



Sprucing Up Patent Law

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Foreword

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1 PRELIMINARY

What should the ideal law on patents for invention look like? No two persons are likely to agree on this, let alone on how to achieve the result. Whilst people might agree on the general framework of such a law, there are real differences about the details.

We start from an international consensus that presumes a patent law with certain features is essential for effective national economic policy and world trade.¹ That law has several goals. Overall, it aims to improve national or regional economic performance and contribute to social welfare. It does so by encouraging innovation through appropriate rewards for new technologies that might not otherwise be invented: adding “the fuel of interest to the fire of genius”, as Abraham Lincoln put it.² It further aims to encourage the financing and distribution of the fruits of innovation; it informs the world of the invention, while encouraging others to do follow-on research, development and further invention; and it ensure that inventions can be widely and freely exploited after a given period.

The device that supposedly achieves all these purposes is the patent: a state grant of a 20-year transferable monopoly to exploit a new and unobvious invention. During this time the invention is protected from unauthorised copiers and from anyone who may have independently developed and marketed the invention without knowing of the grant. The patent-holder is given no positive right to make or exploit the invention: that right exists in common law.³

Without patents, ideas would have little protection. As soon as a product implementing a new idea hits the market, anybody could copy it and compete with the original producer without incurring the initial costs of invention and product development.⁴ A patent thus gives its holder a lengthy breathing-space to enable the invention to be developed and marketed without competition except from non-infringing substitutes. The patent holder can therefore recoup

¹ Agreement on Trade-Related Aspects of Intellectual Property Rights [TRIPs], Including Trade in Counterfeit Goods, appended to the World Trade Organisation Agreement of 1994, section 5 (Patents).

² Lincoln, A. (1859) Second Lecture on Discoveries and Inventions” in Vaver D. (2006), 3 Intellectual Property Rights: Critical Concepts in Law, London: Routledge, pp 31, 36; cf Chiron Corp v Murex Diagnostics Ltd (No 10) (1995) FSR 325, 332 (Pat).

³ Steers v Rogers [1893] AC 232, 235 (HL) by Herschell LC.

⁴ Protection through other intellectual property (“IP”) rights – copyright, design, trade mark, etc – may also sometimes be available.

its initial outlay as well as have the chance to earn a profit commensurate with the value the market puts on the invention.

Granting patents is therefore not an end in itself. Like other laws, patent law must balance the rights and interests of inventors and their employers against rights and interests of at least equal importance, such as the rights of others to work, imitate and compete.⁵ The way patent law reconciles these values has changed greatly over time and continues to vary between countries and legal systems. The constant question is whether the right balance of interests has been achieved or whether it needs adjustment.

We are far from the times decried by Charles Dickens in *A Poor Man's Tale of a Patent* where his fictional inventor asked: "Is it reasonable to make a man feel as if, in inventing an ingenious improvement meant to do good, he had done something wrong?"⁶ The question today may rather be whether we have swung too far in favour of patenting and against other valid interests. On this, the views of policy-makers from developed countries may differ from those in some developing countries, and, furthermore, views held within or among developed or developing countries are far from uniform. History, culture, time, place and vested interests shape thought here as elsewhere. Without empirical research,

⁵ The point made for trade marks in *Joined Cases C-236/08, C-237/08 & C-238/08, Google France v Louis Vuitton Malletier* (ECJ, 22 Sep. 2009) at [102]-[103] by Adv-Gen Póitares Maduro (aff'd (ECJ 23 March 2010, [2010] EUECJ C-236/08) is substantially true for patents. With added references to patents, the passage would read (footnotes omitted): "[W]hatever the protection afforded to innovation and investment, it is never absolute. It must always be balanced against other interests, in the same way as trade mark [or patent] protection itself is balanced against [interests such as] freedom of expression and freedom of commerce.[T]he promotion of innovation and investment also requires competition and open access to ideas, words and signs. That promotion is always the product of a balance that has been struck between incentives, in the form of private goods given to those who innovate and invest, and the public character of the goods necessary to support and sustain the innovation and investment. That balance is at the heart of trade mark [or patent] protection. Accordingly, despite being linked to the interests of the trade mark [or patent] proprietor, trade mark [or patent] rights cannot be construed as classic property rights enabling the trade mark [or patent] proprietor to exclude any other use. The transformation of certain expressions and signs [or practical ideas] – inherently public goods – into private goods is a product of the law and is limited to the legitimate interests that the law deems worthy of protection. It is for this reason that only certain uses may be prevented by the trade mark [or patent] proprietor, while many others must be accepted."

⁶ In *Vaver* (2006). Indeed the tide was turning even as Dickens wrote in 1850. The "fashion" of earlier legal thinking that regarded patents as "a monopoly, and all monopolies are odious, and that therefore you were to intend everything against them" had already been deprecated in *Stevens v Keating* (1847) 2 Web PC 181, 187, by Pollock CB, who added that he thought "there ought [not] to be any leaning one way or the other. A just construction should be put upon the specification and [the court] should find exactly as the thing is, without any reference to the interests of the public, who may be supposed by some as interested in getting rid of a patent, or the interest of the party claiming under the patent, who no doubt has an interest in supporting it."

there is no single “right” answer. What may however be said without empirical research is that patent law’s trajectory since the industrial revolution has been towards a system that grants ever stronger rights to the inventor with ever less and weaker public access to the invention and information about it.

One might expect that a law that abridged fundamental liberties to work and trade would be enacted only on rigorous evidence that justified each abridgment by reference to its net social advantage, but this has not happened. Instead, it has become accepted wisdom that because some patenting was good, more is better, and stronger patents would be better than weak ones, where “weakness” was equated with cheaper and easier public access (for example, through compulsory licensing). With ideas like these, patent offices naturally became swamped with applications – 150,000 in 2008 to the European Patent Office (“EPO”) alone, of which nearly half of the 121,000 examined were granted.⁷

At least, one might expect patent laws to mirror the social and moral values found in the general law. There, those who profit by saying one thing one day and the opposite the next get little encouragement. Those who seek rewards beyond their due, especially when the reward is public and their due is measured by their public contribution, are looked at askance. Those who would torture the language of legal documents into meanings that benefit them but disadvantage others are also turned aside. Unfortunately, modern patent law embraces phenomena the general law repels. Its practitioners can hardly claim surprise if they find the public providing little support to a system that thrives on such exceptionalism. Patent law needs sprucing up.

