

**IN THE HIGH COURT OF JUSTICE**  
**CHANCERY DIVISION**

**IN THE MATTER OF THE PATENTS ACT 1977**

**AND**

**IN THE MATTER OF UK PATENT APPLICATION NO. GB 0325145.1**

**IN THE NAME OF SYMBIAN LIMITED**

**AND**

**IN THE MATTER OF AN APPEAL FROM THE DECISION**

**OF THE COMPTROLLER-GENERAL OF PATENTS DATED 30 JULY 2007**

Royal Courts of Justice  
Strand, London, WC2A 2LL

Date: 18/03/2008

**Before :**

**MR JUSTICE PATTEN**

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**Between :**

**SYMBIAN LIMITED**

**Appellant**

**- and -**

**COMPTROLLER GENERAL OF PATENTS**

**Defendant**

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**Mr Richard Davis** (instructed by **Withers & Rogers**) for the **Appellant**  
**Miss Charlotte May** (instructed by **The Treasury Solicitor**) for the **Respondent**

Hearing dates: 12 and 13th December 2007  
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**Judgment**

**Mr Justice Patten :**

**Introduction**

1. This is an appeal by Symbian Limited (“Symbian”) against the decision of the Comptroller General of Patents (dated 30 July 2007) refusing UK Patent Application No. GB 0325145.1 on the ground that the invention is excluded from patentability under s. 1(2) of the Patents Act 1977 (“the 1977 Act”). The Hearing Officer (Mrs S.E. Chalmers) confirmed the objection to patentability raised by the examiner which was that each of the claims related to a program for a computer and could not be saved by amendment.
2. If right the decision is yet another illustration of the sharp divide which exists between the United Kingdom Intellectual Property Office (“UKIPO”) and the European Patent Office (“EPO”) about how to approach claims which are said to be prohibited by Art. 52 of the European Patent Convention (“EPC”). I say that because on 5 September 2007 the Examining Division of the EPO informed Symbian that it intended to grant a

European patent in respect of the same claims subject to one amendment to a software claim which I will come to later.

### **The inventions**

3. Most modern computer operating systems embody a dynamic link library (DLL). The DLL is a collection of small programs or files, any one of which can be called up as required by an executable program (EXE) running on the computer at the relevant time. DLL files are used to perform a variety of functions. A common example is allowing the EXE program to communicate with a specific device such as a printer. But they can also be used to perform routine management functions required by the EXE program. Examples given in the evidence and the specification include identifying free space on the hard drive, saving data to physical memory, the creation or destruction of an object within a process and causing a device to perform a function such as emitting an alarm sound. Once the relevant DLL file has been called by the EXE program it can then be run within that program so as to execute the particular function required.
4. DLL files have a number of advantages over some forms of static linking. In order to operate they do not require to be loaded into the computer's random access memory (RAM) as part of the EXE program thereby saving space in RAM. When a DLL file is required in order to perform a particular function it is simply loaded into the virtual address part of the process using it and then unloaded when the process terminates. Because the functionality provided by a particular DLL file is available to any number of programs which may require to use it the computer also needs to store only a single copy of the DLL in physical memory.
5. The other significant advantage of using a DLL module is that it can be modified to accommodate and support displays or functions that were not available when the application programme was originally supplied and loaded, but are subsequently added on. So, for example, the maker of a mobile phone may wish to provide a hardware specific function for a particular model of phone or a service provider to update the instrument's functionality by providing it with a satellite communication facility. Changes of this kind can be implemented by the modification of the DLL without re-compiling and re-linking existing applications provided that the calling conventions and other information supplied by the DLL which enables the EXE program to link with the DLL files is not changed.
6. According to the specification the invention with which this appeal is concerned relates to

*“ a method of accessing data in a computing device and, in particular to a method of accessing data held in a dynamic link library in the computing device. The present invention also relates to a computing device controlled by the method. ”*
7. It therefore has an application to a wide range of electrical devices including any form of computer, various forms of cameras and communication devices such as mobile and smart phones and other products which combine communications, image recording and computer functionality within a single device.

8. As explained earlier, the DLL contains a number of functions and modules which may be common to a number of different software and hardware operations available to the user of the device. A function stored in the DLL can be activated by means of a call from the application requiring the particular functionality. The effective management of this process is necessary for the efficient operation of the computer because application programs each require functionality for their own purposes and are therefore in competition with each other to use the resources of the computer in order to perform the specific function which the owner of the device has accessed.
9. Each file in the DLL occupies a particular position or ordinal. There are essentially two ways in which an application can call for a particular file and link to it. The first is by reference to the ordinal number (link-by-ordinal); the second is by reference to the name (link-by-name). Both are of course known in the prior art.
10. Under the link-by-name system a call to the function by the application program involves its name being looked up in a table which lists the assigned function name with its respective ordinal number. The ordinal number is then accessed by the application seeking to utilise that function. In this system it is possible to modify application code without regard to the order of functions in the DLL. Although the look-up table will need to correctly associate DLL files with their name and ordinal number, the location of the file in the DLL will be unimportant.
11. By contrast, the link-by-ordinal number system is faster and requires less processing power and memory. Names are longer in comparison to ordinals and require additional code for their definition. Moreover, ordinal linking does not require a name ordinal look-up table to be stored on the device thereby saving memory and reduces the amount of processing power used in the look-up operation. Ordinal linking would therefore be the preferred method in many DLL based operating systems particularly those for use in smart phones which have restricted physical resources. It is, however, more difficult to administer because the application code has to include the correct location in the DLL of the functions to be accessed. Any changes to the DLL can affect the application code and impede the access to the DLL file which the application is seeking. Ultimately, this can lead to the wrong function being allocated and to the failure of the program.
12. The link-by-ordinal system, although faster and more efficient is therefore more vulnerable to modifications of the DLL. As mentioned earlier, these commonly occur when there are updates to the functionality of the device.
13. According to the specification the invention seeks to overcome these problems and to optimise the use of an ordinal number linking system in the DLL by providing an interface which contains suitable mapping between the functions and their ordinals within the DLL thereby eliminating the possibility of malfunction caused by a change in the ordinal position of a particular DLL file due to the modification of the DLL library by the addition of a new DLL file.
14. The invention involves the division of the DLL into two sections: one containing fixed functions whose ordinals cannot be changed; the other containing functions which can be modified or moved by third party additions to the functionality of the device. It is described in the specification as follows:

“....

