

Alice in Euroland

Lord Hoffmann

In the past six years, the United States Supreme Court has four times visited the question of the patentability of an invention: *Bilski v Kappos* in 2010, *Mayo v Prometheus* in 2012, *Myriad Genetics* in 2013 and *Alice Corporation v CLS Bank* in 2014. The function of a Supreme Court is to settle important questions of law and this ceaseless activity suggests that the Court has not yet done so. So it seemed to me that it might be interesting to look at how a European court would have approached the questions raised in those four cases and whether any lessons could be learned. I am not on the whole an enthusiast for comparative law. Citation of foreign cases is generally a form of showing off; a rhetorical flourish to support a decision which has been already made on other grounds. So I am rather sympathetic to the views of the late Justice Scalia on these matters. But his views are not shared by Justice Kennedy, who wrote the opinion of the Court in *Bilski v Kappos*, while Breyer J, who wrote the opinion in *Mayo v Prometheus* and signed an importance concurrence in *Alice Corporation*, is a positive enthusiast for examining how these things are done abroad. In any case patent law is, I think, a subject in which there is much to be gained from looking at how other systems have developed because they all come from the same roots. Everyone agrees that United States patent law, starting from the Patent Act 1793, was based on principles developed in England in the seventeenth and eighteenth centuries and section 101 of the US

Patent Act has obvious resemblances to section 6 of the Statute of Monopolies 1623, which is still in force in Australia and New Zealand. The European Patent Convention was heavily influenced by English law. So we are all part of the same family.

The first lesson on how you construe an old patent statute comes from Australia. It is even more pertinent to the United States than to the United Kingdom, because we no longer have to apply the Statute of Monopolies, whereas in Australia and the United States, the basic statutes which say what is patentable date from 1623 and 1793 respectively. The words which defined what was patentable in 1623 were “any manner of new manufacture”. The Australian High Court¹ gave some very sensible advice about how to construe this provision:

“It is an inquiry not into the meaning of a word so much as into the breadth of the concept which the law has developed by its consideration of the text and purpose of the Statute of Monopolies. It is therefore a mistake, and a mistake likely to lead to an incorrect conclusion, to treat the question whether a given process or product is within the definition as if that question could be restated in the form: "Is this a manner (or kind) of manufacture?" It is a mistake which tends to limit one's thinking by reference to the idea of making tangible goods by hand or by machine, because "manufacture" as a word of everyday speech generally conveys that idea. The right question is: "Is this a proper subject of letters patent according to the principles which have been developed for the application of s. 6 of the Statute of Monopolies?"

So you do not try to construe that 1623 Act or the US Patent Act as if the legislature had chosen those words yesterday. You treat the process of interpretation as it has evolved over the centuries as if it were a development of the common law and ask, what are the principles which have been developed?

¹ In the *NRDC Case* (1959) 102 CLR 252 (High Court of Australia)

The second lesson is, do not be tempted to try to manage with too few principles. Adam Smith said² that philosophers had a propensity “as the great means of displaying their ingenuity, to account for all appearances from as few principles as possible.” The one principle clearly recognised everywhere is that you cannot patent a discovery, a law of nature a new mathematical formula or the like. One way of putting this, the way we would be inclined to put it in Europe, is that a patent must be for a product or a process. The discovery of a law of nature, the properties of a substance, a new way of solving a problem, may enable you to produce a new and useful product or a new process. But a patent is granted only for the product or process, not the idea from which it was derived. As an English judge, Whitford J, once said:³

“It is trite law that you cannot patent a discovery, but if on the basis of that discovery you can tell people how it can be usefully employed, then a patentable invention may result. That in my view would be the case, even though once you had made the discovery, the way in which it can be usefully employed is obvious enough. Let me take an example: you discover that a length of iron treated in a certain way will always point to the north. The way in which you can use this discovery to make a direction finding instrument may well be obvious art, but based on your discovery you could get a patent for it.”

The United States Supreme Court has frequently emphasised the principle, which they treat as an implied exception to the otherwise universal scope of section 101 of the Act, that you cannot patent a law of nature. The trouble is that they work it too hard. They try to make it explain cases in which patentability is excluded for altogether different reasons.