Where, then, to begin? This paper will focus on UK patent law, mainly the Patents Act 1977, but its comments may apply elsewhere too, given that the Act complies with World Trade Organisation and European patenting agreements. This is not a comprehensive review; for that, a major research project would be required. Instead the paper aims to highlight some aspects of the patent system that would cause a reasonable onlooker – a person perhaps unskilled in any art but willing to accept that a properly tailored and functioning patent system can do good – disquiet or at least concern.

In principle, patent laws should seek to reward (1) the right activity, (2) on the right conditions, (3) to the right extent, (4) with the right level of enforcement,

⁷ www.epo.org/about-us/press/releases/archive/2009/20090317.html.

and (5) the right person. This paper will consider elements (1) to (4).⁸ It will suggest that patents:

- should more precisely match and reward the advance the inventor discloses;
- should not be granted for activities that need no stimulus or are already adequately stimulated by other IP laws;
- should disclose everything the inventor knows about the invention to as wide an audience as possible;
- should catch only activities the patent holder and the public fairly expect to be included with the patent's claims;
- should be enforced in ways that do not unfairly benefit patent holders and unnecessarily restrain industry.

⁸ As to (5), see *Kelly v GE Healthcare Ltd* [2009] EWHC 181 (Pat), Floyd J, holding that two employees had been undercompensated for their contributions to patents worth £50m to their employer, and awarding them £1m and £500,000 – the first judicial award made since the court was given this jurisdiction under the 1977 Act. Time and space prevent this element from being further considered in this paper.

2 THE RIGHT ACTIVITY

The World Trade Organisation's agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) and the European Patent Convention (EPC) require patents to be available for inventions "in all fields of technology".⁹ This seems right in principle: if society wishes to reward and encourage inventiveness, no a priori reason exists to exclude any technology. On the other hand, for both a priori and empirical reasons, patent law should not be over-inclusive: it should neither provide reward when none is deserved nor encouragement where none is needed. Patents should therefore not be granted (a) in broad terms for limited inventiveness, or (b) for material that needs no protection, or for ideas already well protected elsewhere.

UK patent law seems to contravene both these principles.

(a) Broad patents

Patents today are granted for larger monopolies than are warranted by the contribution the inventor may have made. Consider these examples:¹⁰

- A new compound is found which works as a glue. The inventor can claim and monopolise the compound not just for glue but for all its potential uses. If someone else finds a new and unobvious use for it, for example, develops a way to use the compound as a herbicide, that discovery too is patentable¹¹ although both patent-holders must concur before it may be exploited. One may well ask: why should the first patent-holder have power over the second patent's use during the 20-year life of the original patent?
- A new unobvious use for an old, perhaps previously patented, compound is found. Such a discovery can now itself be patented, though it would not have been formerly.¹² One may ask: why should users of the product now be exposed to infringement actions if they reveal a new use for something

⁹ TRIPs art 27.1; EPC art 52(1). The UK Act has not been formally amended to reflect this language but UK courts will no doubt apply the TRIPs formula in the way the EPO interprets it.

¹⁰ All drawn from *H Lundbeck A/S v Generics (UK) Ltd* [2008] EWCA Civ 311, affd [2009] UKHL 12.

¹¹ *Ibid*, EWCA at [55] by Jacob LJ.

¹² *Ibid* at [56], indicating the acceptability of a claim for "the use of that compound in a composition for a particular purpose".

they could previously freely use? Was there any evidence that inventions for new uses for old items were previously undersupplied?

- A known but previously unmade compound is produced by a new unobvious process. The patent can claim all the rights on that compound, however made, even if the inventor's only contribution is the new process. Process claims already allow patent-holders to reach products "directly obtained" by the process.¹³ One may ask why the potentially wider protection a product claim confers, for example, over products "indirectly" obtained by a process, is needed.

The EPC is said to allow and even encourage such claims. These "inventions" have all been considered new, unobvious and adequately disclosed. This view of patenting is partly justified because it is said not to have been "much of a problem" in practice, and its "certainty and pragmatic value has proved itself over the years."¹⁴ Others find the policy point more ambiguous: "as a matter of principle or philosophy or from a utilitarian viewpoint ...[c]onsiderations such as equity, incentivisation to research and development and administrative and legal simplicity can all be deployed."¹⁵ But arguments that the inventor may be getting more than his social contribution (once a critical factor for patent validity)¹⁶ or that such broad patents discourage third party research into better ways of making the patented product or finding new uses for it are dismissed as legally irrelevant. Whether the gap between good law and good policy should be this wide deserves more serious study.¹⁷

(b) Overlapping protection

Multiple IP rights on essentially the same innovation are inefficient and unnecessary, and so should be discouraged. Granting extra protection for what is already adequately protectable - or needs no protection provides a windfall

¹³EPC art 64(2).

¹⁴ Lundbeck, n 11 at [57] by Jacob LJ.

¹⁵ Ibid, UKHL at [45] by Mance L.

¹⁶ Thus, old substances produced by a new method continue to be unpatentable in Canada because they are not themselves considered new or unobvious in law: *Hoffman-LaRoche & Co Ltd v Comm'r of Patents* [1955] SCR 414; *Abbott Laboratories v Canada (Minister of Health)*, 2007 FCA 153. *Hoffmann-LaRoche* also contradicts the assumption in *Lundbeck* (EWCA at [46] by Hoffmann L) that the 1949 UK repeal of a provision that allowed only product-by-process claims for "substances prepared or produced by chemical processes" legalized product claims for old substances produced by a new process. The post-1949 UK practice of allowing such claims was never judicially tested.

