

5 Conventionally the securities making up the indexes are weighted either according to market capitalisation (the most common option) or share price, or equally. The invention recognises the difficulty, particularly with market capitalisation, that there is a natural tendency when weighting the index to overemphasise overvalued securities and underemphasise undervalued securities. It therefore seeks to rely on different criteria, so as to weight the index in a way which better reflects the performance and growth potential of the securities, and to offer a choice of passive management options with different risk characteristics.

6 The claims have been amended several times, mainly in order to overcome objection under section 1(2) and to clarify the nature of the weighting without introducing new matter. At the hearing Mr Miller proposed a new set of claims, the widest independent claim (claim 1) reading:

“A system for generating an index of entities, said system comprising:

a store for data about the entities;

an analysis host computer communicating with the store and having an analysis program arranged to build the index from data in the store and to output the index;

wherein the analysis program is arranged to access data in the store for a plurality of entities, normalize the data, generate a weighting of each entity using the normalized data and generate the index using the weighting; and

wherein the building of the index and the weighting of each entity is based on at least one non market capitalization metric, and is not equal weighting.”

7 Claim 3, also independent, lists around 65 non market capitalization metrics on which the index can be based, but is otherwise identical to claim 1. Claim 18 is dependent on preceding claims and adds the following integers:

“a trading host computer arranged to receive an index generated by the analysis host computer and having trading software; and

an exchange host computer in communication with the trading host computer;

wherein the trading software is arranged to determine the identity and quantity of securities to be purchased in accordance with the index generated by the analysis host computer.”

Independent claims 22 and 23 are to “a system for generating an index of entities and constructing a portfolio of the entities” and combine the integers of claims 1 and 3 respectively with those of claim 18.

The law and its interpretation

8 Section 1(2) reads:

“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.”.

9 The interpretation of section 1(2) has recently been considered by the Court of Appeal in *Symbian Ltd's Application* [2008] EWHC Civ 1066, decided on 8 October 2008. *Symbian* arose under the computer program exclusion, but as with its previous decision in *Aerotel*¹ 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* was never intended to be a new departure in domestic law; that it remained bound by its previous decisions, particularly *Merrill Lynch*² 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.

10 Subject to the clarification provided by *Symbian*, it is therefore still appropriate for me to proceed (as Mr Miller did at the hearing) on the basis of the four-step approach explained at paragraphs 40-48 of *Aerotel* namely:

- 1) Properly construe the claim
- 2) Identify the actual contribution (although at the application stage this might have to be the alleged contribution); as explained at paragraph 43 this is “an exercise in judgment probably involving the problem said to be solved, how the invention works, what its advantages are”; it is essentially a matter of determining what it is the inventor has really added to human knowledge, and involves looking at substance, not form.

¹ *Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application* [2006] EWCA Civ 1371, [2007] RPC 7

² *Merrill Lynch's Application* [1989] RPC 561

- 3) Ask whether it falls solely within the excluded matter, which (see paragraph 45) is merely an expression of the “as such” qualification of section 1(2).
- 4) If the third step has not covered it, check whether the actual or alleged contribution is actually technical.

11 I bear in mind the Court’s belief in *Symbian* that it was possible, at least in principle, to reconcile the test with the decision of the European Patent Office Board (EPO) in *Duns Licensing Associates* (T 0154/04) - which was critical of the *Aerotel* approach - by conflating the third and fourth *Aerotel* steps. The Court was fortified in its view by the approach taken in a more recent decision of the Board in *Gameaccount Ltd* (T 1543/06) holding that patent protection should not be conferred “where the only identifiable contribution of the claimed technical implementation to the state of the art is the excluded subject-matter itself”. The Court stated at paragraph 15 that the *Gameaccount* approach:

“... plainly requires one to identify the contribution (which equates to stage 2 in *Aerotel*) in order to decide whether that contribution is solely “the excluded subject-matter itself” (equating to stage 3 in *Aerotel*), while emphasising that the contribution must be “technical” (effectively stage 4 in *Aerotel*). The order in which the stages are dealt with is different, but that should affect neither the applicable principles nor the outcome in any particular case.”