*According to a first aspect of, the present invention there is provided a method of operating a computing device having an operating system and a dynamic link library containing a plurality of functions accessible by an executable program, each function in the dynamic link library being associated with an ordinal number, the method comprising: providing the dynamic link library as a first part and an extension part, the first part and the extension part each containing one or more of the plurality of functions; causing the executable program to link to functions in the first part directly by means of the associated ordinal numbers; and causing the executable program to link to functions in the extension part indirectly via a further library containing additional functions.*

....”

15. The methodology is illustrated in diagrammatic form by Figure 4 from the specification.

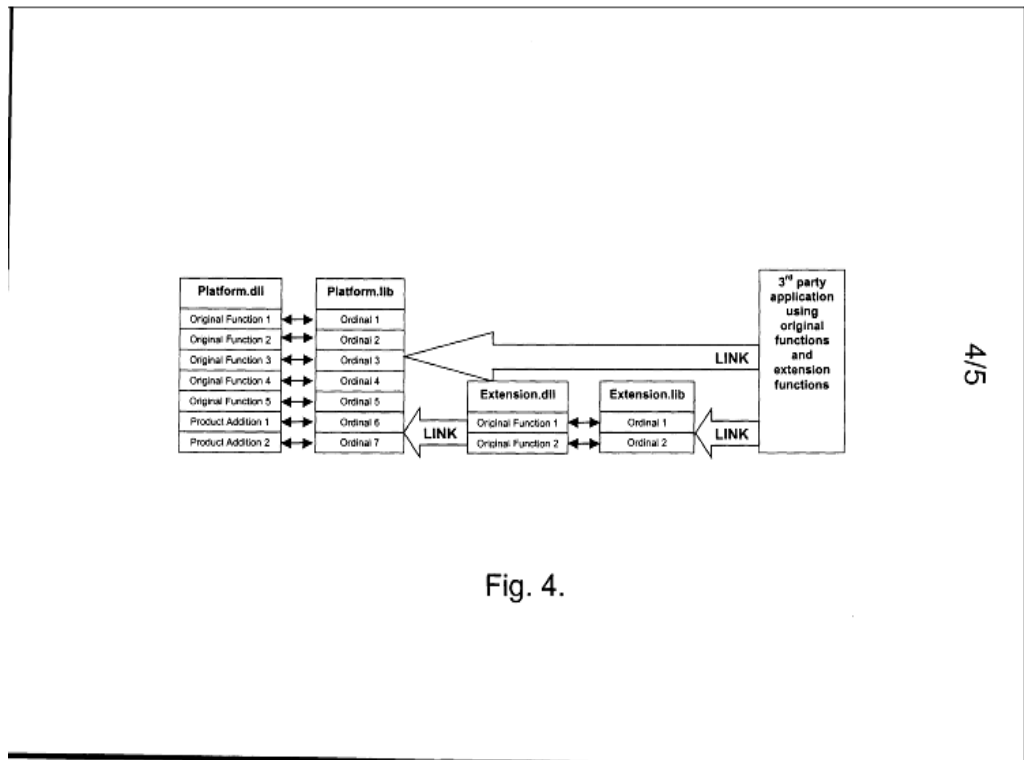


Fig. 4.

## The Claims

16. The claims presently on file include 17 main claims and two sets of alternative claims. The set of main claims is addressed towards the general invention and includes three independent claims. Claim 1 reads:

*“A method of operating a computing device having an operating system and a dynamic link library containing a plurality of functions accessible by an executable program, each function in the dynamic link library being associated with an ordinal number, the method comprising:*

*Providing the dynamic link library as a first part and an extension part each containing one or more of the plurality of functions;*

*Causing the executable program to link to functions in the first part directly by means of the associated ordinal numbers; and*

*Causing the executable program to link to functions in the extension part indirectly via a further library containing additional functions”*

17. Claim 9 relates to software arranged to cause a computing device to operate in accordance with the method set out in claims 1 – 8. This was amended in the EPO proceedings by deleting the reference to software and substituting the words “program product”. It is not clear what (if any) change in substance that made. Claim 10 is an apparatus claim to a computing device comprising a DLL arranged to carry out the method steps contained in claims 1 – 8.
18. There is therefore no substantive difference between claims 1 and 10 and they must stand or fall together. The software claim has to be approached in the same way. As explained by Kitchin J in *Astron Clinica Limited v Comptroller General* [2008] EWHC 85 there is no reason in principle to exclude claims to computer programs from patentability under Art.52 where the claims to a method performed by running a suitably programmed computer or to a computer program to carry out the method are allowable. The question in each case is whether the technical effect produced by the invention is sufficient to make it patentable or whether (to use the words of Art.52 (3)) it is more than a patent for the computer program as such.
19. The first set of alternative claims concentrates on the performance by the operating system of the various available functions contained in the two parts of the DLL but does not affect the substance of the claims in terms of their patentability and need not be considered separately from the main claims. The second set of alternative claims specify the managing of the resources of the computing device. This may have been included to meet the suggestion made by Pumfrey J in *Halliburton v Smith* [2006] RPC 2 that claims might require to be to some form of specific industrial activity. But again the substance of the invention is not affected and it seems to me doubtful whether they would require separate consideration even if the appeal on the main claims were to fail.