¹⁷ See Pila, J. (2009) "Chemical Products and Proportionate Patents Before and After Generics v Lundbeck" 20 King's LJ 489; Kitchin, D (2009), "How much for how little?" 38 CIPA Jo 522, 527.

for the beneficiary at a high social cost. The cost is justifiable if it encourages beneficial activity that would otherwise not occur; but, empirically, that is unlikely to be the case.

IP laws recognise a “no-overlap” principle – the need to avoid multiple IP rights - to some extent. So, for example, trade mark law provisions refuse registration to functional features that are adequately protectable under patent or design law, and copyright law provisions deny general copyright protection to industrial design in favour of more tailored shorter-term protection under sui generis design copyright or design registration. Patent law also recognises a “no-overlap” principle in, for example, its exceptions or exclusions for plant and animal varieties, and “aesthetic creations”, presentations of information and computer programs “as such”.¹⁸ These items are excluded at least partly because they are thought to need no stimulus from the patent system: they are either adequately protected or protectable under other IP laws, or they need no IP protection at all (e.g., natural animal breeding methods).

For the EPO, a “no-overlap” policy appears to conflict with a presumption towards patenting, and any exceptions should be narrowly construed or defined into oblivion. That thinking appears, for example, in the EPO’s treatment of the ban on patenting “computer programs ... as such”, which has been transformed into a positive rule welcoming all programs with some “technical effect”,¹⁹ and brought in 10,000 applications in computing in 2008.²⁰ Whatever the legal merits of this “interpretation”, the result is hard to explain in economic terms. Our reasonable onlooker might well query the need for a concurrent 20-year monopoly, on top of the automatic international copyright protection granted to such programs for 70 years beyond the death of their author. Would this added protection likely stimulate innovation in computer programming that would not otherwise have occurred?

It is true that legal categories elsewhere may overlap and cumulate: a single act can be a tort, equitable wrong or breach of contract, and a victim may sue on one or more of these grounds as he or she chooses. But just because this

¹⁸EPC arts 52(2), 52(3) & 53(b); Moufang, R “Patentable or non-patentable subject matter?” in Drexel, J, Hilty, R. Boy, L, Godt C. & Rémiche, B. (eds), (2009) *Technology and Competition - Technologie et Concurrence: Contributions in Honour of Hanns Ullrich* (Larcier), 277

¹⁹EPC art 52(2)(c) & 52(3); *Symbian Ltd v Comptroller General of Patents* [2008] EWCA Civ 1066; Moufang, previous note. The protectability of computer programmes is currently before the European Patent Office Enlarged Board of Appeal on reference from the EPO President.

²⁰ N 7.

debatable outcome applies elsewhere does not explain why it should apply to IP rights. Some believe that each IP component – trade marks, copyrights, patents, etc – has its own role to play in overall innovation and distribution policy, and that each ought in principle be “kept firmly within its legitimate bounds.”²¹

Legislatures have traditionally ducked IP overlap issues and left the courts to determine boundaries on a case-by-case basis. Unfortunately, the courts have interpreted this legislative silence to mean that overlap is permissible.²² This is particularly true in Europe, where legislative, judicial and administrative responsibilities for IP are fragmented among and within national and European institutions. In patent law, national courts take their patenting cues from the EPO, which has set patent boundaries with little concern over how other IP rights should interact with patents. The result is a policy vacuum that can be filled only by legislatures considering how far porous boundaries in IP statutes further innovation policy.

²¹Beecham Group Plc v Triomed (Pty) Ltd, (2003) (3) SA 639, 643 (Sth Afr SCA) by Harms JA.

²²See, eg, JEM Ag Supply Inc v Pioneer Hi-Bred Int'l Inc 534 US 124 (2001), allowing cumulative patent and plant variety protection in the US. Cf *Mailman v Gillette Safety Razor Co* [1932] SCR 724, denying a Canadian patent for a method of impressing trade marks on reusable razors that would give the applicant the control of the aftermarket in razor blades that trade mark law denied.

3 THE RIGHT CONDITIONS

A key condition of patent validity since the 18th century has been full disclosure of how to perform the invention. This obligation is sometimes treated as the metaphorical price the patent-holder pays in return for the exclusive right, his *quid pro quo*. In this context both the *quid* and the *pro quo* should be right.

The purpose of disclosure is to shift the invention from being a trade secret – which only reverse engineering can reveal, and then not always, especially if it is a process – into the light of day, by laying its teaching on a public register for all to see and learn from. Anyone may experiment with the invention, try to improve it or use the knowledge gained to move in entirely new directions. Technological knowledge is thus distributed widely throughout society competitors and the public may freely exploit and profit from the invention at the end of the patent period.

However, this idealised version of disclosure does not reflect reality today. Patent specifications may have been commonly consulted in the 18th and 19th centuries for their technological knowledge.²³ Fears that French competitors would gain access to their inventions led patent-holders such as cotton entrepreneur Richard Arkwright to muddy their specifications; and other inventors have tried to persuade parliament or patent officials to seal up and keep their specifications away from prying eyes. Today, patent registers are more freely accessible but how far they are actually used as learning tools is less clear. Some industries doubtless scan them to keep pace with developments, but whether the information obtained adds much to the enormous amount of similarly available material that is regularly found at conferences, in journals and in databases is doubtful. Corporate researchers are sometimes advised not to look at patent registries at all, lest their knowledge returns to haunt their employer if it is sued for patent infringement - in the US, an infringer with knowledge of the patent may be liable for treble damages.

How helpful is the public register anyway? The answer is, not as much as it could and should be. What is there is constrained both practically and legally.

Practically, patent-holders prefer to maintain their competitive edge and give as little away as they can in their disclosure. So only what is really necessary to

²³ Logistical difficulties in tracking them down and convincing some suspicious official to reveal them were partly offset by the relatively small number of patents in existence.

enable the invention to be worked will be revealed, and the remainder will be kept back as a trade secret. A patent-holder may undercut disclosure by being either terse or wordy - disclosing so much that the key points are obscured by irrelevant verbiage and data.²⁴

Two additional features reduce the usefulness of a disclosure: (a) the level at which it is written, and (b) the absence of any requirement to disclose the best method of working the invention.