12 A letter from Lucas & Co dated 6 June 2007 invited the examiner, if he was not satisfied that the invention fell outside the exclusions of section 1(2), to conclude that the *Aerotel* test did not take account the UK’s obligations under the TRIPS agreement. It is not open to either an examiner or a hearing officer to do so and indeed Mr Miller confirmed that it served no purpose to pursue the point before the comptroller, although reserving his right to do so on appeal if necessary.

Argument and analysis

13 Before I go through the *Aerotel* test, I will flag up an argument which Mr Miller submitted as regards the conclusions to be drawn from the commercial success of the invention and the level of skill required to devise it. Quite rightly, he accepted that commercial success could not convert an excluded invention into one that was not excluded, but nevertheless submitted that in the light of the success of the invention and the level of skill involved the index made a valuable and useful contribution which was of a technical nature. As he put it in his skeleton argument (paragraph 16) “examples showing the success of an invention can give colour to the way it is used and, perhaps more importantly, the contribution that it has made.”

14 These matters are addressed in detail in Lucas & Co’s letter of 6 June 2007 and in the witness statements from Mr Arnott and Dr Hsu. To summarise matters very briefly, it appears that the applicant has marketed an index (called the “Fundamental Index TM” or “RAFI TM”) which relies on accounting measures –

book equity value, cash flow, sales and dividends - to avoid the volatility inherent in indexes based on market capitalisation or share price which can be affected by speculation. This index appears to have significantly out-performed capitalisation-weighted portfolios and to have been recognised by experts in the investment industry as an outstanding new development. It also appears to have attracted both widespread academic attention and significant commercial acceptance (despite a relatively low spend on advertising) from a wide range of licensees, leading to the applicant's rapid growth. Lucas & Co and Dr Arnott provide supporting data and figures to back up these contentions, but I do not think that I need to go into any detail on that.

- 15 As I said at the hearing I do not dispute any of this, but I think there are limits to the assistance that it can give me in regard to deciding as a matter of law whether the invention falls within one of the excluded categories of section 1(2). Even if leading industry experts believe that the invention is neither well known nor obvious and have recognised its commercial success (Mr Arnott at paragraphs 27-30), this will go if anything to whether the invention is new and not obvious, not whether it is within an excluded category.
- 16 The argument concerning the level of skill required was put in order to show that the invention makes a technical contribution, and I will deal with that as part of the *Aerotel* test, to which I now turn.

Step 1: Construction of the claims

- 17 At the hearing it appeared that questions of added matter and clarity might still remain to be resolved in respect of the claims proposed by Mr Miller. It was agreed that for the most part these could await resolution of the patentability question, but on that matter two points of construction seem relevant to me.
- 18 First, the term "entities" has replaced "assets" used in previous versions of the claims. I do not think that the two terms are necessarily identical in meaning, "entities" to my mind having a broader meaning. The claim does not state in so many words that the entities or assets are financial, but I consider that is clear in context and I therefore construe the term "entities" as meaning financial assets, securities or instruments.
- 19 Second, the proposed claims on the face of it do not exclude weighting by share price. However, as Mr Miller explained, market capitalisation is the share price multiplied by the number of shares issued and is therefore tied to share price; the aim of the invention was "basically to get away from the share price". This point may require clarification if the application proceeds, but for present purposes it goes to what the contribution actually is.

Step 2: Identifying the contribution

- 20 The examiner had argued that the contribution was a weighting of assets on something other than market capitalisation, equality and share price, but Mr Miller believed that this put the contribution on too narrow a footing. He thought that the examiner had merely identified the idea or concept which lay behind the

invention, whereas the invention as a whole was a new system for generating a “tradeable product” in the form of an index. On this point, a fundamental plank of Mr Miller’s argument was that access to the index would be electronic and require the payment of a licence fee which could be substantial. Even though it did not exist in physical form, the index was therefore a product which was bought and sold in much the same way as any other product. To reinforce the point he referred me to the “vendible product” test originating in *GEC’s Application* (1943) 60 RPC 1 and *Cementation Co Ltd’s Application* 62 RPC 151, which showed that a product did not have to exist in physical form in order to be patentable.