## The law

20. Art. 52 of the EPC (which is given effect to by s. 1(2) of the 1977 Act) provides as follows:

*“ (1) European patents shall be granted for any inventions, [in all fields of technology] which are susceptible of industrial application, which are new and which involve an inventive step.*

*(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:*

*a. discoveries, scientific theories and mathematical methods;*

*b. aesthetic creations;*

*c. schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;*

*d. presentations of information.*

*(3) The provisions of paragraph 2 shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.”*

21. The words “in all fields of technology” which I have included in brackets have been added to paragraph 52(1) of the EPC 2000 which came into effect on 13 December 2007. They were inserted, it is said, in order to make the EPC more compliant with TRIPS (the Agreement on Trade Related Intellectual Property Rights (1994)) which does not have the same categories of excluded material. Art.27(1) of TRIPS states that:

*“Subject to the provisions of paragraphs 2 and 3 [which roughly correspond to the art 53 exceptions] patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application . . . patents shall be available and patent rights enjoyable without discrimination as to . . . the field of technology.”*

22. As yet there has been no corresponding change to the 1977 Act but Symbian has raised an argument based on the change to the EPC that it is now open to me to take a broader view of the law compatible with the current jurisprudence of the EPO in preference to the decisions of the Court of Appeal up to and including its recent decision in *Aerotel v Telco; Macrossan’s Application [2007] RPC 7* (“*Aerotel*”). I shall come to this point later after considering the recent English authorities.

23. It has long been recognised that the excluded categories under Art.52 (2) have no common theme or purpose and need to be considered separately. The question of how to determine whether an invention is excluded from patentability as a computer program was one of the principal issues considered by the Court of Appeal in *Aerotel*. In giving the judgment of the Court, Jacob LJ conducted an extensive analysis of the history of the case law on excluded matter which is contained in an Appendix to the judgment. In it he traces the development of the English authorities and contrasts it with the approach in the EPO. A similar (but equally illuminating) analysis can be found in the judgment of Kitchin J in *Astron Clinica*.
24. After referring to the earlier decisions of the Court of Appeal in *Merrill Lynch's Application [1989] RPC 561*; *Gale's Application [1991] RPC 305*; and *Fujitsu Ltd's Application [1997] RPC 608* Jacob LJ (at paragraph 40) set out a four step test of exclusion which had been put forward by the Comptroller General's counsel and described as a structured approach consistent with the principles derived from the earlier authorities. The steps are:
- “ (1) *properly construe the claim*
- (2) *identify the actual contribution;*
- (3) *ask whether it falls solely within the excluded subject matter;*
- (4) *check whether the actual or alleged contribution is actually technical in nature.*”
25. I do not propose to undertake the same kind of detailed survey of the earlier cases. The Hearing Officer applied the decision in *Aerotel* (as she and I are bound to do subject to Mr Davis's point about the change in the wording of the EPC) but it is, I think, necessary to examine some of the earlier authorities in order to understand what the test laid down in *Aerotel* is intended to achieve and what should be the focus of the Court's inquiry when considering potentially excluded material in the form of a computer program.
26. Advances in technology mean that most improvements to a computer or computer-based device can be effected via a software program. The present invention is no exception to this. It involves the re-structuring of the DLL (itself a computer program) by the provision of a novel interface to assist the EXE program to access the relevant DLL file regardless of intervening amendments or updates to the system. At this stage in the examination of the patent issues of novelty and inventiveness do not have to be addressed except in general terms. But assuming that one is dealing here with claims which do embody an original and inventive step which would otherwise merit a patent, then this case provides another good example of the way in which UKIPO and the English Courts are forced to struggle with concepts such as technical contribution or technical effect in a way which is alien to the EPO in its current approach to the same provisions of the EPC.
27. To understand the background to the *Aerotel* test it is unnecessary to go further back than the EPO Board of Appeal's decision in *Vicom System Inc's Application [1987] O.J. EPO 14*. It concerned a claim to a method of digitally processing images

although there was also a subsidiary apparatus claim to a computer program to operate that technology. The Board said:

*“16. In arriving at this conclusion the Board has additionally considered that making a distinction between embodiments of the same invention carried out in hardware or in software is inappropriate as it can fairly be said that the choice between these two possibilities is not of an essential nature but is based on technical and economical considerations which bear no relationship to the inventive concept as such. Generally speaking, an invention which would be patentable in accordance with conventional patentability criteria should not be excluded from protection by the mere fact that for its implementation modern technical means in the form of a computer program are used. Decisive is what technical contribution the invention as defined in the claim when considered as a whole makes to the known art. Finally, it would seem illogical to grant protection for a technical process controlled by a suitably programmed computer but not for the computer itself when set up to execute the control.”*

Both claims were upheld.

28. In *Genentech Inc’s Patent [1989] RPC 147* the Court of Appeal approved the reasoning of the Board of Appeal in *Vicom*. This was followed soon afterwards by the decision of the Court of Appeal in *Merrill Lynch* which also adopted the *Vicom* approach. Fox LJ said (at p.569)

*“The position seems to me to be this. Genentech decides that the reasoning of Falconer J. is wrong. On the other hand, it seems to me to be clear, for the reasons indicated by Dillon L.J., that it cannot be permissible to patent an item excluded by section 1(2) under the guise of an item which contains that item – that is to say, in the case of a computer program, the patenting of a conventional computer containing that program. Something further is necessary. The nature of that addition is, I think, to be found in the *Vicom* case where it is stated: “Decisive is what technical contribution the invention makes to the known art”. There must, I think, be some technical advance on the prior art in the form of a new result (e.g., a substantial increase in processing speed as in *Vicom*).”*

29. It is clear from these decisions that the Court of Appeal accepted the reasoning of the Board of Appeal in *Vicom* that not all computer programs were to be excluded from patentability. The key to exclusion is Art. 52(3): i.e. are they merely programs for computers as such. The technical contribution test established in *Vicom* therefore moves the essential enquiry away from the fact that one is dealing with an invention based on a computer program to a consideration of the kind of technical effect which the program produces in the device in which it operates. In *Merrill Lynch* the claim to patentability failed because the claims also amounted to a method of doing business and were excluded under Art. 52(2) (c) in any event. It was not therefore relevant or

necessary to decide whether they also produced a technical advance in accordance with the *Vicom* criteria. Any such advance would still constitute excluded matter. But that is not a problem in this case. The only exclusion relied upon by UKIPO is that relating to computer programs.