(a) Reading levels

The law requires patents to be drafted to be understood by a very narrow band of readers: those skilled in the art to which the invention is directed. It does not have to be written in terms understandable to ordinary users of the invention or those who may be affected by it. Patients may use patented drugs and physicians may prescribe them but neither is meant to understand a drug patent.

In fact, over time the skilled person in the art has become more specialised; they are now assumed to know more and more about less and less. A patent need therefore tell him, and so everyone else, only very little about how to practise the invention. The patent accordingly loses value as a source of technical information to all, bar a narrow cohort.

In the 19th century, specifications had to be understood not only by the skilled and knowledgeable, but also by the workers who actually implemented the technology.²⁵ The latter class of reader has been progressively eliminated. At the end of the 20th century, the notional reader of a patent for an improved door lintel could still be designated as a builder, admittedly fictitiously, for no real-life builder would have constructed such a lintel or immersed himself in an apparently endless claim.²⁶ But, even if the skilled reader were assumed to be highly literate, he was not supposed to know much patent law beyond the

²⁴ The strategy is as old as Arkwright's patent, which was eventually revoked. Buller CJ said that if, to work the patent "four things only were necessary instead of ten, the specification does not contain a good account of the invention": *R v Arkwright* (1785) 1 Web PC 64, 70 (KB).

²⁵ *Plimpton v Malcolmson* (1876) 3 Ch D 531, 568-9 by Jessel MR.

²⁶ *Catnic Components Ltd v Hill & Smith Ltd* [1982] RPC 183 (HL). The claim appears in full below, n 53.

obvious: that patents should claim no more than they disclose but may (legitimately) claim less or (illegitimately) claim more.²⁷

But this position is rapidly changing in the 21st century, largely through decisions by judges. A patent for building components need now be understood only by a practical designer or manufacturer of the components. Builders are now excluded from the patent's presumed linguistic community.²⁸ Not only is a designer or manufacturer presumed to have more technical skill than a builder, but he or she also now has to be pretty knowledgeable about patent law²⁹ – exactly how much is unclear, but at least enough to understand such arcana as why claims are numbered, why they sometimes appear in two parts, how parent and divisional applications interrelate,³⁰ and whether these features come from a rule of patent law or just the conventional drafting practices of patent agents.

These features have implications for a patent's utility as a teaching tool. Since designers and manufacturers are presumed to know more than builders, they can be told less in the patent. The more detailed instructions necessary to reveal the invention's mysteries to builders can be dropped. The patent can also get away with more mistakes and obscurities, for defects that would pass by or puzzle a builder are acceptable if they would be easily picked up and corrected or clarified by a skilled designer or manufacturer.³¹

²⁷ *Improver Corp v Remington Consumer Products Ltd* [1990] FSR 181, 197 (Pat) by Hoffmann J (the hypothetical skilled man is not “also assumed to be skilled in patent law”); *Merck & Co Inc v Generics (UK) Ltd* [2003] EWHC 2842 at [38]-[39] (Pat) by Laddie J (“[a]lthough he is not deemed to be a patent lawyer, the patentee should be taken to be aware of the primary, and rather different, purposes of the specification and the claims when drafting his patent” and “the notional skilled reader ... is to assume that the patentee is also a man skilled in the art”).

²⁸ *Ancon Ltd v ACS Stainless Steel Fixings Ltd* [2009] EWCA Civ 498 at [11] by Jacob LJ: “the patent is not directed to a geometer – it is directed to a practical designer and manufacturer of fixings for buildings – much the same sort of person as the Catnic patent was aimed at (Lord Diplock described him as a “builder” but really it would be a manufacturer of components to be used by a builder, just as here).”

²⁹ *Kirin-Amgen Inc v Hoechst Marion Roussel Ltd* [2004] UKHL 46 at [78] by Hoffmann L (he must “be assumed to know the basic principles of patentability”), qualifying his view in *Improver*, n 28 ; *Virgin Atlantic Airways Ltd v Premium Aircraft Interiors UK Ltd* [2009] EWCA Civ 1062 at [13]-[15] by Jacob LJ.

³⁰ Matters that even IP law professors may not have known before reading *Virgin*, previous note at [7]-[10].

³¹ Compare the Victorian case of *Plimpton*, n 26, 568-9, where Jessel MR accepted that one of the class of workers to whom the patent was directed, those without formal technical training, would lack “that great scientific knowledge or power of invention which would enable him by himself, unaided, to supplement a defective description, or correct an erroneous description”; cf *Synthon BV v Smithkline Beecham PLC*

(b) No best method requirement

UK patents must disclose inventions in a clear and complete enough manner for them to be performed by a person skilled in the art.³² Only one method of working the invention need be disclosed, even if the inventor has a favourite among the many he has tried. He may disclose the least effective method and keep the others to himself, without jeopardising the patent.

This overturns a long held position in common law, under which inventors had to disclose what they regarded as the “most beneficial” way of working when filing their specification.³³ If the inventor had made a patented article “with cheaper materials than those which he has enumerated [in his specification], although the latter will answer the purpose equally well, the patent is void, because he does not put the public in possession of his invention, or enable them to derive the same benefit which he himself does.”³⁴ This obligation was part of the inventor’s duty to disclose the whole truth and nothing but the truth in his application: otherwise, inventors could “commit great frauds, by concealing the most important parts of their inventions.”³⁵ The requirement also avoided useless duplication of the search costs already incurred by the inventor. It gave the public as much knowledge as the inventor had and put them both on as even a footing as possible to experiment with or improve the invention.

A best mode requirement continued in UK law until the 1977 Act, although since 1949, it had been limited to disclosing only methods that were not publicly known and were patentable in themselves.³⁶ The best mode requirement continues in many Commonwealth countries, including Canada, Australia, and New Zealand, as well as in the United States,³⁷ although recent attempts to reform US patent law have sought to water down or eliminate the requirement.

The reasonable onlooker might find it hard to see why a requirement that compels patentees to show all their cards and point out their best is missing from our law. It is not as if the requirement, as practised elsewhere (and before

³² EPC art 83; similarly UK Act s 14(3).