² Theory of Moral Sentiments (1759) VII.II.68

³ Whitford J in *Genentech Inc's Patent* [1987] RPC 553

What are these other principles? It is curiously difficult to find a plain statement in the English cases. The draftsmen of the European Patent Convention avoided any statement of the principles governing patentability. Instead, they gave examples of what was not patentable. But you can see from those examples, by a reflected light, what they thought the principles of patentability were. The examples of non-patentability divide into two groups. First, there are those which embody the principle that a patent must be for a product or a process. So the Convention says⁴ that “discoveries, scientific theories and mathematical methods” are not patentable. Computer programmes “as such” are excluded, because the programme as such is a mathematical method, but of course one can patent a new and useful product or a process, even though you need a computer programme to make it or work it. But then there is another group of examples which cannot be explained on this principle. They include “schemes, rules and methods for performing mental acts, playing games or doing business” and “presentations of information”. These are not discoveries or abstract theories. Winning a game or developing and operating a business model can fairly be described as a process. But what they have in common is that they are all forms of human behaviour. “Presentations of information” are, as such, no more than instruments of human behaviour. You can patent a new clock but not the idea of telling you the time of your next appointment.

In addition to the reflected light of the exclusions in the European Patent Convention, there were English cases before the Convention in which attempts to patent human behaviour were summarily rejected. Rolls-Royce made aero engines and in 1963⁵ they tried to patent a method by which an aircraft could take off without causing too much disturbance to the residents near Heathrow. It consisted essentially of telling the pilot to use half throttle during

⁴ Article 52(2).

⁵ *Rolls-Royce Ltd's Application* [1963] RPC 251

the shallow climb from the runway and give full throttle only when he had reached a sufficient height. In an immediate extempore opinion, the judge said: “This is as much outside the operation of any of the useful arts as would be a trainer’s direction to a jockey in his control of a racehorse.”

These are all evidence of a principle which was regarded as so obvious as not to need express formulation. By far the most careful and scholarly examination of the principle, reaching deep back into the history of English patent law, is in the joint concurrence of Judges Dyk and Linn in the Court of Appeals for the Federal District in *re Bilski*⁶. It was their conclusion that “[T]here is no suggestion in any of the English consideration of process patents that processes for organizing human activity were or ever had been patentable”, which was cited with approval by Justice Sotomayor in her three-sentence concurrence in *Alice Corporation*. It is, I think, a statement of very great importance which may lead to a more stable jurisprudence on the question of patentability.

Why are forms of human behaviour or “organizing human activity”, not regarded as patentable? I think it is regarded as too great a restriction on human autonomy that anyone should be able to have a monopoly on what people can do. In the *Rolls-Royce* case, the judge said:

“The responsibility of a pilot of an aircraft is already sufficiently onerous without adding to his burden the task of avoiding the infringement of a statutory monopoly in the operation of his standard engine controls.”

You can regard this as a rule of public policy, although I suppose the whole law of patents reflects various forms of public policy, often competing with each other. But there is one exclusion of human activity in the Patent Convention in which considerations of public

⁶ 545 F. 3d 943, 972 (C.A. Fed. 2008)

policy loom larger than in any of the others, and that is the non-patentability of “methods for treatment of the human or animal body by surgery or therapy and diagnostic methods practised on the human or animal body.”⁷ The draftsmen might have left this to the general principle excluding forms of human behaviour – by doctors, in this case – but they chose to underline it by specific mention. The exclusion is specifically authorised by TRIPS⁸ in addition to the exclusions allowed on grounds of public policy (“*ordre public* or morality”).

The second lesson from European law is therefore that there is not a simple dichotomy between patentable inventions on the one hand and discoveries, laws of nature etc on the other. There are at least two principles of exclusion: discoveries, laws of nature and so forth which are not in themselves products or processes, and forms of human behaviour. And there is a third ground for exclusion; not exactly a principle, because its scope is too disparate to be described as a principle, but an important ground none the less, and that is public policy.

Public policy is at the heart of the passionate debate over whether isolated gene sequences should be patentable. The answer to this question involves striking a balance between creating incentives to invent new biotech therapies and diagnostic tools, freedom of access to such scientific advances, religious and other objections to creating monopolies over replicas of parts of the human body and so forth. These are not matters which are suitable for judicial decision. The judicial hearing is not adapted to weighing up the importance of all the factors involved. It is best a matter for legislative decision by the democratic process.

The need for a decision on these matters at the legislative level was recognized in the 1980s by the European Commission. It put forward legislation applicable to the whole

⁷ Article 52(4)

⁸ Article 27.3 (a).

