposes and fall to be assessed under the EC Merger Regulation.³

Thus, a comprehensive treatment of technology transfer agreements might require a consideration of the law relating to distribution agreements and the law relating to corporate mergers. Another example arises in the university context, where technology transfer departments are increasingly using ‘spin-out’ companies as a vehicle for technology transfer rather than licensing the technology to an independent, usually large, company. Company law, including company formation, shareholder agreements and investment agreements, is outside the main subject area of this book.⁴

The authors must make a judgement, perhaps arbitrary, as to when a legal subject strays too far from the main theme of the book. At various points the reader will be referred to other sources of information on legal topics that are treated briefly, or not at all, in the text.

ORGANISATIONS INVOLVED IN TECHNOLOGY TRANSFER, INCLUDING RESEARCH AND DEVELOPMENT

Research and development (R&D), and associated technology transfer activities, are conducted by a range of different types of organisation, including:

Large manufacturing companies that typically spend a small percentage of their turnover on R&D, and where R&D may be viewed as ancillary to the main purpose of the business, ie to manufacture and sell products. Traditionally, such R&D activities have often been conducted in-house, making technology transfer agreements unnecessary. In recent years, in-licensing of technology has become more popular, particularly in an area such as pharmaceuticals

3 See ch 12 under ‘If the agreement is horizontal, is it a full-function joint venture with a Community dimension to which the Merger Regulation applies, or is it subject to the Article 81 regime?’.

4 For a discussion of legal and practice issues in venture capital, joint ventures and shareholders agreements, see the *Encyclopaedia of Forms and Precedents*, particularly vols 4, 19 and 9 respectively.

where there is a constant pressure to find new sources of drugs. Sometimes, large companies may ‘drop’ a technology, eg because it doesn’t fit their strategic objectives, and be prepared to license it out.

Technology-based companies, many of them small-to-medium-sized companies, that spend a large part of their turnover on R&D, and where the in-licensing and/or out-licensing of technology is a central part of their commercial activities.

Universities and other research-based charities, which have always been involved in research activities and increasingly are becoming involved in commercially-focused R&D work and in the licensing of their inventions to commercial companies.

These categories are clearly generalisations, but they help to clarify the following discussion. In recent years, technology transfer agreements have become of increasing commercial significance, and growing numbers of lawyers are specialising in this field. This may be partly as a result of an increased willingness on the part of traditional manufacturing companies to contemplate licensing-in technologies – in other words, a move away from the traditional hostility on the part of large companies to technology that was ‘not invented here’. It may be partly as a result of universities becoming more actively involved in commercial activities, including technology transfer. Some of the leading UK universities now have sophisticated technology transfer operations that are generating significant revenues for these universities. Perhaps the most significant factor is the increased scale and activity of technology-based companies and the number of organisations promoting and supporting such activity, including the Russell Group, PraxisUnico and Auril.⁵

The newer, technology-based industries are becoming increasingly important to the UK economy, as evidenced by the number of biotech and e-commerce companies that have joined (and, in some cases, quickly left) the FTSE-100 index in recent years, replacing companies in traditional industries. Many of these high-tech companies do not make or sell products, or if they do their stock market value is not based on a multiple of annual product sales. Instead, their value is based on intangibles such as intellectual property and goodwill. In the case of a biotech company, these intangibles might be patents protecting their drugs in development. In the case of an internet bookseller, they might be a customer base that is predicted to generate future revenues. In both of these examples, the company may not have made a profit since formation, and may not be expected to do so for many years to come.

Put another way, many of these companies are valued on the basis that they possess valuable information and a means of protecting that information,

⁵ See ‘Representative bodies’ below.

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and that they are conducting activities to realise value from that information. For example, a biotech company may possess information about its drug in development, may protect that information through patents, regulatory exclusivity and confidentiality agreements, and may intend to realise the value of that information by bringing the drug to the market or by licensing another company to do so. The internet bookseller may not yet have made a profit, but may have generated goodwill and customer loyalty from users of its website (ie information possessed by customers and others about the company); it may possess a valuable database on its customers, and may realise value from that information in a number of ways, eg by using its website to sell products other than books, and to provide advertising space to third parties.

Thus, many technology-based companies are in the business of generating, using and deriving value from information. One of the more important ways in which they do this is by entering into agreements with third parties to create, transfer and commercially exploit the information – in other words, technology transfer agreements.

DIFFERENT PRIORITIES IN TECHNOLOGY TRANSFER

Universities and research institutions

Universities approach R&D agreements, and other forms of technology transfer agreement, with different priorities and objectives to those of most commercial companies. Other types of charitable research institution, eg a cancer research charity that employs research scientists, will often have similar issues and concerns to a university.