30. The next case to mention is *Gale*. Mr Gale claimed to have discovered an improved method of calculating the square root of a number using a computer. The program was loaded into the ROM of the computer and the claim was for the circuitry of the ROM loaded with the program so as to enable the computer to calculate square roots in this new way. The Court of Appeal held (applying the reasoning in *Merrill Lynch*) that if the program was not patentable it could not be saved merely by incorporating it into some form of carrier whether a computer or (in those days) a floppy disk. At p.325 Nicholls LJ said this:

*“Plainly, however, if the instructions qua instructions are not patentable, a claimant's position is not improved by claiming a disc on which those instructions have been recorded or a ROM in which they have been embodied. The disc or ROM is no more than an established type of artefact in which the instructions are physically embedded. It is merely the vehicle used for carrying them. If the disc or ROM, considered as a disc or ROM, is in all respects conventional, a claim can no more be made for the disc or ROM incorporating those instructions than a claim for a patent could be made for a conventional compact disc on which a particular new piece of music has been recorded. Every compact disc on which a piece of music is recorded differs physically from every other compact disc on which different pieces of music are recorded. But these physical differences are not material for patent purposes, because they constitute no more than the use of a compact disc for its intended purpose. Likewise with a disc or ROM which records or reproduces a new set of instructions, if those instructions are recorded on a conventional disc, or are stored in a ROM using conventional methods. To decide otherwise would be to exalt form over substance.”*

31. The question therefore was whether the program loaded into the ROM produced a new technical effect of the kind identified in *Vicom*. The answer given by Nicholls LJ (at pages 327-8) was that it did not:

*“That still leaves the difficulty that those instructions when written, and without more, are not patentable, because they constitute a computer program. Is there something more? In the end I have come to the conclusion that there is not. The attraction of Mr. Gale's case lies in the simple approach that, as claimed, he has found an improved means of carrying out an everyday function of computers. To that extent, and in that respect, his program makes a more efficient use of a computer's resources. A computer, including a pocket calculator with a square root function, will be a better computer when programmed with Mr. Gale's instructions. So it may. But the*

*instructions do not embody a technical process which exists outside the computer. Nor, as I understand the case as presented to us, do the instructions solve a "technical" problem lying within the computer, as happened with patent applications such as IBM Corp./Computer-related invention (Decision T 115/85) [1990] E.P.O.R. 107 and IBM Corp./Data processor network (Decision T 06/83), [1990] E.P.O.R. 91. I confess to having difficulty in identifying clearly the boundary line between what is and what is not a technical problem for this purpose. That, at least to some extent, may well be no more than a reflection of my lack of expertise in this technical field. But, as I understand it, in the present case Mr. Gale has devised an improvement in programming. What his instructions do, but it is all they do, is to prescribe for the cpu in a conventional computer a different set of calculations from those normally prescribed when the user wants a square root. I do not think that makes a claim to those instructions other than a claim to the instructions as such. The instructions do not define a new way of operating the computer in a technical sense, to adopt the expression used in IBM Corp./Document abstracting and receiving (Decision T22/85), [1990] E.P.O.R. 98, 105.*

*In short, therefore, the claim is in substance a claim to a computer program, being the particular instructions embodied in a conventional type of ROM circuitry, and those instructions do not represent a technical process outside the computer or a solution to a technical problem within the computer."*

32. Sir Nicolas Browne-Wilkinson V-C approached the matter in a more compressed way (at page 333):

*"Mr Gale's discovery is a computer program (an excluded matter) incorporated in a ROM which is a device of no inherent novelty. The mere incorporation of the programs in the ROM does not alter its nature: it remains a computer program. A computer program remains a computer program whether contained in software or hardware: proposition (3) above. Moreover the result of the incorporation of Mr Gale's "method of calculation" or "computer program" (both excluded matters) only produces another excluded matter, viz. a computer program: proposition (2) above. That is enough to decide this case.*

*As Nicholls L.J. points out, other difficult cases can arise where the computer program, whether in hardware or software, produces a novel technical effect either on a process which is not itself a computing process (see VICOM/Computer-related invention (Decision T208/84), [1987] 2 E.P.O.R. 74) or on the operation of the computer itself (see IBM Corp./Computer-related invention (Decision T115/85), [1990] E.P.O.R. 107). But, in my judgment, those difficulties do not arise in the*

*present case. Mr Gale's discovery is from start to finish a "mathematical method" or "computer program": its incorporation in a device having no novelty does not alter the position."*

33. It is of course true that Mr Gale's invention was a computer program. But *Vicom* establishes that this is simply the starting point in any determination of whether the invention is excluded material: i.e. is it only a computer program as such? It is never an answer in itself. The three propositions set out in the quotation above need to be read with this caution in mind. The last paragraph of the Vice-Chancellor's judgment is relied on by the Comptroller in this case for its reference to the line only being crossed where the computer program produces a novel technical effect on a process which is not itself a computing process. The insertion of the interface to control access to the DLL was regarded by the Hearing Officer in this case as no more than the addition of one piece of software to another: i.e. still a computer program and as such excluded matter. But this states the question rather than answers it. As the Vice-Chancellor recognised in the same paragraph of his judgment programs which bring improvements to the operation of the computer may amount to more than the mere running of a computer program.
34. The claim in *Fujitsu* was to a computer program for modelling synthetic crystal structures. Aldous LJ (at p.616) again emphasized the need to identify a technical contribution but stressed the problems which this can involve:
- "I, like Nicholls L.J., have difficulty in identifying clearly the boundary line between what is and what is not a technical contribution. In Vicom it seems that the Board concluded that the enhancement of the images produced amounted to a technical contribution. No such contribution existed in Gale's Application which related to a ROM programmed to enable a computer to carry out a mathematical calculation or in Merrill Lynch which had claims to a data processing system for making a trading market in securities. Each case has to be decided upon its own facts."*
35. These decisions of the Court of Appeal achieved an obvious measure of consistency with the decisions of the EPO in *Vicom* and in *IBM/Computer Program Product T 1173/97 [1999] O.J EPO 609* which emphasize that the intention of Art. 52(2) and (3) is not to exclude all computer programs from patentability. Thereafter the paths separate. In the trilogy of cases (*Pension Benefit System Partnership(2000) T 931/9; Hitachi/Auction Method (2004) T258/03* and *Microsoft/Data transfer (2006) T424/03*) there was a departure from the approach in *Vicom* with its emphasis on technical contribution. The Board in all three cases accepted that an apparatus claim (in the programmed computer) was not excluded by Art. 52 (2) as a computer program: the so-called "hardware approach". It was, they said, therefore unnecessary to resort to the criterion of technical contribution in order to determine whether the invention was excluded matter. They therefore rejected the approach of the Court of Appeal in *Gale* and of the Board in *Vicom* with its emphasis on substance over form.
36. In *Aerotel* Jacob LJ rightly described the various decisions of the EPO Board of Appeal as mutually contradictory and declined to follow any of the later trio of