- 21 To my mind there is some force in Mr Miller’s argument. If, in accordance with paragraph 43 of *Aerotel* (see above), I ask what problem the invention solves, how it works and what its benefits are, and what it adds to human knowledge, then I do not think that I can ignore the use to which the new form of weighting is put. Accordingly, in my view the contribution, at least of claims 1 and 3, is:

“The generation of an index of financial entities for passive portfolio management, the index being based and the entities weighted at least in part on one or more metrics which do not depend on market capitalisation or share price, and the weighting of the entities not being equal, with the benefits set out in paragraph 5 above.”

- 22 Claims 1 and 3 are drafted in terms of an overall system comprising a data store and a host computer having an analysis program which accesses data in a store to generate the index, and claims 18, 22 and 23 add the further features of a trading host computer, having trading software which determines what is to be purchased in accordance with the index that has been generated, and an exchange host computer. In my view these are conventional arrangements which form no part of the contribution as a matter of substance and the system is new only insofar as the analysis program is arranged to generate a new index. I observe that Mr Miller did not press an argument previously raised in correspondence with the examiner - which I do not in any case accept - that there was a new physical combination of hardware (see *Aerotel* at paragraph 53),

- 23 The *GEC* and *Cementation* cases to which Mr Miller referred me were of course decided under legislation which has long been superseded, and are therefore of limited persuasive effect. Nevertheless I accept that a product does not have to be in physical or tangible form in order to be patentable. Mr Miller placed considerable emphasis on this point to distinguish precedent cases and show that the contribution did not relate solely to excluded matter. I will therefore consider it as part of the third *Aerotel* step.

Step 3: Does the contribution relate solely to excluded matter?

The examiner had maintained objection under the business method, computer program and mathematical method exclusions, but had not pressed an objection under the mental act exclusion that he had initially raised. However in the light of *Symbian*, I asked Mr Miller to address me on this point also.

Business method

- 24 Mr Miller took *Merrill Lynch* as his starting point. That case related to a data processing system for making a trading market and was refused by the Court of Appeal because, whatever the technical advance might be, the result was simply the production of a trading system and therefore excluded as a method of doing business. Mr Miller thought the invention was distinguished from *Merrill Lynch* because the latter generated nothing in the nature of a tradeable product such as the index of the present invention, even though that product could later be fed into a trading system.
- 25 He sought to link this point with the decision on the *Macrossan* appeal in *Aerotel* in which the Court of Appeal held that an automated interactive method for producing the documents required to form a company was excluded as a method for doing business. Overruling the decision of the High Court, the Court of Appeal held (paragraphs 67-71) that the exclusion was not limited to abstract matters or to completed transactions and cited double-entry bookkeeping as an example of an incomplete transaction which was nevertheless a method for doing business. The Court was confirmed in its view by the French and German versions of Art 52(2) EPC (which corresponds to section 1(2)), these translating as “in the domain of economic activities” and “business activities” respectively. The fact that Mr *Macrossan*’s idea might be regarded as a “tool” to be used in a business was not necessarily decisive of the matter, and the Court drew a distinction between a device which was free-standing and a method which was “for the very business itself”, in this case the business of advising upon and creating appropriate company documents - something which (see paragraph 64) solicitors were paid to do.
- 26 Mr Miller argued that the index which the invention generated was likewise a free-standing product which could be sold separately and could not therefore be regarded as a way of conducting a business and nothing more. As examples of cases on the other side of the line he took me to the decisions of the Patents Court in *Shopalotto.com*³ (reinforcing the message conveyed by brands selected by a player in a computerised lottery), *Oneida Indian Nation*⁴ (apparatus for carrying out a new business (gaming) method whose advantages were solely that of putting the new business method into effect), *Crawford*⁵ (method of operating a bus in exit mode) and *Raytheon Co*⁶ (method for stock control in which textual descriptions were replaced by visual representations).
- 27 Mr Miller accepted that *Symbian* was decided in relation to the computer program exclusion and that little was to be gained by going through the particular facts of the case. However he commended the approach of the Court of Appeal at paragraph 52, which I quote :

