



PATENTS ACT 1977

APPLICANT	Endura Limited
ISSUE	whether patent application GB1617637.2 complies with section 1(2) of the Act
HEARING OFFICER	Dr L Cullen

DECISION

- 1 This decision concerns whether patent application GB1617637.2 entitled “*Method for optimising the aerodynamic efficiency of an athlete*” assigned to Endura Limited (“the applicants”) relates to excluded matter as defined in section 1(2)(c) of the Patents Act 1977 (“the Act”).

Introduction

- 2 Application GB1617637.2 was filed under the Act on 18 October 2016. In response to the request for search, a report under section 17(5)(b) that a search would serve no useful purpose was issued on 17 January 2017 together with an explanatory Examination Opinion setting out in detail why the search examiner considered that the application did not meet the requirements of section 1(2)(c) of the Act. The application was subsequently published on 29 August 2018 as GB 2559944 A.
- 3 Following reinstatement, substantive examination was requested on 29 July 2019. The first examination report under section 18(3) was issued on 29 June 2021 in the form of an Abbreviated Examination Report setting out a single objection that the invention was excluded under section 1(2)(c) as a program for a computer. A second examination report dated 10 February 2022 and a third examination report dated 26 June 2022 maintained the same objection. The applicants’ attorney consistently responded with argument disagreeing with the examiner’s objection. In response to the offer of a hearing on the matter, the applicants’ attorney, Lucy Coe, supplied further substantive argument, dated 9 August 2022, and requested that the issue be decided by a Hearing Officer based ‘on the papers’ currently on file. The matter was accordingly forwarded to me to consider and decide taking due account of the written submissions made.

The Invention

- 4 The application is in the field of aerodynamic modelling and concerns optimising the aerodynamic efficiency of an athlete by modelling the effects to the aerodynamics of

an athlete of articles of clothing or equipment particular to a specific planned route. The benefits of the modelling are described as being especially useful for example in competitive road cycling:

“An obvious approach is to select a garment that provides the lowest possible aerodynamic drag at the expected average speed of the race. Many might assume that this would provide the optimum aerodynamic efficiency. However, we have found that this is not always true. While it may sometimes be true for races where the speed does not vary much (for example in time trials and cycle races on flat roads where the speed for most of the race is generally quite close to the average speed), it is not necessarily true for races where the speed varies considerably (for example in races on mountainous routes that involve steep ascents and descents). On such routes the athletes may spend very little time travelling at or near the average speed, instead mostly travelling either much slower than the average speed (when climbing) or much faster (when descending).”

The Claims

- 5 The application as currently on file comprises one independent claim 1 to a method and dependent claims 2-15.
- 6 Claim 1 as now amended reads as follows (my numbering added to identify the steps):

“A method for optimising the aerodynamic efficiency of an athlete, comprising:

- 1) *inputting, at a computer, a plurality of first data sets comprising article specific data for a plurality of articles that may be associated with the athlete, wherein the article-specific data includes data representing the aerodynamic drag of the article over a predetermined range of air speeds,*
- 2) *inputting, at the computer, a second data set comprising route-specific data for a planned journey, wherein said route-specific data includes data representing the topographical profile of the planned journey,*
- 3) *inputting, at a computer, a third data set comprising athlete-specific data, wherein said athlete specific data includes data representing the power output of the athlete,*
- 4) *running a computer simulation to calculate a performance indicator for the athlete when associated with each of the articles, wherein each performance indicator relates to the performance of the athlete over the planned journey and each performance indicator is calculated by:*
 - i. *dividing the planned journey into a plurality of route sections;*
 - ii. *calculating the progress of the athlete through each route section by solving equations of motion taking account of:*

- *an initial speed at the start of each route section*
- *the aerodynamic drag of the respective article at the initial speed,*
- *route-specific data for the route section, and*
- *athlete-specific data,*

and

- iii. determining from the progress of the athlete through each route section, a performance indicator that is related to the performance of the athlete over the planned journey,*
- 5) identifying, at a computer, the most favourable performance indicator by comparing the performance indicators of the athlete associated with each of the articles;*
 - 6) identifying, at a computer, the article associated with the most favourable performance indicator;*
 - 7) outputting, at a computer, the identity of the article associated with the most favourable performance indicator; and*
 - 8) wearing, by the athlete, the identified article associated with the most favourable performance indicator during performance of the planned journey.”*

The Issue to be decided

- 7 The issue to be decided is whether the claims, as amended, relate to an invention that is excluded under Section 1(2) of the Act, specifically part (c).