decisions. In paragraph 76 of the judgment he suggested a reference of various questions of law to the Enlarged Board of Appeal in order to clarify the test of exclusion under Art.52. That invitation has subsequently been rejected by the President of the EPO as unnecessary on the basis that the reasoning of the Board in *Vicom* has been replaced by that in *Pension Benefit; Hitachi* and *Microsoft*.

37. This divergence between the jurisprudence of the English Courts and the EPO is a matter of considerable concern and renders hollow the sentiments expressed by judges such as Lord Hoffmann in *Merrill Dow Pharmaceuticals Inc. v H.N. Norton & Co. Ltd* [1996] RPC at p.82 about the need for consistency of approach. To some extent this is the inevitable consequence of the combination of our strict system of precedent and the inability of the EPO Board of Appeal to make decisions binding on the Courts of all member states. But the reality is that English Courts (up to the House of Lords) remain bound by the decisions in *Merrill Lynch* and *Gale* although they are based on the *Vicom* approach which the Board appears now to have rejected.
38. Before coming to the test propounded in *Aerotel* it is useful to look at a passage in the decision of Pumfrey J in *Shoppalotto.com Ltd's Application* [2005] EWHC 2416 (Pat). At paragraphs 9 – 11 he said this about the scope of Art. 52 in relation to computer programs:

*“There has been a tendency, especially in the earlier decisions of the Technical Boards of Appeal, to consider that the exclusions have in common a lack of 'technical effect' . While this may be true of many members of the list, it is not necessarily the case. A programmed computer provides an obvious example. Suppose a program written for a computer that enables an existing computer to process data in a new way and so produce a beneficial effect, such as increased speed, or more rapid display of information, or a new type of display of information. It is difficult to say that these are not technical effects, and, indeed, that the programmed computer, itself a machine that ex hypothesi has never existed before, is itself a technical article and so in principle the subject of patent protection. The real question is whether this is a relevant technical effect, or, more crudely, whether there is enough technical effect: is there a technical effect over and above that to be expected from the mere loading of a program into a computer? From this sort of consideration there has developed an approach that I consider to be well established on the authorities, which is to take the claimed programmed computer, and ask what it contributes to the art over and above the fact that it covers a programmed computer. If there is a contribution outside the list of excluded matter, then the invention is patentable, but if the only contribution to the art lies in excluded subject matter, it is not patentable.*

*The majority of the English decisions (in particular, Merrill Lynch [1989] RPC 561 (CA), Fujitsu [1996] RPC 511 (Laddie J) and [1997]RPC 608 (CA), Gale [1991] RPC 305), along with EPO decisions such as T208/84 Vicom/Computer-related*

*Invention [1987] OJEPO 14, [1987] 2 EPOR 74, support this approach. The analysis has two stages. First, determine what the inventor has contributed to the art over and above a computer operating in a new way as a matter of substance and, second, determine whether this contribution lies in excluded matter or, on the contrary, whether it consists in a technical contribution or effect. The contribution must be considered as a matter of substance so as (for example) to prevent patents being granted for such things as novel computer programs on a carrier such as a compact disc.*

*An invention may be viewed as a solution to a concrete technical problem. Merely to program a computer so that it operates in a new way is not a solution to any technical problem, although the result may be considered to be a new machine. It follows that an inventive contribution cannot reside in excluded subject matter. I consider that this is a correct statement of the principle, although the learning in the EPO on this issue is not entirely consistent. Decision T0935/97 IBM/Computer Program II is a case in which a claim to a program on a carrier was allowed, although the material technical effect was found only in the computer once programmed with the claimed software, but I think that the contribution approach is the one that I should take in the light of the decided English authorities, and having regard to what I believe to be the preponderance of the views expressed in the EPO.”*

39. This passage is, I think, important for where it seems to set the threshold of the test for relevant technical effect and I shall return to it later when considering some of the English cases decided since *Aerotel*.
40. This brings me to *Aerotel* itself. Jacob LJ begins (at paragraph 38) by acknowledging that the Court of Appeal is bound by its earlier decisions in *Merrill Lynch, Gale* and *Fujitsu*. He then comes to the test at paragraph 40 quoted earlier which he explains at paragraphs 42 – 47:

*“42 No-one could quarrel with the first step – construction. You first have to decide what the monopoly is before going on the question of whether it is excluded. Any test must involve this first step.*

*43 The second step – identify the contribution – is said to be more problematical. How do you assess the contribution? Mr Birss submits the test is workable – it is an exercise in judgment probably involving the problem said to be solved, how the invention works, what its advantages are. What has the inventor really added to human knowledge perhaps best sums up the exercise. The formulation involves looking at substance not form – which is surely what the legislator intended.*

*44 Mr Birss added the words “or alleged contribution” in his formulation of the second step. That will do at the application stage – where the Office must generally perforce accept what the inventor says is his contribution. It cannot actually be conclusive, however. If an inventor claims a computer when programmed with his new program, it will not assist him if he alleges wrongly that he has invented the computer itself, even if he specifies all the detailed elements of a computer in his claim. In the end the test must be what contribution has actually been made, not what the inventor says he has made.*