³³ 35Bovill v Moore (1816) 1 Carp PC 320, 339 (CP); Walton v Bateman (1842) 1 Web PC 613, 622-3 (CP); Plimpton, n 26, 580; W Hindmarch, A Treatise on the Law relating to Patent Privileges for the Sole Use of Inventions (Stevens 1846), 166-7.

³⁴ Turner v Winter (1787) 1 TR 602, 607 (KB).

³⁵ Hindmarch, n 34, 166-7.

³⁶ 38Falconer, D., Aldous WA & Young D (eds) (1971) Terrell on the Law of Patents, 12th ed (Sweet & Maxwell), § 226; cf Firebelt Pty Ltd v Brambles Australia Ltd [2000] FCA 1689 at [46]-[55], affd on other grounds [2002] HCA 21.

³⁷ Patents Act, 35 USC § 102.

1977 in the UK), is particularly burdensome. Typically in those jurisdictions, only what the inventor honestly believes, at the priority date, to be the best method of practising the invention need be disclosed and enabled: only deliberately concealing that method jeopardises the patent's validity. Changes of heart in the light of further research can be withheld; so may better methods known to an assignee or within a corporate applicant, even if the inventor is deliberately sequestered from those with superior knowledge.³⁸

All this still leaves the skilled reader with much to do before putting the disclosure into practice, but it is hard to see why he must now have the added burden of spending time and money wading through second-best modes before hitting on the one that should have been disclosed first. If our skilled reader does this at the patent's expiry, the monopoly is effectively extended by the extra time the experiments take.

³⁸Glaxo Inc v Novopharm Ltd 52 F3d 1043 (Fed Cir 1995); High Concrete Structures Inc v New Enterprise Stone & Lime Co Inc 377 F3d 1379 (Fed Cir 2004); Plimpton, n 26, 582-3.

4 THE RIGHT EXTENT OF PROTECTION

A patent is infringed most obviously by acts that fall clearly within its claims. But other acts can infringe it as well. Suppose a claim for making beef stew involves adding particular spices to chopped meat and vegetables and cooking the contents in a standard oven for 2 hours at 150C. Cooking for 2 hours 1 minute at 149 will no doubt infringe the patent but what if a chef cooked the mixture for 1 hour 45 minutes at 175? A skilled reader might think the claim included such an obvious variant. But what if there was a letter on the patent office file from the applicant, replying to a patent examiner's query, that cooking at 2 hours at 150 is critical and only one or two degrees variation is intended?

None of this tells us conclusively one way or another whether the chef infringes the patent or not. A UK court will not even look at the exchange of letters, even if the chef saw them on the file before he acted, and even if the patent would not have been granted, in that form or at all, had the applicant said that cooking 15 minutes less at a higher temperature lay within his claimed invention. Such results may rightly concern the reasonable onlooker.

(a) Infringing, more or less

How to explain what acts do or do not infringe in cases such as these has perplexed courts and commentators over the years. Although infringement requires no intent or knowledge, a rule that treated deliberate copiers less favourably than innocent infringers might once have been justified in principle, especially in marginal cases: the same act might then infringe the patent if done by a copier but not if done innocently. That, however, is not how the law developed. While such differences today are supposed to affect only remedy, they may also influence liability, especially where juries are involved.

Today, infringement is said to be merely a question of claim construction. Sometimes, a claim will be construed to catch acts that do not, at first sight, fall squarely within it; at other times, it will be construed so that such acts fall outside the claim and so will not infringe. It all depends what construction "combines a fair protection for the patentee with a reasonable degree of certainty for third parties."³⁹ So, patents will be construed, like statutes, "purposively" and "so far as is possible in an imperfect world" in a way that does

³⁹ EPC, art 1 of Protocol to art 69.

not “disappoint the reasonable expectations of either side.”⁴⁰ Too often this mantra becomes an excuse to torture language to mean something beyond a normal reading of the words.

American law deals with the problem of the doubtful infringement differently. First, the claims are construed according to the ordinary and customary meaning of the words; then, if the activity falls outside this language, one asks if the activity contains “elements identical or equivalent to each claimed element” in the patent. If so, it constitutes an infringement.⁴¹ English law also once pursued a similar “doctrine of equivalents”, but it does so no longer. Construing claims to give effect to “what the person skilled in the art would have understood the patentee to be claiming” is what the EPC mandates⁴² and is thought to be a flexible enough formula to catch the borderline act. The EPC method is even touted for its superiority over the American approach: “American patent litigants pay dearly for results which are no more just or predictable than could be achieved by simply reading the claims.”⁴³ But not all Americans are impressed by such assertions. To some, purposive construction is just the doctrine of equivalents in fancy dress. Both doctrines “occasionally recast[s] claims to achieve the overarching purpose (as divined by the judges) of the invention.”⁴⁴

Any test that depends on divining the purpose of the invention or what an inventor objectively intended to claim, without actually saying so, remains inherently uncertain,⁴⁵ but whether more or less uncertain than a substantive doctrine of equivalents is arguable.⁴⁶ Matters are not helped much by the post-2000 addition to the EPC that requires “due account” to be taken of “any element which is equivalent to an element specified in the claims” in determining the extent of protection.⁴⁷ This American-style language is apparently not enough to Americanise the European approach to claim construction:

⁴⁰ Kirin-Amgen, n 30 at [47] by Hoffmann L.

⁴¹ Warner-Jenkinson Co Inc v Hilton-Davis Chemical Co 520 US 17, 40 (1997).

⁴² Kirin -Amgen, n 30 at [43]-[44].

⁴³ Ibid at [44].

⁴⁴ Adelman, M, Rader R & Klancnik, G (2008) Patent Law (Thomson West), p373.

⁴⁵ A point conceded, at least for borderline cases, in Kirin-Amgen, n 30 at [48]. The border may be wider than supposed.

⁴⁶ To complicate matters, the doctrine of equivalents English courts applied spasmodically before 1977 was – unsurprisingly – not exactly the same as the doctrine by that name that American courts now apply.

⁴⁷ EPC, art 2 of Protocol to art 69.

