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## Software Patents: A New Era?

by David Webber

The new Australian Patent Office practice adopted following *International Business Machines Corporation v. Commissioner of Patents*<sup>1</sup> and the US Court of Appeals, Federal Circuit decision in *Arrhythmia Research Technology Inc. v. Corazonix Corp*<sup>2</sup> appear to have opened significantly the door to patents for computer software. Previously both countries relied solely on the cumbersome US Freeman/Walter/Abele test to determine the patentability of software related inventions. IBM has forced the Australian Patent Office to ap-

ply a completely new test, whereas *Arrhythmia* provides an avenue for stepping around the Freeman/Walter/Abele test to allow a wider class of software patent claims.

### **The Freeman/Walter/Abele Test**

This is a test which the US Court of Custom and Patent Appeals (CCPA) developed in light of three Supreme Court decisions, *Gottschalk v. Benson*<sup>3</sup>, *Parker v. Flook*<sup>4</sup> and *Diamond v. Diehr*.<sup>5</sup> The test essentially

allows method or process claims for inventions which are implemented by software, and de facto apparatus claims in a 'means for' format, provided the claims do not attempt to monopolise or 'pre-empt' traditional unpatentable subject matter, such as mathematical algorithms or laws of nature. The test is primarily concerned with mathematical algorithms, as software, by its nature, is used to execute mathematical steps, and mathematical terms and formulae are used to describe software al-

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gorithms. Two considerations are involved in applying the test, the first being a determination as to whether the patent claim even recites a mathematical algorithm. Once the first part of the test is affirmed, the second part involves a complicated analysis to determine whether the claim 'pre-empts' the recited mathematical algorithm. The CCPA *In re Walter*<sup>6</sup> said:

'Once a mathematical algorithm has been found, the claim as a whole must be further analysed. If it appears that the mathematical algorithm is implemented in a specific manner to define structural relationships between the physical elements of the claim (in apparatus claims) or to refine or limit claim steps (in process claims) the claim being otherwise statutory, the claim passes muster under section 101.<sup>7</sup> If, however, the mathematical algorithm is presented and sold by the claimed invention, as was in the case in *Benson* and *Flook*, and is not applied in any manner to physical elements or process steps, no amount of post-solution activity will render the claim statutory; nor is it saved by a preamble merely reciting the field of use of the mathematical algorithm.'

*In re Abele and Marshall*<sup>8</sup> provides a good example as to how the test is applied and qualifies *Walter* in view of *Diamond v. Diehr*. The qualification is summarised in the US Patent Office Manual for Examiners by stating that a claim seeking coverage for a computer program would be non-statutory when considered as a whole, if it merely recites a mathematical algorithm or mathematical calculation which is not applied in any manner to physical elements or process steps.

The US Patent Office has refused claims to computer programs *per se* on the basis that the claims relate to a computer language listing of instructions which is a mere idea or abstract intellectual concept that as such is not patentable. Alternatively the claims have been viewed as relating to a collection of printed matter which is also not patentable.

The Australian Patent Office in adopting the US Freeman test simply recited in their guidelines<sup>9</sup> that claims to computer programs *per se*

*"The Australian Patent Office ... simply recited in their guidelines that claims to computer programs per se would continue to be refused..."*

would continue to be refused, presumably on the basis of previous Patent Office decisions, such as *Telephone A/B LM Ericsson's Application*.<sup>10</sup>

### New Australian Practice

*IBM* was an appeal heard by the Australian Federal Court on a decision<sup>11</sup> of a Delegate of the Commissioner of Patents in which claims of the *IBM* patent application were refused on the basis of the Freeman/Walter/Abele test. The invention related to a computer program for producing an improved curve image on a visual display. Two old algorithms, the B spline technique and the interpolat-

ing spline technique, were used to compute the coordinate values for the curve, and the invention was said to provide a significant advantage in that integer control points were used instead of floating point control points which gave rise to the improved display. The main claim, claim 1, simply recited a method for producing a visual representation of a curve image, a number of computing steps and a final step of simply displaying the curve without defining the particular environment or any specific physical steps. The Federal Court, however, was willing to conclude that on considering the patent specification as a whole, there was a necessary inference confining the claim to the operation of computers and therefore it was limited to a computer environment.<sup>12</sup>

In considering whether the claim then recited patentable subject matter, the Court referred to *National Research Development Corporation v. Commissioner of Patents*<sup>13</sup> as being the leading authority in Australia,<sup>14</sup> where the High Court said

'a process, to fall within the limits of patentability..., must be one that offers some advantage which is material, in the sense that the process belongs to a useful art as distinct from a fine art...—that its value to the country is in the field of economic endeavour.'