European Union to determine what aspects of gene technology should be patentable. The passage of the legislation took ten years and it eventually emerged as the Biotech Directive.⁹ It was one of the most bitterly fought items of legislation in the history of the European Union and even afterwards, some Member States like the Netherlands and Germany, where there were strong Green parties, had to be forced kicking and screaming to implement it. It contained a list of various aspects of biotechnology which, on grounds of public policy, were not to be patentable, like cloning human beings and inventions which required the destruction of human embryos. But for present purposes, the most important provision is Article 5.2:

“An element isolated from the human body or otherwise produced by means of a technical process, including the sequence or partial sequence of a gene, may constitute a patentable invention, even if the structure of that element is identical to that of a natural element.”

You will recognize this as the very question decided in the opposite sense by the United States Supreme Court in *Myriad* and more recently by the Australian High Court in *D’Arcy v Myriad Genetics*.¹⁰ I shall come back later to the US Supreme Court decision and the lessons which can be learned from the differences between that decision and the Biotech Directive. What is important is that the social and economic issues which were argued before the courts in the United States and Australia were settled by a more democratic process in Europe. So the third lesson from Europe is that courts should not necessarily regard themselves as the sole arbiters of these questions of public policy. It may be more appropriate to leave them to legislation.

The fourth lesson from European law is that you should not try to make one concept of patent law do the work which properly belongs to another. I can illustrate this by a

⁹ 98/44/EC

¹⁰ [2015] HCA 35.

squabble which took place a few years ago between the European Patent Office and the English Court of Appeal, led by Sir Robin Jacob. Take an application to patent a conventional computer loaded with a new and innovative programme. The English view was that the computer was not patentable. The programme was not as such a patentable invention. It was simply a mathematical formula designed to produce information. And putting it on a conventional computer did not make it any more patentable. The European view was that in principle the computer was patentable. It was a product, a piece of hardware. If it had been new and inventive, it could have been the subject of a patent. To say that something is not patentable meant that it cannot be patented, whether or not it is new and inventive. And that is not the case with a computer. So the computer is in principle patentable. However, it does not qualify for a patent because it is not new. The only new thing about it is the programme with which it was loaded, and this is from a patent point of view irrelevant, just as if it had been painted with a new shade of pink. Novel in patent law means novel in relation to the state of the art – an innovation in a patentable respect and not novelty in some non-technical sense.

Both parties of course agreed that the programme-loaded computer was not patentable, but they disagreed loudly about why this was the case. I think that the Patent Office was right. To say that something is unpatentable means that it cannot be patented, even if new and inventive. It is a preliminary decision which, if answered yes, makes it unnecessary to go any further. But a new and inventive computer would clearly be patentable. One needs to go on and ask whether the application passes that further test. One should therefore not muddle up patentability with novelty and inventive step. Each concept has its own work to do.

Before I come to the recent attempts by the US Supreme Court to come to grips with the concept of patentability, I must say something about the position in which they found the law at the time of *Bilski*. Until the *State Street* case in 1998, US patent lawyers spoke of a “business methods exception” – a term which suggested that, contrary to what one might expect, there was a special reason why business methods could not be patented. It was, however, difficult to explain why business methods should be singled out for this treatment. It looked like an arbitrary judge-made exception. No serious attempt was made to do what Judges Dyk and Linn afterwards did in *Bilski* and point out that business methods were merely one form of human behaviour and that their exclusion from patentability was part of a more general, ancient and defensible principle which denied patents for such activities. The result of this failure of analysis was to enable that elderly Pandora, Judge Rich, to declare in *State Street* that the business methods exception was an illegitimate judicial gloss on the Patent Act and open the box to release the problems with which the courts have since been trying to deal.

In *Bilski* the Court of Appeals tried to row back from *State Street* but the reasoning was far from unanimous and the Supreme Court was left to sort matters out. The claim in *Bilski* was to a method of hedging commodity transactions. It taught that if you sold forward, you could reduce the risk arising from future price fluctuations if you bought forward at more or less the same price. This was plainly a method of doing business and the concurrence of Justice Stevens was a passionate defence of the business methods exception. But he did not persuade the majority of his colleagues and one must therefore look at the judgment of the Court written by Kennedy J. They held that it was not patentable because it was an attempt to patent an abstract idea.