“Although article 69 prevents equivalence from extending protection outside the claims, there is no reason why it cannot be an important part of the background of facts known to the skilled man which would affect what he understood the claims to mean. That is no more than common sense.”⁴⁸

What does all this sophistry, whether American- or English-style, mean in practice? Much uncertainty and unpredictability continue. Hands are wrung over how expensive infringement litigation is, without accepting that current principles of claim construction virtually ensure that even simple claims may take days to argue over in court,⁴⁹ even then producing different readings by different courts.⁵⁰ Such results suit deep-pocketed patent-holders. Uncertainty over their patent’s ambit lets them successfully demand royalties in lieu of litigation: competitors pay up or try to steer clear of shifting parameters. No doubt this constitutes “fairness to the patentee” but is it simultaneously fair to competitors and follow-on innovators, let alone the public which ultimately pays for unclear law?

A doctrine of infringement “more or less” – or let us say, in the current orthodoxy, “purposive construction” – may be a necessary safeguard against sharp practice or sloppy imitation,⁵¹ as when 2 hours 1 minute heating time at 149 is deliberately or carelessly substituted for the claimed 2 hours at 150C in our example of the chef and the beef stew. This obvious need for modest flexibility hardly justifies the present expansive and uncertain doctrine that yields results that are hard to justify in logic or language.

Consider, for example, the leading English case, *Catnic Components Ltd. v. Hill & Smith Ltd.*⁵² In this case, the court construed a claim to a door lintel that featured a “vertically” extending support as covering a leaning support. The

⁴⁸ *Kirin-Amgen*, n 30 at [49] by Hoffmann L.

⁴⁹ *Merck*, n 28 at [32]-[34] & [82] ff, where Laddie J criticized a 4-day trial on a simple chemical process claim which had by then run up some £850,000 in costs.

⁵⁰ *Improver*, n 28, where the same consumer device was found not to infringe a European patent in the UK and Hong Kong (for different reasons), but infringed in Germany and elsewhere in Europe, all courts supposedly applying the same test: *PLG Research Ltd v Ardon Int’l Ltd* [1995] FSR 116, 129-33 (CA). The problem continues: *Pozzoli SpA v BDMO SA* [2007] EWCA Civ 588 at [72]-[73], where the same act infringed a European patent in Germany but not the UK or France. The solution to such different results is said to be a single European court to try infringement; but this just sweeps the problem under the one carpet.

⁵¹ Eg, *Henricksen v Tallon Ltd* [1965] RPC 434, 445 (HL), avoiding a construction that would simply “invit[e] infringers to take the invention but make it work inefficiently.”

⁵² N 27. The claim in full (with the relevant words in bold and key word capitalised) read: “1. A lintel for use over apertures in cavity walls having an inner and outer skin comprising a first horizontal plate or part adapted to support a course or a plurality of superimposed units forming part of the inner skin and a

court said that “vertically” meant “substantially vertically”. Eight degrees, presumably either way, was acceptable. A support angled at between 82 to 98 would therefore come within the patent. The court asserted that a reasonable reader, who knows about building and tolerances, would have understood “vertical” in this sense. So a copier, who knew nothing of the patent and changed the support angles by 6 to 8 off the vertical for partly practical reasons, was held to be an infringer.

Patent practitioners and judges almost universally acclaim this decision but its reasoning seems little better than the building practices it describes. The skilled reader – a hypothetical literate builder who could accurately parse and comprehend the 198-word sentence and two commas that comprised the claim – was supposed to interpret the language the way the court did. He was expected to reach the same interpretation even where the drafter of the patent showed himself well able to claim tolerances when he wanted. In the claim, the lintel’s facing support was described as “extending downwardly and forwardly,” and another member was described as being “substantially parallel to the first and spaced therefrom in a downward vertical direction.”⁵³ Might not our reasonable builder reader hesitate at this? Might he not think there was some deliberate significance in the contrast between “vertically” for one side of the support, and “downwardly and forwardly” and “in a downward vertical direction” for the other?⁵⁴ If two elements of the same structure can have varying degrees of tolerance, maybe the third element has to have hardly any tolerance at all to avoid the weakness flowing from cumulating three sets of broad tolerances. Why else did the drafter not use “substantially vertically” or another phrase implying tolerance? Unsurprisingly, an Australian court read similar contrasting language, in a specification for designing a boat hull, as meaning that the percentages in which the design parameters were expressed were supposed to be exact. Variations of plus or minus two percent were outside the claim, purposively construed according to Catnic principles.⁵⁵ Sic transit Catnic.

⁵³ Like “vertical,” “parallel” too can be read as substantially where the drafter shows he is using it in a popular sense rather than geometrically, e.g., for hair clippers with teeth cut and “pointed like a comb in the parallel portions”: *Clark v Adie* (No 2) (1877) 2 AC 423, 427-9 (HL).

⁵⁴ *56Minerals Separation North American Corp v Noranda Mines Ltd* (1952) 69 RPC 81, 93 (P.C.) by Reid L: “[the reader] would see that the patentee was well able to use the term ‘alkali metal’ when that was what he meant, and he would naturally assume that when the patentee used another word he intended a different meaning.”

⁵⁵ *Austal Ships Pty Ltd v Stena Rederi Akt* [2005] FCA 805 at [120]-[135]. The point arose where an opponent seeking to deny the grant of the patent said that prior art fell within the claims even though the

The Catnic court's disparagement of this line of argument as "the kind of meticulous verbal analysis in which lawyers are too often tempted by their training to indulge"⁵⁶ was a cheap shot, especially coming from a judge (Lord Diplock) noted for his meticulous analyses. Whatever can be said against someone who can assemble and parse a single meaningful under-punctuated 198-word sentence, a charge of not being meticulous in the use of language seems misguided. The writer of such prose demands similar qualities of the readers he targets: the patent "is not a document *inter rusticos* for which broad allowances must be made."⁵⁷ The writer knows his readers are not hyper-literate builders with a masochistic penchant for patent perusal, but instead a combination of expert engineer, patent agent, lawyer and, perhaps ultimately, judge itching for a linguistic challenge. They may not be meticulous readers but they are certainly careful ones.⁵⁸