The Federal Court in *IBM* concluded that it is by the production of some useful effect that patent law has been able to distinguish between the discovery of a principle of science and the making of an invention, and that the 'production of an improved curve image is a commercially useful effect in computer graphics'.<sup>15</sup> The United States authorities were considered not to preclude this view and the appeal was allowed.<sup>16</sup> *IBM* was the first time an Australian

Court had considered the Patent Office practice for software inventions, and whilst the Court did not disapprove of the adopted practice, it went much further by applying the principles established in *NRDC*.

In view of *IBM*, the Australian Patent Office decided in 1992 to adopt a new test<sup>17</sup> for determining the patentability of software inventions. The test is:

'Does the invention claimed involve the production of some commercially useful effect?'

This seems to cast an extremely wide net and it is difficult to envisage what class of software inventions would be excluded, as presumably most would have some commercial application. The test contrasts with the practice of the European Patent Office<sup>18</sup> which involves a consideration of the technical effect which a software related invention has on known equipment. The Australian Patent Office has not gone so far as to condone claims for computer programs *per se* but nor has it expressly ruled out acceptance of such claims as in the past. Senior officials of the Office have indicated that such claims will be objected to but this would seem to be inconsistent with *IBM*.

The Office has provided the following illustrations as to how the new test should be applied:

- (a) A method-type claim must define a method which, either directly or by clear implication, embodies the commercially useful effect.
- (b) A claim to a mathematical algorithm *per se* is not patentable, because it does not produce a commercially useful effect. A commercially useful effect can only arise when the mathematical algorithm is implemented in

some manner to produce a result.

- (c) A claim to a mathematical algorithm when used in a computer is patentable so long as a commercially useful effect is produced.

### Arrhythmia

In *Arrhythmia*, the US CAFC considered an appeal from a decision<sup>19</sup> of the US District Court for the Northern District of Texas which found that US Patent 4,422,459 (the Simpson patent) did not claim statutory subject matter under 35 USC

*"Courts should give 'process' its literal and predictable meaning, without conjecturing about the policy implications of that literal reading..."*

§101. The invention related to a process for analysing electrocardiograph signals in order to determine whether a patient is vulnerable to an acute type of heart arrhythmia known as ventricular tachycardia. The main claim recited a method for analysing electrocardiograph signals by converting a characteristic part of the signals into a time sequence and applying the segments in reverse time order to a high pass filter and then comparing the output of the filter with a threshold level. All of the processing steps could be executed using a digital computer with appropriate software and connected to an electrocardiograph machine. The basis of the

District Court's objection was that the claims of the Simpson patent were directed to a mathematical algorithm.

Newman J. of the Federal Circuit Court found that the claims of the Simpson patent passed the Freeman/Walter/Abele test.<sup>20</sup> The claimed method was said to relate to physical process steps that transform one physical, electrical signal into another and that the view that there is nothing necessarily physical about signals is incorrect. The method was held to comprise an otherwise statutory process whose mathematical procedures are applied to physical process steps. Of particular interest, however, is the basis on which Rader J. of the CAFC also found for the appellant.

After a detailed consideration of the mathematical algorithm cases of the Supreme Court and the CCPA, Rader J. concluded that the Supreme Court in *Diamond v. Diehr* had stressed that the Courts should simply consider the statute, 35 USC §101, when determining whether a claim recites patentable subject matter.<sup>21</sup> In defining patentable subject matter, section 101 refers to, *inter alia*, a 'useful process' and Rader J. said:

'Courts should give "process" its literal and predictable meaning, without conjecturing about the policy implications of that literal reading...If Congress wishes to remove some processes from patent protection, it can enact such an exclusion. Again in the absence of legalised limits on the meaning of the Act, courts should not presume to construct limits. The Supreme Court directed this Court to follow the Act.'<sup>22</sup>