How would a European court have dealt with the case? Would it have been excluded under article 52 (2)(a) as a “scientific theory” or “mathematical method”? Or under 52(2)(c) as a “method for...doing business”? The Supreme Court would presumably have chosen the first reason. But I think a European Court, like Stevens J, would have chosen the second. The difference is important because, as I said earlier, they are manifestations of different principles. The claim was not an attempt to patent the abstract proposition that a hedge reduces risk. The claim was to using that proposition as a practical method of carrying on business. One difficulty, of course, is that the claim in *Bilski*, even if patentable, was so clearly going to fail for lack of novelty or obviousness. One can, as Stevens J pointed out, detect some of this in the majority opinion. But that was not a matter to be taken into consideration under section 101. The question in *Bilski* was whether, assuming that the proposition that a hedge reduces risk was a new and non-obvious idea, its use for running a commodity trading business could be patented. You might say, what does it matter? All nine justices agreed that the claim was not patentable. My experience, particularly in patent law, is that it is relatively easy to produce the right answer. The difficulty is to give reasons which will not mess up the law for the next case. I can think of at least one judgment of my own which failed to pass that test. For a UK or European judge, the problem would have been to avoid compromising the clear proposition which I quoted earlier from Whitford J:

“It is trite law that you cannot patent a discovery, but if on the basis of that discovery you can tell people how it can be usefully employed, then a patentable invention may result. That in my view would be the case, even though once you had made the discovery, the way in which it can be usefully employed is obvious enough.”

Assume (and I realise this requires a leap of the imagination) that the idea that a hedge will reduce risk is a discovery, new and non-obvious. Running a commodity dealing business is an obvious way in which it can usefully be employed. Why should it not be the

subject of a patent? The only answer is that although it satisfies the *Whitford* test for patenting the use of ideas and discoveries, it fails a different test, namely, the prohibition on patenting human behaviour in general and methods of carrying on business in particular.

Which brings me to round 2 of the Supreme Court's wrestle with patentability, the case of *Mayo v Prometheus*. In that case, the patentee had discovered a close relationship between the concentration of certain metabolites in the blood and the effective level of dosage of a thiopurine drug. Below a certain level of concentration the drug would be ineffective and above a certain level it would have harmful side effects. The claim was to the use of this discovery by doctors when administering the drug. The unanimous opinion of the Supreme Court, in an opinion given by Justice Breyer, was that the claim was not patentable because it was an attempt to patent a law of nature.

Of course it was no such thing. It was an attempt to patent the *use* of a law of nature by doctors in applying a given therapy. A European court would have said that it was not patentable because it was a “method... for treatment of the human...body by...therapy [or] diagnostic methods practised on the human...body”¹¹ or, putting the matter more broadly, a form of human behaviour – behaviour by doctors as *Bilski* had been about behaviour by commodity dealers. It is slightly disappointing that Breyer J, who subscribed in *Alice Corporation* to the concurrence of Sotomayor J, affirming that forms of human behaviour were not patentable, did not suggest that *Mayo v Prometheus* could be decided on this ground. Maybe he would not have secured unanimity if he had. However, it seems to me that by going down the route of treating the claim as being to a law of nature, the Supreme Court was creating future difficulties for itself in having to define what else was needed to enable a use of a discovery to count as an invention. What if the discovery of the metabolite

¹¹ Article 52(4)

relationship had enabled the applicant, by entirely conventional means, to make a supplementary drug which kept the thiopurine within the appropriate limits? Surely the drug would have been a patentable invention? Yet Breyer J said there must, *in addition* to the discovery of a natural law such as the metabolite relationship, be an “inventive concept” in the way it was used.

Let us consider how a European court would have decided the supplementary drug example. It would have said that a drug is a product and therefore is patentable. That is the end of the patentability inquiry. The question of whether it is relevantly new or involves a relevant inventive step is a separate question. A European court would have thought that Breyer J, in asking questions about inventive step at the patentability stage, was muddling up different stages of the inquiry. As Quince said of Flute the bellows mender in *Midsummer Night’s Dream*, “You speak all your part at once, cues and all.” The Government submitted to the Court in *Mayo* that it should hold the claim patentable and leave the question of whether it was new or involved an inventive step until later. The Court rejected this submission. It was not going to hold the claim patentable. In this respect, its instincts were quite right. But the reason was not the lack of an inventive step. A European court would also have said it was not patentable because the claim was not for a product or a process. It was a claim to a method of treatment, a form of human behaviour.