Ultimately, patent-holders and their advisers choose how to write their own claims. They can and do pepper them with general language where the nature of the invention warrants it: "substantially" this and "approximately" that, tolerances here and options there. Whoever fails to write claims in "clear and concise" language⁵⁹ to cover an activity has only himself and his advisers to blame. He should not ask a court's help to construe ("rewrite") claims *ex post facto* to cover something not earlier thought of or expressed.⁶⁰ As a wise judge put it in the 1930s: "It is not sufficient for the inventor to discover his gold mine – he must also peg out his claim. Outside the pegs, the gold, if it be there, is free to all."⁶¹

(b) Statements during the application process

Let us return to our cooking patent, the hotter and quicker chef, and the exchange of letters in the patent office which, if admitted, would show pretty conclusively that the chef was not an infringer, even though the average skilled reader in the art might say that deviations like this could fall within the claim. In the US, the chef could have the exchange admitted to limit the patent to two

⁵⁶ Catnic, n 27 at 243.

⁵⁷ Kirin-Amgen, n 30 at [34]. *Inter rusticos* means literally 'among rustics', in other words among the poorly educated or illiterate.

⁵⁸ Ancon, above note 29 at [5].

⁵⁹ EPC art 84; UK Act s 14(5)(b).

⁶⁰ Cf Brinkhof J (2002), "Is There a European Doctrine of Equivalence?" 33 IIC 911, 923 (equivalents should be protected only under "extraordinary circumstances," eg, where "developments were not predictable at the time when the claims were made [since] in such a case, there is nothing to reproach the applicant").

⁶¹ *Marconi's Wireless Telegraph Co v Phillips Lamps Ltd* (1933) 50 RPC 287, 303 (Ch).

hours cooking time at 150. There, a theory of “file wrapper” or “prosecution history” estoppel prevents applicants from proffering a broader interpretation of their invention or claims than they asserted in the patent office.⁶² So, the chef would not infringe patent law in the US, but in the UK and many other countries he would.⁶³⁶⁵

Yet, nothing in the 1977 Act, the EPC or TRIPs compels that conclusion: the rule is judge-made. It harkens back to a formalistic past when a document could not be affected by statements made before or after it was finalised, and relevant evidence about such statements was excluded largely because juries might be unduly swayed by it. The continuing grip of this exclusionary rule on patent enforcement is unjustified. True, even now, judge-made law in the UK continues to insist that prior informal statements cannot change the meaning of a later formal contract,⁶⁴ but such statements are no longer dismissed out of hand as irrelevant. Today, even oral statements can prevail over later formal documents such as leases where justice requires.⁶⁵ So why does justice not require such a thing here?

It cannot be because what an applicant tells the patent office is irrelevant; it plainly is relevant, as the US courts recognise. The strongest reasons seem to be pragmatic: the time and cost of investigating the file would outweigh the likely benefits,⁶⁶ and admitting the applicant’s statements would “undermine the public notice function of the claims, and increase uncertainty as well as fuelling

⁶² See, eg, Schechter, R & Thomas, J *Intellectual Property: The Law of Copyrights, Patents and Trademarks* (West, 2003) 491 ff.

⁶³ *Kirin-Amgen*, n 30 at [35], [39]-[40] & [44]; *Baycol Pty Ltd v Foamex Polystyrene Pty Ltd* [2005] FCA 145 (Can); *Ranbaxy Laboratories Ltd v Warner Lambert Co* [2006] 1 IR 193; cf *Rohm & Haas Co v Collag Ltd* [2001] EWCA Civ 1589 at [40]-[42] favouring admission in some circumstances. An attempt to amend the EPC in 2000 in line with US law failed.

⁶⁵ *Kirin-Amgen*, n 30 at [35], [39]-[40] & [44]; *Baycol Pty Ltd v Foamex Polystyrene Pty Ltd* [2005] FCA 145 (Can); *Ranbaxy Laboratories Ltd v Warner Lambert Co* [2006] 1 IR 193; cf *Rohm & Haas Co v Collag Ltd* [2001] EWCA Civ 1589 at [40]-[42] favouring admission in some circumstances. An attempt to amend the EPC in 2000 in line with US law failed.

⁶⁴ The arguments for a more flexible rule made by Nicholls L in “My kingdom for a horse: the meaning of words” (2005) 121 LQR 577, 587-8, were rejected in *Chartbrook Ltd v Persimmon Homes Ltd* [2009] UKHL 38; see eg *ibid* [32] & [41] by Hoffmann L; a result that has not met universal acclaim: eg D McLauchlan, “Interpretation and Rectification: Lord Hoffmann’s Last Stand” (2009), NZ Law Review.

⁶⁵ *Bolkiah v State of Brunei Darussalam* [2007] UKPC 63 at [47] by Mance L (concurring). Technically, the meaning of the latter document is unchanged, so the purity of contract dogma is maintained. Instead a collateral contract or estoppel is constructed to bar reliance on the contradictory language in the formal document.

⁶⁶ *Kirin-Amgen*, n 30 at [35] by Hoffmann L: “life is too short for the limited assistance which [the patent file] can provide”.

the already overheated engines of patent litigation.”⁶⁷ But these arguments apply equally to hard-fought contract claims, including those where the document is publicly filed. Lawyers already comb patent office files for gleanings to use at trial to support their client’s case; so arguments about cost savings are illusory. Viewed from both a defendant’s and public perspective, exclusion works an injustice: patent-holders can blow hot and cold and profit from statements that deliberately contradict ones that helped ease their application through to grant. Competitors are excluded from an activity the patent-holder accepted was outside his power, a cost that seems as serious as the transaction costs surrounding admission. Ultimately, exclusion covers up what in hindsight were probably strategic mistakes in the application process.

⁶⁷ Free World Trust v Électro Santé Inc [2000] 2 SCR 1024 at [66] (Can SC), by Binnie J.