*45 The third step – is the contribution solely of excluded matter? – is merely an expression of the “as such” qualification of art 52(3). During the course of argument Mr Birss accepted a re-formulation of the third step: Ask whether the contribution thus identified consists of excluded subject matter as such? We think either formulation will do – they mean the same thing.*

*46 The fourth step – check whether the contribution is “technical” – may not be necessary because the third step should have covered that. It is a necessary check however if one is to follow Merrill Lynch as we must.*

*47 As we have said this test is a re-formulation of the approach adopted by this court in Fujitsu: it asks the same questions but in a different order. Fujitsu asks first whether there is a technical contribution (which involves two questions: what is the contribution? is it technical?) and then added the rider that a contribution which consists solely of excluded matter will not count as a technical contribution.”*

41. This test (as Jacob LJ makes clear in the passage I have quoted) is not intended to be a departure from the law as laid down in *Merrill Lynch, Gale* and *Fujitsu*. It was offered to and accepted by the Court of Appeal as a useful means of determining whether the criteria and principles applied in those cases are satisfied in any given case. But it is not in itself a substitute for those principles; still less for the provisions of Art.52 itself. It is therefore important when going through the four steps to keep firmly in mind what principles are embodied in them and not to substitute this four stage formulation for Art. 52 as interpreted by the earlier Court of Appeal decisions.
42. I stress this point particularly in relation to steps 3 and 4. The question whether the claim falls solely within the excluded subject matter (in this case a computer program) cannot be answered in isolation from the issue of whether it embodies a relevant technical contribution in the *Merrill Lynch* sense. The separation of this issue between steps 3 and 4 is not a problem provided that one recognises that they are as a matter of law alternatives. Where the only potential category of excluded material is a computer program then a claim based on such a program will be excluded unless it is in the relevant sense technical in nature. In paragraphs 46 and 47 Jacob LJ makes it clear that the Art. 52 (3) test is part of the step 3 question but that of course is

inseparable from the issue of technical contribution in step 4 which only becomes an unnecessary inquiry if the question is included as part of step 3.

43. Finally on the law, I need to mention some of the post *Aerotel* decisions. The first of these is the decision of Mr Christopher Floyd Q.C in *Oneida Indian Nation's Application [2007] EWHC 0954 (Pat)* which concerned a gaming apparatus arranged to perform a two stage gaming method in which the results of the wager had to be separately requested which could be done either on or off site and at a separate time from the wager in order to comply with local gaming laws. The Hearing Officer rejected the claims on the basis that they were excluded matter either as a method of doing business or as a computer program as such. The Deputy Judge (after referring to the treatment of *Merrill Lynch* in *Aerotel*) said this:

“...

*10. Fox LJ went on to say that, even if there was a technical contribution, if the result was still within an exclusion then that is the end of it:*

*"Now let it be supposed that claim 1 can be regarded as producing a new result in the form of a technical contribution to the prior art. That result, whatever the technical, advance may be, is simply the production of a trading system. It is a data processing system for doing a specific business, that is to say, making a trading market in securities. The end result, therefore, is simply "a method..., of doing business", and is excluded by section 1(2)(c). The fact that the method of doing business may be an improvement on previous methods of doing business does not seem to me to be material. The prohibition in section 1(2)(c) is generic; qualitative considerations do not enter into the matter. The section draws no distinction between the method by which the mode of doing business is achieved. If what is produced in the end is itself an item excluded from patentability by section 1(2), the matter can go no further. Claim 1, after all, is directed to "a data processing system for making a trading market". That is simply a method of doing business. A data processing system to produce a novel technical result would normally be patentable. But it cannot, it seems to me, be patentable if the result itself is a prohibited item under section 1(2)."*

*In Aerotel at [85], after citing these passages from Merrill Lynch, Jacob LJ said:*

*"So the technical contribution theory was adopted by this court but with the important rider that inventive excluded matter could not count as a technical contribution"*

*It is clear, therefore, that the critical question is that asked by the third step: does the contribution lie solely in excluded matter? If the invention fails to overcome that test, then it is*

*excluded. Identification of some technical advance as compared with earlier methods does not bring back into contention inventions excluded at the third step. If the invention has been excluded at step 3, any technical contribution must have been one of purely excluded matter. Inventive excluded matter cannot, as a consequence of the Merrill Lynch rider, count as a technical advance. The fourth step is intended merely to make sure that inventions that have passed at step 3 are technical in nature, so step 4 is exclusionary in nature.*

*11. Paragraph 10 of the Patent Office's Guidance Note issued after Aerotel says*

*"If the invention passes the third step, one must then check whether the contribution is technical in nature. Of course it is not necessary to apply this fourth step if the invention has failed at the third."*

*I agree, but on the basis that an invention will not pass the third test on the strength of technical advances which fall solely within one of the excluded categories.*

*...."*

44. As mentioned earlier the *Merrill Lynch* rider is Fox LJ's statement that a novel technical result which might otherwise be patentable cannot have this result if the latter is itself a prohibited item under Art. 52: in that case a method of doing business. Jacob LJ said in *Aerotel* (paragraph 85) that this meant that inventive excluded matter could not count as a technical contribution. But in a case in which the only excluded class relied on is that of a computer program the rider has no practical application because the existence of a relevant technical contribution is itself the determinant of whether the exclusion applies. On a proper application of the step 3 test, step 4 becomes little more than a duplication. In his judgment in *Astron Clinica* Kitchin J (at paragraph 49) describes the purpose and effect of the *Aerotel* test in these terms:

*"..*

*Third, I believe that in any particular case the application of the new approach should produce the same result as did the old. Indeed the Court of Appeal considered it was doing no more than applying a re-ordering of the Merrill Lynch test and that it was bound by Merrill Lynch, Gale and Fujitsu. Thus, in the case of a computer related invention which produces a substantive technical contribution, the application of step ii) will identify that contribution and the application of step iii) will lead to the answer that it does not fall wholly within excluded matter. Any computer related invention which passes step iii) but does not involve a substantive technical contribution will fail step iv). The answer to these questions will be the same irrespective of whether the invention is claimed in the form of a programmed computer, a method*

*involving the use of that programmed computer or the program itself. Aerotel/Macrossan requires the analysis to be carried out as a matter of substance not form, just as did Genentech, Merrill Lynch, Gale and Fujitsu. True it is that the first step requires the scope of the monopoly to be determined and, in the case of a program, that will necessarily be limited. However the contribution of that monopoly must still be assessed by reference to the process it will cause a computer to perform.*

..”