He further found that '*Diehr* limited *Benson* and its progeny to three classes of unpatentable subject matter - laws of nature, natural phe-

nomena, and abstract ideas<sup>23</sup> and that the claims of the Simpson patent in defining a process and corresponding apparatus, claimed patentable subject matter within the language of section 101.<sup>24</sup> As far as Rader J. was concerned 'the Supreme Court's most recent message is clear: when all else fails (and the algorithm rule clearly has), consult the statute'.<sup>25</sup> In stating that the Simpson patent did not, in any event, present a mathematical algorithm,<sup>26</sup> he questioned the barring of mathematical algorithms from patentability and in the footnotes of his judgment commented that laws of nature are excluded from being patentable as they are not new within the meaning of section 101. He said that although the Supreme Court in *Diehr* concluded that a mathematical algorithm is like a law of nature and cannot be the subject of a patent, he felt it was difficult to determine how or why mathematical algorithms are 'like' laws of nature. He felt a mathematical algorithm does not appear in nature at all, but only in human and numerical processes.

## Summary

The new Australian practice only requires a software invention to produce a commercially useful effect in order to constitute patentable subject matter. In the US, *Arrhythmia* provides support for the contention that a claim to a software invention need only recite a new process or apparatus. Both criteria should be relatively easy to meet as it is the function of most computer programs to execute a specific process which is commercially useful.

Software patents have been obtained and continue to be actively sought by hardware manufacturers, such as IBM, but it is also now the software houses, such as Microsoft Corpora-


tion, and telecommunications companies which are seeking and obtaining software patents. There is a distinct trend in the US towards relying more on patent protection and narrowing copyright protection for software to its traditional limits, as indicated by decisions such as *Computer Associates International, Inc. v. Altai Inc.*<sup>27</sup> This seems primarily due to the often debated problems in determining the scope of copyright protection for software, and the utilitarian nature of software, which has evolved, in a number of areas, to succeed hardware in im-

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portance, both commercially and functionally.

Patents having traditionally been granted for hardware and there no longer seems to be any logical basis for excluding patents for software. A software development will still need to be sufficiently new and inventive to qualify for a patent, which is a significantly more onerous requirement to meet than the low threshold of originality required to gain copyright protection. Also the published patent specification provides third parties with at least some guidance as to the scope of protection afforded to the patentee. Difficulties associated with patents for software, of course, need to be attended to, such as disclosure requirements and examination standards and the extent of prior art material

available to patent examiners. Work in this regard has already commenced in the US with the establishment by the Software Patent Institute of a non-patent prior art database for US Patent Examiners.

Unless there is a dramatic turn around in US and Australian practice, the day when claims to computer programs *per se* can be obtained does not appear to be too distant. 

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## Footnotes

<sup>1</sup> (1992) AIPC 90-853, 22 IPR 417

<sup>2</sup> 22 USPQ 2d 1033

<sup>3</sup> 175 USPQ 673

<sup>4</sup> 198 USPQ 193

<sup>5</sup> 209 USPQ 1

<sup>6</sup> 205 USPQ 397, at 407

<sup>7</sup> Section 101 is the U.S. patentability provision, 35 USC §101, which recites 'whoever invents or discovers any new or useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this Title'.

<sup>8</sup> 214 USPQ 682

<sup>9</sup> 'Guidelines for Considering the Patentability of Computer Program Related Inventions', Australian Patent Office, 1986

<sup>10</sup> 1975 FSR 49

<sup>11</sup> (1991) AIPC 90-781

<sup>12</sup> (1992) AIPC 90-853, at 38162

<sup>13</sup> (1959) 102 CLR 252

<sup>14</sup> *Ibid*, at 38163

<sup>15</sup> *Ibid*, at 38165

<sup>16</sup> *Ibid*

<sup>17</sup> Patent Examiners Manual 35.65, August 1992

<sup>18</sup> European Patent Office Guidelines C-IV 2.3

<sup>19</sup> *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, No. CA 3-88-7745-AJ (ND Tex 1990)

<sup>20</sup> 22 USPQ 2d, at 1038

<sup>21</sup> *Ibid*, at 1044

<sup>22</sup> *Ibid*, at 1042

<sup>23</sup> *Ibid*, at 1043

<sup>24</sup> *Ibid*, at 1044

<sup>25</sup> *Ibid*

<sup>26</sup> *Ibid*, at 1043

<sup>27</sup> 23 IPR 385 [See note and comment in issue 20, *Computers & Law — Eds*]