Many UK universities, particularly those engaged in prestigious scientific research, are incorporated by Royal Charter and have charitable status. Their charitable status means that most if not all of the income that they receive is exempt from corporation tax. Tax issues are considered later in this book.⁶ Some types of R&D agreement with commercial companies are consistent with a university's charitable and tax-exempt status, other types are not. An important test of charitable R&D work is whether the results are made available to the public, usually by means of academic publications. If the R&D is conducted under an agreement that includes restrictions on publications, these may cause the research to be regarded as non-charitable and cause any payments received under the agreement to be subject to corporation tax. HMRC and the Charity Commissioners take the view that a delay in publication of up to six months to allow patents to be filed does not prejudice charitable status, but lengthier or wider restrictions may do so.

6 See ch 17.

Even if the payment is subject to the corporation tax regime, there may not be a tax liability. It is understood that many UK universities fail to charge companies the full costs of commissioned research projects. The university may be able to show that the costs incurred in undertaking the work exceed the payments received, ie there is no 'profit' on which tax would be assessed.

A related issue is that academic scientists and their institutions are judged⁷ by the quantity and quality of academic research that they undertake. Some research conducted under agreements with commercial companies qualifies as academic research for these purposes; other commercial research activities do not. Again, a key test is whether the results of the research are published or allowed to be published. A delay in publication of up to a year is generally permitted for this purpose.

These issues may mean that a university is not willing to accept certain restrictions on publications, or if it does it will classify the research as commercial and increase the price for that research work accordingly. In some cases a university may be unwilling to conduct research that is too focused on one company's products or technology.

A related issue that affects the terms of R&D agreements is who is to own and who may use any of the intellectual property that may be generated in the research programme, and on what terms. Some historical background may help to set the scene here.

Traditionally, UK universities have obtained much of their funding from the various UK Research Councils (eg the Medical Research Council (MRC)), and until 1985 there were restrictions on how they could exploit the intellectual property created.⁸ Many UK universities now have technology transfer departments or subsidiary companies which are responsible for the commercialisation of inventions made at the university (whether or not funded by a Research Council). In many cases these departments did not exist prior to 1985. Some of them have grown large in recent years and now run a sophisticated operation; others are still at a relatively early stage of development. As well as simply licensing their intellectual property to commercial companies, there is an increasing tendency for universities to form 'spin-out' companies, transfer items of intellectual property into the

7 Eg by the Higher Education Funding Council (HEFCE).

8 The work of the Research Councils is described later in this chapter. Until 1985, if any commercially valuable technology resulted from research that was conducted at a UK university and funded by a Research Council, the university was expected to commercialise the technology through the National Research and Development Corporation (NRDC)–. In 1985 the Government announced that universities were no longer to be restricted to using the NRDC. If they wished, they could pursue other routes to commercialisation. They were, however, required to report what steps they were taking to ensure the proper commercialisation of such technologies. At around the same time, the NRDC was renamed the British Technology Group (BTG), and a few years later the BTG was privatised (and renamed again to 3i).

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company and obtain venture capital investment to finance the company's activities.

It should also be mentioned that universities are highly political organisations, with powerful vested interests, particularly amongst the senior academic staff and heads of department. It is predictable that a university's level of interest in pursuing an R&D project will not always be related to whether commercially valuable results are likely to flow from the project. Academic priorities may override purely commercial objectives. What is less easy to predict is whether issues other than the scientific merit of an R&D project will influence the university's approach. To put it bluntly, considerations such as 'keeping Professor X happy', or avoiding controversy or bad public relations, may be important factors. University research contracts offices do not always have much influence in these internal debates; it is sometimes easier to ignore the commercial arguments than the political arguments, particularly when any commercial returns from a technology are likely to be several years ahead, and in an institution whose primary purpose is academic rather than commercial. This can be a source of frustration for research contracts staff, who are not always given clear guidance from the university authorities as to what their objectives (for example, when negotiating an R&D agreement) should be.

There is also the issue of academic freedom, which does not arise in a commercial company. University scientists expect and receive considerable freedom as to the direction that their research takes and they are not usually obliged (unless they agree to be obliged) to co-operate in the university's relationships with commercial companies. Some academics wish to avoid contact with commercial companies; others are happy to work with them.