45. I agree with this subject to one reservation. For the reasons just given, I do not believe that a claim to a computer program or computer based system which survives step 3 could ever then be rejected as excluded matter under step 4 on the basis that it did not involve a substantive technical contribution. They are in reality a single question.
46. This brings me to the additional argument that following the change in the wording of Art. 52 I am free to follow the more recent trio of EPO decisions in preference to *Aerotel* and *Merrill Lynch*. Mr Davis accepts that but for the change I am bound by the recent Court of Appeal decisions in preference to those of the EPO but the EPC 2000 allows me, he says, to start with a fresh view of the law.
47. I am not convinced about this. The 1977 Act has not been amended to incorporate the new wording of the EPC. But that aside, it seems to me that it requires something more than the addition of the reference to all fields of technology for me to be able to jettison four binding decisions of the Court of Appeal. *Pension Benefit, Hitachi* and *Microsoft* were all decided before the change of wording. The changes in the EPC 2000 were not responsible for the change of direction taken by the EPO in those cases and arguably do not effect any alteration in the substance of the law. The exclusionary provisions of Art. 52 (2) and (3) remain the same and it is difficult to see how the reference to all fields of technology can be construed as making any claim patentable which would otherwise be excluded as no more than a computer program. I also think that Miss May is right when she says that the new words merely make express what has always been implied.
48. It follows that it is not open to me to disregard *Aerotel* on the basis that it has been superseded by a change in the relevant legislation.

### **The Hearing Officer’s Decision**

49. The Hearing Officer focussed on the method claim 1 of each set of claims on the basis that in substance each of these claims relate to a method of operating a computer which is broadly the same. She then went through the *Aerotel* four step test.

### **Step 1 : Construing the claim**

50. This is not a problem in the present case. As explained earlier, the substance of the claim is the re-organisation of the DLL into two parts and the provision of a library interface for the extension DLL so as to improve the linking of any EXE program

running on the computer with the available functions contained in the DLL files. No issues of construction arise.

## **Step 2 : Identify the contribution**

51. Symbian's case before the Hearing Officer was that the contribution made by the invention lay in the improved reliability of a computing device enabled by the provision of a novel interface. This enabled the EXE program to access available functionality regardless of additions or amendments made by the updates to the DLL and its ordinal numbers.
52. The Hearing Officer assessed the contribution in these terms:

“..

*20 Whilst the use of the “interface” may well lead to improved reliability, it seems to me that this is an advantage of the method claimed rather than the actual contribution in the sense set out in paragraph 43 of the Aerotel/Macrossan judgement. In my view, the contribution made by the invention as claimed in all the claim sets lies in the interface which enables an executable program to access the functionality available on the computing device, regardless of any additions or amendments made to the available functionality by a third party. Does the contribution fall solely within the excluded subject matter?*

.. “

53. In physical terms that is right. But the assessment of the contribution made by the computer program used to carry the invention into effect does seem to me to involve some reference to and consideration of the problems which the invention solves albeit by the interposition and use of the interface. This would include improvements in reliability consequent upon the modifications to the operating system. To use the words of Jacob LJ it has to encompass the problem said to be solved; how the invention works; and what its advantages are: see *Aerotel* at paragraph 43.

## **Step 3 : Does the contribution lie solely in excluded subject matter?**

54. This is the “as such” test. The Hearing Officer was referred to the treatment of *Gale* in *Aerotel* and in particular to paragraph 92 of the judgment in which Jacob LJ said this:

*“So what Gale decided is that the computer program exclusion extends not merely to the code constituting a program, but that code as embodied on a physical medium which causes a computer to operate in accordance with that code. More is needed before one is outside the exclusion – as for instance a change in the speed with which the computer works. A technical effect which is no more than the running of the program is not a relevant technical effect. And Gale clearly*

*decides that merely putting a new program on a known memory device is not enough to escape art 52(2).”*

55. So is this invention no more than the running of the program? Having regard to the earlier authorities the answer has to be that it depends on what the program does and not merely how it does it. The mere fact that it involves the use of a computer program does not exclude it: see *Aerotel* at paragraph 22. This point was made in its clearest form in paragraph 16 of the decision in *Vicom* (quoted at paragraph 27 above) which underpins all of the current English authority on this point.
56. The Hearing Officer set out her conclusions in the following paragraphs of her decision. I have included her treatment of Step 4 (rather than deal with it separately) because it is integral to her approach to Step 3:

*“28 It seems to me that if the contribution made by the invention, considered as a matter of substance rather than the form of claim (see paragraph 43 of Aerotel/Macrossan), consists solely of a program for a computer, then the invention will be excluded under section 1(2) and will not be saved by reference to a possible technical effect. I should not now give the applicant benefit of any doubt as to whether the invention arguably covers patentable subject-matter, as paragraph 5 of the judgment makes clear. Nevertheless, it bears emphasising that the exclusion of section 1(2) applies only where the invention relates to excluded matter as such. I must therefore be satisfied that the contribution lies solely in a computer program before finding against the applicant. I observe that Office decisions are not binding on me and, as I said at the hearing, I must make my decision based on the facts of this case.*

*29 I have carefully considered Miss Harper’s submissions which, if I have understood her correctly, were cited by way of analogy to show that claims to a technical process involving an arrangement of computer programs and also involving the physical step of performing functions on the computing device were patentable.*

*30 So, does the contribution fall solely within the excluded subject matter? As stated above, in my view, the contribution is the interface which enables the executable program to link to the functions in the DLL, where the DLL is the API through which control of the computer hardware is enabled. I cannot see that this control is changed by the claimed invention – it seems to me that the application merely describes a different way in which I can call the functionality held within the DLL and not the way the API operates to control the resources of the computer.*