I move on to *Myriad Genetics* and its counterpart in Australia. These were remarkable cases in which a decision on a point which had aroused so much passion in Europe and eventually settled by special legislation was thrust upon the courts. On ordinary principles of patent law, the answer was in my opinion plain. The patent was for a product, an artificially created molecule. The fact that it was created to perform precisely the same function as a DNA sequence in the human body did not make it any the less a product. It was

new: no such artificial molecule had been made before. And the discovery of its function was an inventive step, even though there was nothing inventive about creating an artificial molecule once you know what sequence it should contain. However, the Supreme Court and the High Court of Australia rightly recognized the case as raising a new and important question. But this question was not really a question of patent law. It was a question of public policy, raising issues of social policy, economics, ethics and even religion. None of these was suitable for judicial decision. But the court had to make a decision and so the question was really what the default position should be: should it say that the molecule was patentable and leave it to the legislature, if it so chose, to say it should not be, or should it say that it was not patentable and leave it to the legislature to say that it was? Given the strength of public feeling, it is not surprising that both courts chose the latter course. But both also claimed to justify the decision on orthodox grounds of patent law. In both cases the reasoning is rather lame. I shall not trouble you with the Australian decision but the Supreme Court decided, as *Mayo v Prometheus*, that Myriad was attempting to patent something which existed in nature. The artificial molecule performed precisely the same coding function as the human DNA. In the ordinary way, one would think that the fact that a new product performed the same function as something which existed in nature was a reason for granting a patent rather than the reverse. The nineteenth century discovery of the active element in the bark of the cinchona tree which enabled artificially synthesized quinine to reproduce its anti-malarial effects would surely have produced a patentable product. And one can think of many other examples. But the Supreme Court reached for what appears to be the only tool in its kit, the non-patentability of natural laws or things existing in nature, however inappropriate it might be.

Finally there is *Alice Corporation v CLS Bank*, where the comparison with what would have happened in Europe is very interesting. This was a computerised scheme for

currency traders. It consisted of a programme on a conventional computer which acted as if it was a clearing house between different traders and allowed only those transactions for which the party in question had sufficient credit. Alice Corporation made three claims: first, to the method of trading by use of the programme (“the method claim”), secondly, to the computer system carrying the programme (“the system claim”) and thirdly, to the programme itself (“the media claim”). The Supreme Court rejected all three as claims to abstract ideas. The system claim was plainly an abstract idea and would have been rejected by a European court as a claim to a computer programme as such. But the reasoning on the other two claims would have been different.

The method claim was the same as the claim in *Bilski*, a claim to a method of doing business. In Europe it would have been rejected as such and one assumes from the concurrence of Sotomayor J that she would have rejected it on the same ground or the more general ground of it being a form of human behaviour. But in Europe the system claim would have been held to be patentable. It was a claim to a collection of hardware – a system of computers – products which are in principle patentable. Where it would have failed would have been the next step: the inquiry into whether the product was new. These were conventional computers and the only thing new about them was the programme with which they were loaded. But, the European Patent Office would say, that is not a relevant form of novelty. Unless the programme on the computer has some technical effect upon the way it works, rather than simply producing information for the user, it is no more relevant than if the computer had been painted a novel colour.

Let me in conclusion summarise the differences between the US and the European rules on patentability. In a series of cases, the Supreme Court has considered (1) claims to methods of trading or treating patients (*Bilski*, *Mayo* and the method claim in *Alice*) (2) a

claim raising a novel question of public policy (*Myriad*) (3) a claim to a computer programme as such (the media claim in *Alice*) and (4) a claim to a system of computers loaded with a particular programme (the system claim in *Alice*). A European court would have rejected *Bikski*, *Mayo* and the method claim in *Alice* on the grounds of specific exclusions (business methods and therapeutic treatment) reflecting a more general principle that human behaviour is not patentable; it would have decided *Myriad* in accordance with the specific legislative decision in the Biotech Directive; it would have rejected the media claim in *Alice* on the ground that it was a computer programme as such, reflecting the general principle that natural laws and mathematical formulae are not patentable, and it would have held the system claim in *Alice* to be in principle patentable but not novel. The Supreme Court has rejected all of them as unpatentable on a single ground: that they are either literally or “in effect” attempts to patent natural laws or phenomena. The difficulties about using this single criterion are, first, that it is difficult to see why the discovery of a law of nature should not itself be a sufficient inventive step to justify a patent for a new practical application of that law and secondly, that the requirement of an additional inventive step in the practical application of a natural law creates uncertainty about what would be enough.