In the medical and biotech fields, public concern about scientific research activities may also influence the university's approach. Such concerns include the use of animals in medical research, genetic engineering, the use and exploitation of materials found in so-called 'third world' countries (whether for reward or not) and whether academics in UK universities should be working with scientists and academics in certain countries. These are all matters that influence the type of work and the participation of academics in universities. In recent years some of these issues have also affected commercial companies.⁹

9 To take one example, in the last decade the issue of use of animals in medical research and testing has become very sensitive, with strong views expressed and high profile campaigns by animal rights campaigners against such testing and research. A case in point is the use of, and building of new, animal research facilities at Cambridge University. Internet searches on this topic (such as YouTube videos and news articles (eg <http://news.bbc.co.uk/1/hi/uk/4177200.stm>) indicate the need to carefully consider these factors, whether to carry them out at all (a consideration for universities) and whether to invest in or participate in such work (a consideration for commercial concerns).

Revenue sharing within universities

Often, technology transfer agreements involve the payment of royalties or other sums for use of intellectual property. Most UK universities have a policy (or even a contractual obligation; this is not always made clear in the university regulations) to pay a share of such payments to the inventor and his department within the university. A typical apportionment of revenue (they do vary from university to university) might be as follows:

Amount received by the university	Percentage paid to inventor(s)	Percentage paid to inventor's department	Percentage retained by university
First £50,000	75%	12.5%	12.5%
Next £200,000	50%	25%	25%
Over £250,000	25%	37.5%	37.5%

At least one UK university pays its technology transfer company a commission on licence revenues received through the technology transfer company's efforts, and this commission (30 per cent) is deducted before the above apportionment is made.

University patents often name more than one inventor; a practical issue for university technology transfer staff in such situations is how any revenues should be apportioned between individual inventors. Sometimes, disputes arise over who should be named as an inventor. It is sometimes difficult to persuade would-be inventors that their contribution, though valuable, is not inventive in legal terms, and that just because you are named as a joint author of an academic paper reporting on a programme of research, this does not entitle you to be named as an inventor of a patented invention made in the course of that research.

The inventor's share may be subject to deduction of income tax and national insurance contributions, although this may partly depend on whether the inventor is an employee of the university and whether the invention is owned by the university as employer or has genuinely been sold by the inventor to the university in return for the revenue-sharing arrangement. (If the latter, then the university may be able to make the payment without deducting tax and NI, but the inventor may find himself/herself liable to charge the university VAT on the amount of the inventor's share, if the annual amounts exceed the VAT threshold.) It is understood that university practice may vary on whether income tax and NI contributions are deducted before the payment is made to the inventor, and on whether the NI deduction is taken from the inventor's percentage share. In at least one case, the university and the inventor share the 10.4 per cent NI contribution equally. (In relation to tax issues generally, see the section on tax later in this commentary[AQ – please substitute x-ref]).

It should be noted that these revenue-sharing policies generally apply to inventions, and are most frequently encountered in relation to patents. They may also apply to know-how and some copyright (eg in relation to computer

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programs). However, there is often a quite separate policy in relation to copyright in books and other materials. Many universities allow their staff to write books and retain any royalty income generated, although some have a different attitude to copyright in course materials as such.

It is now common for universities to set up ‘spin-out’ companies as a vehicle for technology transfer, and to obtain outside investment in the spin-out company. Sometimes, the university will receive shares in the company in return for assigning relevant intellectual property to it. In such situations, the university may agree with the academic inventor that he or she will receive shares in the company instead of an entitlement to revenues generated by the university.

Technology transfer within high-tech companies

There is usually a greater commercial focus in biotech and other high-tech companies than in universities; but the people who are employed to carry out research in such companies may not be very different to their colleagues in academia: indeed, many R&D staff in smaller technology-based companies have experience of working in universities. Senior R&D staff in high-tech companies will generally have greater exposure to commercial issues than their counterparts in universities.

This greater commercial focus affects both the terms sought in R&D agreements and the way in which the activities under an R&D agreement are pursued. For instance, freedom to publish will not generally be a concern of the industrial researcher, or at least not as great a concern as for the academic scientist.

Revenue-sharing policies are rarely encountered in commercial companies: scientists who work for companies are paid a salary and are expected to make inventions for the good of the company. There may be a bonus scheme or other special rewards, but it will not generally be directly related to income received from the invention, and will not usually be anything like as generous as the university revenue-sharing policy. Instead, share options in the employing company may provide the more frequently-encountered (but equally unpredictable) route to financial wealth. Patents Act 1977, ss 39–43 provide for inventors to be compensated by their employer in certain circumstances, but in practice it is rare that an employee will qualify for compensation under the statutory provisions.¹⁰

One of the theories behind setting up small technology-based companies is that the scientists who work in them are more motivated, work harder and

¹⁰ See further ch 4 under ‘Employee inventions’.