



10 March 2010

PATENTS ACT 1977

APPLICANT Kabushiki Kaisha Toshiba

ISSUE Whether patent application number
GB 0805992.5 complies with section
1(2)

HEARING OFFICER Joanne Pullen

DECISION

Introduction

1. Patent application number GB 0805992.5 was filed on 2nd April 2008, claiming priority from earlier Japanese applications numbered 2007333098 and 2007097845, and dated 25th December 2007 and 3rd April 2007 respectively. The application was published on 8th October 2008 as GB 2448225.
2. During the course of examination the examiner raised a variety of objections including that the claims of the application were excluded from patentability under section 1(2) of the Patents Act 1977 as a computer program and a mental act. Several rounds of correspondence were exchanged, however, the examiner was not satisfied that any amended claims submitted resulted in a patentable invention. In the absence of any resolution of the matter a hearing was appointed. The hearing took place on 13th January 2010 before me and the applicant was represented by Dr John Collins of Marks & Clerk.

The law

3. The examiner raised an objection under section 1(2)(c) of the Patents Act 1977 that the invention is not patentable because it relates to a computer program and a mental act as such; the relevant provisions of this section of the Act are shown below:

1 (2) It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of –

- (a) a discovery, scientific theory or mathematical method;
- (b) a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever;
- (c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer;
- (d) the presentation of information;

but the foregoing provision shall prevent anything from being treated as an invention for the purposes of this Act only to the extent that a patent or application for a patent relates to that thing as such.

4. As explained in the notice published by the UK Intellectual Property Office on 8th December 2008, the starting point for determining whether an invention falls within the exclusions of section 1(2) is the judgment of the Court of Appeal in *Aerotel/Macrossan*¹.
5. The interpretation of section 1(2) has been considered by the Court of Appeal in *Symbian Ltd's Application*². *Symbian* arose under the computer program exclusion, but as with its previous decision in *Aerotel/Macrossan*, the Court gave general guidance on section 1(2). Although the Court approached the question of excluded matter primarily on the basis of whether there was a technical contribution, it nevertheless (at paragraph 59) considered its conclusion in the light of the *Aerotel* approach. The Court was quite clear (see paragraphs 8-15) that the structured four-step approach to the question in *Aerotel/Macrossan* was never intended to be a new departure in domestic law; that it remained bound by its previous decisions, particularly *Merrill Lynch*³ which rested on whether the contribution was technical; and that any differences in the two approaches should affect neither the applicable principles nor the outcome in any particular case. But the *Symbian* judgment does make it clear, that in deciding whether an invention is excluded, one must ask does it make a technical contribution? If it does then it is not excluded.
6. Subject to the clarification provided by *Symbian*, it is therefore still appropriate for me, and Dr Collins did not argue otherwise, to proceed on the basis of the four-step approach explained at paragraphs 40-48 of *Aerotel/Macrossan* namely:
 - 1) *Properly construe the claim*
 - 2) *Identify the actual contribution*
 - 3) *Ask whether the identified contribution falls solely within the excluded matter*
 - 4) *Check whether the actual or alleged contribution is actually technical in nature.*

¹ *Aerotel Ltd v Telco Holdings Ltd (and others) and Macrossan's Application* [2007] R.P.C. 7

² *Symbian Ltd's Application* [2008] EWCA Civ 1066

³ *Merrill Lynch's Application* [1989] R.P.C. 561

The application

7. The application is concerned with a method and an apparatus for converting a first binary code, executable in a first processor, to a program code for a second processor, including the steps of

analyzing a first binary code to obtain one or more instructions for a first processor,
extracting one or more corresponding predetermined instructions for a second processor,
translating by rewriting the instructions for the first processor to the predetermined instructions for the second processor; and
compiling a second binary code, executable in a second processor, as program code generated by translating the instructions.

The claims

8. The most recent set of claims were filed with the agent's letter dated 16th July 2009. These amended claims include three independent claims, numbered 1, 8 and 16. These are directed towards various aspects of the invention, namely a program code conversion apparatus (claim 1), a program code conversion method (claim 8) and an alternative program code conversion apparatus (claim 16).
9. At the hearing Dr Collins agreed that claims 1 and 8 could be dealt with together, in that if I find that claim 1 passes (or fails) the requirements of the Act then it follows that a similar finding must also apply (mutatis mutandis) to claim 8. Claim 16 would be considered separately.

Claim 1 reads:

1. *A program code conversion apparatus configured to convert a first binary code executable in a first processor into a second binary code for a second processor, comprising:
A code analyzing section configured to analyze the first binary code;
An instruction function extracting section configured to extract predetermined one or more instruction functions for the second processor which correspond to predetermined one or more instructions for the first processor obtained by the analysis performed by the code analyzing section;
A translator section configured to generate a source code for the second processor as a program code for the second processor from the first binary code, by rewriting the predetermined one or more predetermined instructions for the first processor to the predetermined one or more instruction functions extracted by the instruction function extracting section; and
A parallel compiler section configured to generate a second binary code of a parallel program executable in the second processor as a*

program code for the second processor, from the source code for the second processor generated by the translator section.

Claim 16 reads:

1. *A program code conversion apparatus configured to convert a first binary code executable in a first processor into a second binary code for a second processor, comprising:
A code analyzing section configured to analyze the first binary code to generate source code for the first processor;
A comment sentence description form determining section configured, by referring to the source code for the first processor, to determine whether or not a comment sentence in the source code for the first processor is described in a predetermined form;
A translator section configured, when the comment sentence description form determining section determines that the comment sentence is the source code for the first processor is described in the predetermined form, to generate a source code for the second processor by embedding the comment sentence determined as described in the predetermined form into the source code for the second processor according to the predetermined form; and
A compiler section to generate a second binary code executable in a second processor from the same code generated for the second processor.*

Applying the excluded matter test

Construing the claims

10. I do not think this presents any real problems since both the applicant and the examiner appear to agree as to the meaning of the claims.