“These considerations also manifest the difficulty of formulating a precise test for deciding whether a computer program is excluded from

³ [2005] EWHC 2416 (Pat), [2006] RPC 7

⁴ [2007] EWHC 0954 (Pat)

⁵ [2005] EWHC 2417 (Pat), [2006] RPC 11

⁶ [2007] EWHC 1230 (Pat), [2008] RPC 3

patentability, and suggest that it could be inappropriate to accept either of the rival simple propositions (summarised at [17] above) advanced by the parties here. Bearing in mind the multifarious features of computer programs and the unpredictable developments which will no doubt occur in the IT field, we believe that it would also be dangerous to suggest that there is a clear rule available to determine whether or not a program is excluded by art 52(2)(c). Each case must be determined by reference to its particular facts and features, bearing in mind the guidance given in the decisions mentioned in the previous paragraph.” ,

and thought that the present case could be approached at a similar high level of generality. In paragraph 56 the Court had focussed on the “practical reality” of what was being achieved by the program - a better computer and not just a better program. Correspondingly, Mr Miller urged me to look at the practical reality of what the present invention achieved - the generation of a new and better index as shown by its commercial results.

- 28 Whether or not *Symbian* is a reliable authority on this point, given that paragraphs 52 and 56 were directed entirely to the particular difficulties of setting the boundaries of the computer program exclusion, I agree with Mr Miller that I should look at the practical reality of what the invention achieves. However, I believe that in this case the practical reality highlighted by Mr Miller has fallen out naturally from my assessment of the contribution of the invention in the second *Aerotel* step.
- 29 Since *Aerotel* directs that a business transaction does not have to be completed for the exclusion to apply, the dividing line between a free-standing tool which can be used in business and something which is the “very business itself” will not always be easy to discern. Superficially, the “tradeable product” which Mr Miller identifies in the present case may seem to suggest the former, but I do not consider that settles the point in this case. It seems to me that there is a clear distinction between the examples of a telephone and a machine which makes nails which are mentioned at paragraph 71 of *Aerotel*, which have an existence and use independent of any business context, and the generation of an index for managing a portfolio of securities, which can have no relevance outside of the business of trading securities. I think the examiner made a telling point at the hearing when he suggested that the tradeable product in the present invention is in essence just information, rather like the news in a newspaper (although Mr Miller thought this comparison did not do justice to the technical nature of the invention - which I deal with below - and the intended use of the information).
- 30 I do not therefore think that there is really any “free-standing tool” here. In my view, whatever the meaning of “the very business itself” might be, if the generation of documents in *Aerotel* for use in forming a company constitutes a business method, then so does the generation of an index for use in managing a securities portfolio.
- 31 I also consider the “tradeable product” argument to be unsound for two other reasons. First, even if there is nothing corresponding to the present index, the overall system claimed in *Merrill Lynch* would no doubt still be capable of being

sold or licensed and could similarly constitute a marketable “product” (otherwise, why bother to apply for a patent?). Second, the logic of Mr Miller’s argument leads to the conclusion that a business method might be saved from exclusion simply by providing it in marketable form as a computer program, which runs counter to *Symbian* (see paragraphs 22 and 27 thereof).

- 32 I therefore consider that the contribution identified above, considered as a matter of substance, does relate solely to a method for doing business.

Computer program

- 33 Apart from the references to the computer program exclusion in the above passages from *Symbian*, Mr Miller did not in fact directly address this ground of exclusion, although he accepted that the invention was not really directed to a better computer. I have stated above that I do not think there is any new combination of hardware in the system which is claimed. Nevertheless I do not consider that the contribution I have identified above is in substance a program for a computer, even though this will undoubtedly be the usual manner in which the invention is implemented.

