Patenting Computer Software

by David Webber

Patents can be said to be the quiet achiever of intellectual property protection for software for two reasons:

1. The Patent Offices of most major industrialised countries have been granting patents for software related inventions for a number of years, but this does not seem to have attracted the controversy which has dogged copyright protection for software.
2. There are still a large number of people in the industry, including practitioners, who feel that patent protection cannot be obtained for software or is not worth obtaining.

For those unfamiliar with patents, they provide an exclusive monopoly right for a product or process for a limited period. The monopoly obtained is defined by the wording of one or more patent claims included in a patent specification, and the general rule is that if a party takes features recited in one of the claims then the patent is infringed. Copying does not need to be established, as is the case for infringement of copyright. Patents are however only granted for inventions which are worthy, in the sense that they must be novel and inventive over what has proceeded them, and patents are only granted after pursuing an application process. Patents are used essentially to protect a new concept or idea as embodied in a product or process. Therefore they can be used to protect what a program does as opposed to its expression. Quoting from the High Court's judgement in *Autodesk Inc. & Anor v. Dyason & Ors* [1]

> '...it is nevertheless fundamental that copyright protection is given only to the form on which ideas are expressed and not ideas themselves. The protection of ideas, at all events when the subject of manufacture, is the province of patent law.'

In light of this, one could conclude that rather than be a quiet achiever, patent protection software should perhaps be a front runner to copyright protection. The reason this has not occurred, as yet, can be understood if we digress back to the practice of the late 50's and early 60's and explain how patent law has developed in this area to its present state.

Historical Background

The patent laws of most jurisdictions have always considered certain subject matter to be unpatentable, and whilst the details vary from jurisdiction to jurisdiction, the unpatentable or excluded subject is essentially the same. It includes such things as abstract ideas, schemes, scientific principals, mathematical algorithms, laws of nature and essentially other intellectual and intangible subject matter which it is felt should not belong to one person or is not industrially applicable. In the 50's and 60's the major Patent Offices, including the UK, the US and Australia adopted a position that computer programs fell within one of the classes of excluded subject matter. At that time they were also not persuaded by software producers to think otherwise, as the producers tended to be the large hardware manufacturers who initially provided software free of charge with their machines. The early machines, in any event, were largely controlled by their hardware configuration and were used mainly by government and academic institutions to perform scientific problems. Software had limited application and was more or less used to change the operands on which calculations were performed. Considering this environment, it is difficult to criticise the initial position adopted by the creators. Unfortunately a large number were told by their Patent Attorneys that patent protection was not available for such subject matter (including the creators of the first spreadsheet program) but fortunately others persisted.

The Australian Patent Office practice at the time was first enshrined in an office decision *N.V.Phillips Gloeilampentabrieken's Application* [2] which related to an electronic computer where the distinguishing feature was provided by a program to form a specific advantageous relationship between the address locations of an indirectly accessible store, such as a hard disk, and a directly accessible storage device such as RAM. The Hearing Officer rejected the application by simply stating that:

> '...clearly, the mere programming of a known computer, even optimum programming, is in the nature of the scheme how to use that computer advantageously, and ... would not be patentable.'

A number of decisions followed over the next ten years which all resulted in the applications being rejected on a number of grounds, culminating in *Telephone A/B L M Ericcson's*

Application[3]. The decisions, most of which were given by one Hearing Officer, included a number of questionable analogies with pianolas records and barrel organs and classic quotes against patent protection for software such as

> 'it would certainly be mischievous to the State and generally inconvenient if, after investing a million dollars in a computer, the owner were to find himself prevented from operating it efficiently, or in any other manner he may wish, or with any degree of privacy or secrecy he may desire.'

The first glimmer of hope for patent protection for software came in a 1973 decision of the UK Appeal Tribunal, *Burrows Corporation's Application.*[4] The case related to a method of transmitting information between a master computer to a ring of outlying slave computers and was considered to be patentable as it involved the use of an apparatus modified as programmed to operate in a new way. The Tribunal concluded that

> '..computer programs which have the effect of controlling computers to operate in a particular way, where such programs are embodied in a physical form, are proper subject matter for Letters Patent.'

This was the first decision where a Court had decided that a claimed method could be allowable even if the method was normally executed using a computer program.

However, in 1977 the European Patent Convention came into force and included a list of subject matter to be excluded from patent protection, one of which was computer programs. The exclusions however, only relate to the subject matter, 'as such', and the European Patent Office has gone to great lengths to allow claims to software related inventions in a number of decisions. There remains the proviso nonetheless that the applicant does not claim a computer program per se and the claimed method or system has some advantageous technical effect on a computer's operation.

The United States Position

The practice in the America was first considered by the US Supreme Court in 1972 in *Gottschalk* v. *Benson*[5] which related to a method of converting binary coded decimal numbers into pure binary numbers. The Court was reluctant to comment on

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whether patent protection should be available for computer programs and considered it was more or less a question of policy to be decided by US Congress. It went on to reject the application on the basis that granting the patent would wholly pre-empt the mathematical formula used to perform the conversion, and in effect would be a patent on the algorithm itself. This was considered not allowable as it would provide a monopoly for all possible uses of the algorithm.

The next decision of the Court was in *Parker* v. *Flook*[6] which related to a program for updating alarm limits in a petrochemical process. The Court had to consider whether the claim wholly pre-empted a mathematical algorithm recited at the end of the claim. Although the claim recited a number of integers, it included at the end a new mathematical equation for determining the alarm limit, which was considered to be the distinguishing feature. The Court seemed to focus on this and concluded that unpatentable subject matter could not be rendered patentable by adding additional material to the claim.