*31 The application also makes it clear that only applications that require access to the additional functionality of an updated*

*DLL will be handled by the interface. The actual role of the DLL has not been changed by the claimed invention - it still provides exactly the same functionality as it had before. What has changed is the manner in which the DLL has been accessed – it is now done by an additional piece of software in the form of the interface. I therefore find that the contribution made by the claims on file, the main claims and the first auxiliary claims boils down to nothing more than a computer program and hence is excluded from patentability.*

**32** *Turning now to the second auxiliary claims. Despite Miss Harper’s valiant efforts to persuade me otherwise, I cannot agree that managing the resources of a computing device is a physical process in the sense of Touch Clarity or Fisher-Rosemount referred to earlier in this decision. It’s what the operating system of a computer does. The interface provided by the claimed invention does not alter this fact; it only alters the routing of calls to the DLL. It may provide a different method of accessing functions in the DLL related to the resources on the device, but it does not provide a method of managing resources – that is done by the DLL as it was before.*

**33** *I would add one further comment to reinforce this point. There will, as envisaged by the claims be situations where the executable program does not need to operate through the interface. (Fig 4 provides a good diagrammatic example of this) In these cases it is clear that the DLL functions exactly as it did before the invention and this shows that it is the way in which the DLL is accessed and not the DLL itself that forms the contribution. In my view, this interface is nothing more than an executable application talking to a DLL through another DLL and is clearly a computer program. Indeed Miss Harper stated during the hearing:*

*“I think what the interface controls is the access by one computer program (the executable program, as it is called in the claims) – the access by the executable program of functionality. The interface provides the route for the call from the executable program to the functionality. So I guess it is controlling how one computer program (the executable program) interacts with another (the functionality in the API). But our invention goes beyond that, in controlling the device on which all this is implemented. The functions in the API control the operation of the device”*

**34** *I therefore find that the contribution made by the second auxiliary claims is nothing more than a computer program for allowing an executable program to link to a DLL through a further computer program interface and hence sits squarely within the computer program exclusion.*

*Check the contribution is actually technical*

*35 I do not need to apply the fourth step of the test as the contribution has failed the third step.”*

57. The key elements in her reasoning appear to be that the use of the new interface to obtain better linking between the EXE program and the updated DLL does not involve a change in the role of the DLL but only in the way in which it is accessed in the new piece of software. This is nothing more than a computer program and is therefore, she decided, excluded from patentability. Nowhere in this analysis does she ask herself in terms what the technical contribution made by the invention is although that is perhaps implicit in her analysis at Step 2. She clearly therefore takes the view that an improved method of accessing files in the DLL (although creating improvements in the reliability of the computer as a functioning machine) cannot amount to a relevant technical contribution because it is confined to the improvement of one piece of software by another. Having excluded the invention as part of Step 3 she regards Step 4 as redundant.
58. Miss May told me that UKIPO regards Step 2 as the most important one which if properly carried out should make Step 3 straightforward. It also considers that on the basis of *Aerotel* Step 4 is not compulsory in every case. It seems to me that there are considerable dangers here which as I attempted to explain earlier in this judgment can result from regarding Steps 2 – 4 as self-contained. What is clear from the authorities is that the question whether the invention makes a relevant technical contribution has to be asked because it is the determinant of whether Art. 52 (3) has any application. Whether it is asked as part of Step 2, 3 or 4 matters much less than whether it is asked at all. In a case such as this where the only potential application of Art. 52 (2) is in relation to a computer program care needs to be taken not to pre-judge the issue of technical contribution or even to exclude it by concentrating too much on the fact that the invention is program based. Clearly one needs to avoid treating any computer program as some kind of technical advance. But I fail to see why a program which has some novel technical effect on an important component in the computer's operating system should not qualify as doing more than merely operating as a computer program notwithstanding its effect is to solve what on one view is a software problem affecting the functionality and reliability of the computer. I think this is what Pumfrey J had in mind when he referred in *Shoppalotto* to a patentable invention as providing a solution to a concrete technical problem.
59. Without an effective operating system a computer is nothing. It is simply inaccurate to label all programs within the computer as software and on that basis to regard them as of equal importance in relation to its functionality. The end result of the invention (as claimed) is that it does (to use the test in *Gale*) solve a technical problem lying within the computer.
60. After the conclusion of argument on this appeal, I was provided with a copy of the judgment of Lewison J in *Autonomy Corporation Ltd's Application [2008] EWHC 146 (Pat)*. The application there involved a method for generating links related to the content of an active window displayed on a computer screen and for embedding an icon representing these links within (e.g.) the title bar of the window. The aim of the invention was to provide an improved interface between a user and a computer. The

Hearing Officer upheld the Examiner's objections based on the invention consisting of a program for a computer and Lewison J dismissed an appeal from that decision.

61. All cases in this (and any other) area fall to be decided on their own facts but Miss May relies on *Autonomy* as a useful illustration of a program based invention whose only effect was held to be one caused merely by the running of the program: i.e. in that case the creation of a better display and search program.
62. I doubt whether very much is to be gained by trying to make some kind of direct comparison between the invention in *Autonomy* and that in the present case. In paragraph 21 of his judgment Lewison J said of the claim he had to consider that:

*“What is of significance here is that the claimed invention required no new hardware or arrangement of hardware, did not fix any perceived technical shortcoming in the computer itself, and was purely concerned with the processing of data. This was done and done only by a computer program.”*

63. In the present case there is a perceived technical shortcoming caused by modification to the DLL as a result of updates to the computer's functionality. This is not a case where the invention is limited to the processing of data. If an increase in the speed at which the computer works can take the program out of Art.52 (3) (see *Aerotel* at paragraph 92) it is difficult to see why the improved reliability of the machine brought about by the re-organisation of the DLL in its operating system does not.

### **Conclusion**

64. I think that the Hearing Officer took too narrow a view of the technical effect of the invention and was wrong to exclude it from patentability on the basis that it amounted to no more than a computer program. The appeal will therefore be allowed.