Mental act and mathematical method

- 34 The limit of the mental act exclusion was left somewhat uncertain in the wake of *Aerotel*, but *Symbian* now makes clear at paragraph 27 that a mental act does not avoid exclusion simply by being implemented by a computer⁷. Therefore, even though the examiner had not pressed the objection he originally made on this ground, I asked Mr Miller to address me on it. He argued that because the invention was outputting a tradeable product, the invention could not be excluded as a mental act.
- 35 I am not convinced that this suffices to avoid the exclusion. It seems to me at bottom the contribution comes down to choosing what metrics to use for weighting the entities and deciding what particular weighting to apply to any one entity, there being no significance to my mind in the particular means by which the index is generated or in the fact that the result is a tradeable product. In my view this is no more than a mental act, even if in practice the invention would be implemented by computer.
- 36 In regard to the mathematical method exclusion Mr Miller submitted that this was limited to mere methods of doing mathematics (such as the square roots calculation in *Gale*⁸). However, as I stated at the hearing, the decision of the EPO Board in *Vicom* (T 0208/84) appears to encapsulate the essentials of the exclusion. As the Board explained at paragraph 5, a mathematical method is carried out on numbers (whatever they may represent) and provides a result, also in numerical form, the mathematical method being merely an abstract concept prescribing how to operate on the numbers.

⁷ See the Office notice of 8 November 2008, paragraphs 7-8, at <http://www.ipo.gov.uk/pro-types/pro-patent/p-law/p-pn/p-pn-computer.htm>

⁸ *Gale's Application* [1991] RPC 305

37 I am aware of nothing to say that an invention cannot be excluded as both a mental act and a mathematical method, and make no finding on that point. However, in the light of *Vicom* and irrespective of whether or not it can be said to produce a tradeable product, I consider the contribution in this case to be a mental act rather than a mathematical method, even if it involves some element of mathematical calculation.

38 I have therefore found that the contribution relates solely to a method for doing business and to a mental act. It therefore fails the third *Aerotel* step. However, in the light of a very thorough argument from Mr Miller that the invention did make a technical contribution, which I have not yet considered in detail, I should go on to the fourth step of the test to ensure that this has not been overlooked.

Step 4: Is the contribution technical in nature?

39 This is tackled in the witness statements, particularly that of Dr Hsu. The argument is that in view of the increasingly electronic nature of financial markets the production of an index of this nature would fall to a “financial engineer”. Such a person would have a level of skill beyond that of a securities trader or that taught by conventional business schools and would draw on quantitative disciplines such as physics, engineering, applied mathematics, computer science and electronics in order to design new kinds of financial instrument. It appears that financial engineering is now a recognised field of academic study and has since 1992 had its own professional body (the Association of Financial Engineers). Dr Hsu (at paragraph 5 of his statement) also believes that because of the way in which financial engineering has developed, developing the new index is a technical activity and the increased rate of return and reduced volatility are technical results.

40 This argument seems to carry an implication that generating an index on the conventional market capitalisation basis will in all likelihood be excluded under section 1(2), but generating an index according to the invention will not be excluded. I do not believe that can be right; as Fox LJ stated⁹ in *Merrill Lynch*:

“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) is generic; qualitative considerations do not enter into the matter.”

41 I do not therefore think that an improvement in the generation of an index for managing a securities portfolio becomes non-excluded and makes a technical contribution simply because people with technical qualifications or backgrounds are needed in order to do it. After all, new discoveries, scientific theories, mathematical methods and computer programs will all most likely be made or invented by people with technical qualifications or background, but that does not make them any less excluded under section 1(2). Further, there is in my view nothing whatsoever technical about the advantages to which Dr Hsu refers. They are purely of a business nature, and reinforce my conclusion above that the

⁹ [1989] RPC at page 569

contribution is essentially a method for doing business.

- 42 Therefore even if there is a technical dimension to the invention, I do not consider it to be such as would make the contribution of the invention technical in nature.

Conclusion

- 43 Having found that the contribution relates solely to a business method and a mental act and having confirmed that it is not technical in nature, I conclude that the invention of claims 1 and 3 is excluded under section 1(2). I have read the specification and I do not consider that any saving amendment is possible, whether by restriction to the subject-matter of other claims or otherwise. This conclusion would not be affected by any clarification in respect of the matters noted at paragraphs 16-18 above.

- 44 I therefore refuse the application under section 18(3).

Appeal

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

R C KENNELL

Deputy Director acting for the Comptroller