Identify the actual contribution of claim 1 and 8

11. At paragraph 43 of the Aerotel/Macrossan judgement, Jacob LJ describes step 2 as being essentially a matter of determining what it is - as a matter of substance not form - that the inventor has really added to human knowledge. He also accepted that the test "is an exercise in judgement probably involving the problem to be solved, how the invention works, what its advantages are".

12. In the examination report of 29th September 2009 the examiner identifies the contribution as

"The code for the second processor is generated by identifying instructions for the first processor in the binary code and replacing them with instructions for the second processor. By extracting functions from the first binary code, the generated code can be optimised for execution on the second processor. ...the identified functions are the source code for the

second processor. The predetermined functions for the first processor are rewritten as the instructions for the second processor”

13. Dr Collins asserted that, while he agrees that this forms part of the contribution, that the contribution is much broader and should take account of the submission made in the agent’s letter of 16th July 2009. These submissions are

“Thus the product of the apparatus and method is a binary code for execution in a different processing apparatus having a second processor. Although the apparatus and method could be performed using a single programmed computer, it has a technical function of generating binary code for execution in a different computer apparatus which could include any form of computer apparatus such as a mobile communications device, a personal digital assistant, a camera etc.

It is submitted that the contribution goes beyond simply translating or rewriting the code because the method produces binary code that is optimised for the second processor ie a different apparatus/machine. Optimisations for the first processor are transferred and preserved in the binary code for the second processor. See description page 6, second paragraph to page 7 first paragraph.

In the present case, the binary code for the second processor determines the way that the second processor operates. The binary code can be considered ‘technical means’ using the above argumentation, therefore, any features, such as more efficient operation of the second processor due to the second binary code having been generated by the method can be considered as contributions of the method and apparatus of the present application.”

14. It does not appear to be relevant when determining the actual contribution (step 2 of Aerotel/Macrossan) to consider whether or not ‘technical means’ are involved or what the ‘technical contribution’ is. To determine the contribution based upon ‘technical means’ or ‘technical contribution’ or even in terms of its effect outside of the computer (as Dr Collins submitted at the hearing), rather than what has been added to human knowledge is to prematurely arrive at the result of the step four of the test. Whether the contribution has a technical effect should be considered as step four (or as a conflation of steps three and four) of the Aerotel/Macrossan test.
15. The problem to be overcome, as outlined in the application, is one of ensuring any ingenuity contained on a first program, included in source binary code, is reflected in a converted, second binary code. Having the ingenuity, i.e. a comment sentence, macro declarative sentence and the like, restored in the converted code is advantageous to a user as it facilitates debugging, cope with a specification change etc.

16. I cannot see that the product of the method and apparatus of this invention, being an optimised source code, should form part of the contribution to human knowledge as optimised source codes are common place. The essence of this invention would seem to be how to arrive at the optimised source code in a quicker and more resource efficient way.

17. I am of the opinion that what the inventor has really added to human knowledge is a method and apparatus (for running the method) for producing source code for a second processor from a source code for a first processor, where the source code for the second processor maintains the ingenuity i.e. optimisation, associated with the source code for the first processor.

Does the identified contribution of claims 1 and 8 fall within the excluded matter and is the contribution technical in nature

18. The contribution, as identified above, would appear to lie within the excluded field as it appears to be a computer program which converts a first type of optimised code into a second type optimised code.

19. In order to assess the contribution for technical effect I will follow the useful signposts given in paragraph 40 of AT&T/CVON⁴

- i) Whether the technical effect has a technical effect on a process which is carried on outside the computer;
- ii) Whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run;
- iii) Whether the claimed technical effect results in the computer being made to operate in a new way;
- iv) Whether there is an increase in the speed or reliability of the computer
- v) Whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.

20. In answer to these points:

- i) As the identified contribution is a new translation program which maintains optimisation across the translation, therefore the contribution has no effect outside the apparatus upon which the translation takes place.
- ii) Any effect produced by the identified contribution is entirely dependant on the first source program, i.e. of the data being processed.
- iii) The identified contribution does not have any effect on the way the computer operates.

⁴ AT&T Knowledge Ventures LP and CVON Innovations Limited [2009] EWHC 343

- iv) There is no increase in speed or reliability of the computer upon which the identified contribution takes place.
- v) The perceived problem of maintaining optimisation during translation is circumvented rather than overcome by the claimed invention

Identifying the actual contribution of claim 16

- 21. Claim 16 differs, in essence, from claims 1 and 8 as the ingenuity which is translated between the first source code and the second source code is limited to comment sentences.
- 22. I am of the opinion that the contribution to human knowledge is similar, being an apparatus for producing source code for a second processor from a source code for a first processor, where the source code for the second processor maintains the comment sentences from the source code for the first processor.
- 23. Following the reasoning above I come to the conclusion that claim 16 is excluded as a computer program and has no technical contribution.

Conclusion

- 24. I have found that the invention defined in the claims of the present invention are excluded under section 1(2) as a computer program and does not have a technical effect.
- 25. The examiner has also argued that the invention is excluded as a mathematical method and a mental act. However, having found the invention to be excluded as a computer program, I have no need to decide this issue.
- 26. Having read the specification I do not think that any saving amendment is possible. I therefore refuse the application under section 18(3).

Appeal

- 27. Under the Practice Direction to Part 52 of the Civil Procedures Rules, any appeal must be lodged within 28 days.

J PULLEN
Deputy Director acting for the Comptroller