The next decision of the Court, *Diamond* v. *Diehr*,[7] considered a similar claim which related to a method for controlling a rubber moulding press. One difference was that the calculation performed at the end of the method claim was already known but was simply, in this instance, being applied to determine when to open a rubber moulding press after measuring a number of different variables, such as temperature. The Court allowed the claim and concluded that a claim drawn to subject matter otherwise patentable does not become unpatentable simply because it uses a mathematical formula, computer program or digital computer. Therefore the Court effectively gave a green light to obtaining patent protection for methods which were executed by computer programs provided the patent did not attempt to monopolise unpatentable subject matter, such as mathematical algorithms. The decision was somewhat of a watershed as the US Patent Office then recruited a number of computer science graduates to handle the expected influx of patent applications relating to software inventions.

In order to reconcile the somewhat contradictory decisions of *Parker* v *Flook* and *Diamond* v *Diehr*, the Lower Court, the US Court of Customs and Patent Appeals developed a complicated set of criteria to determine whether a claim recites patentable subject matter. The test, known as the Freeman Test, is used to determine whether a claim should be rejected. In a simplified form it works as follows:

1. Does the claim recite a mathematical algorithm?

2. Does the claim wholly pre-empt a mathematical algorithm?

The Australian Position

In 1986, the Copyright Act was amended to provide expressly for protection for computer programs. The Australian Patent Office then decided to review its restrictive practice, considering the more lenient stance that was being adopted by the US and European Patent Offices. It decided to adopt the US Freeman Test, with the qualification that claims directed to computer programs per se should continue to be refused. The Office has since granted a considerable number of patents for software inventions and the practice recently gave rise to an appeal to the Federal Court in *IBM's Application.*[8]

This case relates to producing an improved display of a curve on a computer using integer control points instead of floating point control points to define the curve. The main claim under consideration is as follows:

> 'A method for producing a visual representation of a curve image from a set of control points which define the curve and which are input for each dimension and a number of intervals of the curve to be computed, said method comprising the steps of:
>
> (a) computing a set of scaled vector coefficient integers for each dimension from the set of input control points for that dimension and from a scaling parameter;
>
> (b) computing forward difference interval coefficient integers for each dimension for each interval from the scaled vector coefficient integers for that dimension and the interval integer number;
>
> (c) computing the curve coordinate values for each interval for each dimension from the forward difference interval coefficient integers for that dimension for each interval and the scaling parameter; said computing steps being carried out without the use of floating point arithmetic; and
>
> (d) displaying the curve by displaying curve coordinate points in accordance with the computed curve coordinate values for each dimension and a plurality of straight lines which successively connect said computed curve coordinate points.'

"In 1986, the Copyright Act was amended to provide expressly for protection for computer programs"

The Hearings Officer rejected the claim and two others primarily on the basis that he felt they were attempting to monopolise a mathematical algorithm. His reasoning was that the steps of the method could more or less be performed by a person using a hand-held calculator, and the claim was not restricted to any particular environment. The Hearing Officer did however accept a number of the other claims which added limitations concerning certain electronic or computer features.

In considering the claim, the single Judge, Burchett J. said it must be considered in the context of the specification as a whole which was clearly directed to computers and in particular graphics processing systems. He decided therefore that the claim could be construed as limited to a computer environment. Then in considering whether the claim recited patentable subject matter, he turned to the decision of the High Court in *National Research Development Corporation* v. *Commissioner of Patents.*[9] The High Court in that decision stated that any attempt to place a restriction on or derive an exact verbal formula with respect to what could be considered to be patentable subject matter was unsound. The correct question to be answered was whether the claim in consideration recited patentable subject matter according to principles which have been developed at the time. In qualifying its conclusions, the High Court said a patentable invention

> 'must be one that offers some advantage which is material, in the sense that [it] belongs to a useful art as distinct from a fine art ... - that its value to the country is in the field of economic endeavour.'

Relying on this and the earlier conclusion concerning limitations that could be imported into the scope of the claim, the Court in *IBM's Application* held that the claim was allowable. It said what was new was the application of selected mathematical methods to computers, and in particular, to the production of the desired curve image by a computer, and the production of an improved curve image is a commercially useful effect in computer graphics. In considering the US authorities the Court felt that they did not preclude this view and therefore held the method recited in the claim was entitled to protection by way of a patent.

The Commissioner of Patents has now appealed the decision for what

the author understands are the following reasons:

1. The Commissioner is concerned, quite rightly, that limitations can be imported in a claim by referring to the specification as a whole without having to expressly recite the limitations in the patent claim.
2. The Federal Court did not expressly condone or reject the Office's practice of applying the US Freeman Test.
3. The Commissioner may be concerned that the decision provides a basis for now obtaining claims which presently cannot be obtained in the US and Europe, that is to say, claims directed to computer programs per se.

In summary, patents can be obtained for software inventions. Although you presently cannot obtain a claim directed to a computer program per se, you can obtain a claim directed to the method or process executed by the program or a system controlled by the program, provided you do not attempt to monopolise excluded subject matter, such as mathematical algorithms. The Federal Court decision in *IBM's Application* also indicates that in time the restriction on obtaining claims to computer programs per se will probably be removed, as there is no longer any basis for it to remain. If the creator of a software program wishes to protect the functional features of his, her or its program, the only certain way of achieving this is to obtain a patent.

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Footnotes

[1] (1992) AIPC 90-855
[2] (1966) 36 AOJP 2392
[3] 1975 FSR 49
[4] 1973 FSR 439
[5] 409 US 63 (175 USPQ 673), 1972
[6] 198 USPQ 193
[7] 209 USPQ 1, 1981
[8] (1991)AIPC 90-781.
[9] (1959) CLR 252

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