5 RIGHT ENFORCEMENT

Enforcing patent rights is much like enforcing remedies for any other economic tort.⁶⁸ The comments of an experienced English patent judge are pertinent:

“[I]n 30 years’ experience of litigation in [patents], I have never come across a defendant who engaged in infringement knowing that what he was doing was wrong. They all thought that they either did not infringe or the patent was invalid or both. Most of those who lose think that they have been unlucky or worse. I never came across a defendant who, having lost, expressed any desire to take the risk of infringing again. The costs of patent litigation are too high. There is, I think, only one reported case of such an infringer.”⁶⁹

These words appropriately remind us that enforcement rules must work fairly for infringers, not just patent-holders. Two features of injunctions in patent cases therefore deserve mention.

(a) Interim injunctions: the undertaking

Interim injunctions are rightly available in patent cases though at least one aspect of this practice is unsatisfactory. Courts usually require claimants, as a condition of being granted the injunction, to undertake to compensate the defendant against losses caused if the claim ultimately fails or is discontinued. This condition, imposed in justice to the defendant, sometimes imposes injustice on him. A patent-holder’s gain from keeping a defendant off the market may be more, sometimes very much more, than the defendant’s loss, as the calculating patent-holder will know. He could be content to keep a defendant wrongly off the market since he will still come out ahead financially. Just as patent-holders can opt for a defendant’s gains instead of their lost profits if infringement is proved, so a defendant should be entitled to opt for a patent-holder’s gains instead of the defendant’s losses on a wrongly granted interim injunction.⁷⁰ A statutory amendment may be needed to give courts discretionary power to require the undertaking to cover the greater of the claimant’s gain or the defendant’s loss, as the defendant elects. Meanwhile,

⁶⁸ A 2004 directive seeking to harmonize principles across the EC and EEA also applies to patents but adds little to UK law (Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights).

⁶⁹ *Coflexip SA v Stolt Comex Seaway MS Ltd* [1999] EWHC Pat 258 at [33] by Laddie J.

⁷⁰ 72A possibility mooted in *Les Laboratoires Servier v Apotex Inc* [2008] EWHC 2347 at [10] (Ch) by Norris J

judges should consider this factor as part of the balance of convenience when deciding whether to grant an injunction in the first place.

(b) Damages instead of injunction

In England, final injunctions are usually granted against patent infringers to prevent possible future infringements, although an injunction may be refused at the court's discretion with damages awarded instead. To repel the injunction in cases other than those of extraordinary delay, acquiescence or triviality, the defendant must usually show oppression or that enforcement would be "grossly disproportionate" to the right protected, although other grounds are not positively ruled out.⁷¹

No recent case of refusing an injunction in a patent case is reported.⁷² Thirty years ago, one court did muse that depriving the public of a life-saving drug might be an exceptional case,⁷³ but a later court seemed unmoved by the example. Instead it equated refusing an injunction with granting a compulsory licence, and thought the Patents Act provided the only grounds on which such a licence should be granted. The judge seemed hard pressed to think of any case, other than the usual examples of long prejudicial delay or acquiescence, that would result in an injunction being refused – and certainly not if substantial damages were likely awardable in lieu.⁷⁴

By contrast, the US Supreme Court has rejected the view that only exceptional circumstances warrant refusing an injunction against further infringement. Instead, the equities of each individual case must be considered before a court decides whether damages or an injunction is more appropriate. In practice, an injunction may still be likely, but not routine. To get it, a successful plaintiff must show (a) irreparable injury; (b) inadequacy of damages to compensate it; (3) the balance of hardships between the parties in favour of an injunction; and (4) no contrary public interest.⁷⁵

⁷¹ Fisher v Brooker [2009] UKHL 41 at [18] (Walker L) & [74] (Neuberger L) (copyright); Virgin Atlantic v Premium Aircraft [2009] EWCA Civ 1513 at [24] & [25] by Jacob LJ. See the list of criteria for grant or refusal in Regan v Paul Properties Ltd [2006] EWCA Civ 1391 at [36], approved in Watson v Croft Promo-Sport Ltd [2009] EWCA Civ 15 at [46] with some changes.

⁷² See Coflexip, n 72 at [7]-[10], by Laddie J.

⁷³ Roussel-Uclaf v GD Searle & Co Ltd [1977] FSR 125, 131 (Pat) by Graham J.

⁷⁴ Chiron, n 2, by Aldous J (who had been counsel in Roussel-Uclaf, previous note).

⁷⁵ eBay Inc v MercExchange LLC 126 S Ct 1837 (2006).

The case affirming these principles concerned the on-line auction site eBay, which had been enjoined through a court injunction from deliberately infringing a patent for conducting on-line sales. When the remedy issue came back to the trial court, after conducting the analysis the Supreme Court had mandated, it awarded damages instead of an injunction. Among the factors influencing it were the fact that the patent-holder and eBay were not competitors, the patent-holder's interest was only monetary, the patent lay in the troublesome area of business methods, and the patent-holder had not asked for a pre-trial injunction but had instead told the media it would not attempt to enjoin the defendant. In sum, the court thought it better not to disrupt a major economic contributor than to assist a patent-holder who was just after royalties and was not interested in continuing to develop the invention.

On current principles, an English court would struggle to reach the same result.⁷⁶ Whether the current principles on injunctions, developed in Victorian times mainly around cases of nuisances on land, respond well to the case of patents, is very much an open question. Reorienting those principles would most likely need a statutory amendment.⁷⁷

⁷⁶ Cf *Cantor Gambling v GameAccount Goba Ltd* [2007] EWHC 1914 at [100]-[113] (Ch) by D Alexander QC, Dep J (copyright and licence breaches).

⁷⁷ Eg, as is done in the case of interim injunctions in free expression cases by s 12 of the Human Rights Act 1998.

6 CONCLUSION

This paper has not attempted to propose root and branch reform of the patent system. The shortfalls it has discussed give an idea of the work needed for such a project. The reforms it has suggested are meant to attune the patent system more closely with widely accepted social values, without undermining the goal of appropriately stimulating and rewarding invention. Patenting can hardly claim legitimacy or public support if its practice does not match its promise of providing fair public reward in return for fair public disclosure.