Excluded Matter – Section 1(2)

The Law

- 8 Section 1(2) of the Act sets out certain categories of subject-matter which are not considered to be inventions. These categories are often referred to as ‘excluded subject-matter’.
- 9 The relevant provisions of section 1(2) of the Act read as follows (my emphasis added in bold):

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.

- 10 The assessment of patentability under Section 1(2) is governed by the judgment of the Court of Appeal in *Aerotel/Macrossan*¹, as further interpreted by that court in *Symbian*². In *Aerotel/Macrossan*, the court reviewed the case law on the interpretation of Section 1(2) and set out a four-step test to decide whether a claimed invention is patentable. These steps are:
- (i) properly construe the claim;
 - (ii) identify the actual contribution;
 - (iii) ask whether it falls solely within the excluded subject-matter;
 - (iv) check whether the actual or alleged contribution is actually technical in nature.
- 11 In *Symbian*, the Court of Appeal made it clear that the four-step test in *Aerotel/Macrossan* was not intended to be a new departure in domestic law; it confirmed that the test is consistent with the previous requirement set out in case law that the invention must provide a “*technical contribution*”.
- 12 Kitchen LJ in paragraph 35 of *HTC*³ noted that the *Aerotel/Macrossan* test is followed in order to address whether the invention makes a technical contribution to the art, with the rider that novel or inventive purely excluded matter does not count as a “*technical contribution*”. Thus, the question of whether a computer-implemented invention is patentable has to be resolved by asking whether it reveals a technical contribution to the state of the art and this question is answered with the aid of the four-step test for excluded subject-matter set out in *Aerotel/Macrossan*.
- 13 According to paragraph 46 of *Aerotel/Macrossan*, applying the fourth step may not be necessary because the third step should have covered the question. This is because a contribution which consists solely of excluded matter will not count as being a “*technical contribution*” and thus will not, as the fourth step puts it, be “*technical in nature*”.
- 14 Subsequently, Lewison LJ provided five signposts in *AT&T/CVON*⁴, which he reformulated in *HTC*, which he considered helpful when exploring the issue of whether

¹ *Aerotel Ltd vs Telco Holdings Ltd & Macrossan’s Patent Application* [2007] RPC 7

² *Symbian Ltd’s Application* [2009] RPC 1

³ *HTC Europe Co Ltd v Apple Inc* [2013] EWCA Civ 451

⁴ *AT&T Knowledge Ventures/Cvon Innovations v Comptroller General of Patents* [2009] EWHC 343 (Pat)

(or not) a computer programme makes a technical contribution. These so-called “AT&T/CVON signposts” are:

- 1) whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;
- 2) 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;
- 3) whether the claimed technical effect results in the computer being made to operate in a new way;
- 4) whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer; and
- 5) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.

15 In addition, the precedents set by *Halliburton*⁵ and by *Protecting Kids the World Over (PKTWO)*⁶ have been raised by the attorney. These will be dealt with in turn below.

16 I note that there is no disagreement between the applicant and the examiner over the applicable and relevant law.

Analysis

Independent claim 1

17 The first step in *Aerotel/Macrossan* is to construe the claim.

Step (1): Properly construe the claim

18 I note that the substantive examiner views claim 1 as entirely clear. I am inclined to agree, however in order to reach a fully objective assessment of the patentability of claim 1, I must read and construe this claim through the eyes of the notional “*person skilled in the art*” who has read the specification (that is the description, drawings and claims) as a whole and who is seeking to implement the invention. The skilled person would have regard to the context of the invention, which I have sought to explain above, and would develop their understanding of the invention within that context. I believe that this is precisely what the attorney has done in her letter dated 9 August 2022 and I agree with the following construction:

“Claim 1 defines a method for improving the aerodynamic efficiency of an athlete during performance of a specific route. Based on information about the specific route, the athlete and a plurality of articles of clothing, a computer determines which article of clothing from the plurality of articles

⁵ Halliburton Energy Services Inc's Applications [2012] RPC 129

⁶ Protecting Kids the World Over (PKTWO) Ltd's Patent Application [2012] RPC 13

of clothing will have the best performance for that specific route and specific athlete. The computer outputs the identity of the clothing for best performance, and then the athlete wears the selected clothing during performance of the specific route.”

Step (2): Identify the actual contribution

19 I note that the identification of the actual contribution and thus the determination as to whether it is ‘technical’ in nature are at the heart of the issue in a case such as the present one. In arriving at an assessment of the contribution, some reference may be made to the prior art by way of contrast and as set out in *Aerotel/Macrossan*, “*What has the inventor really added to human knowledge perhaps best sums up the exercise.*” At this point in time, no prior art search under section 17(4) has been performed on this case and we must thus rely on the contribution as alleged by the inventor as indicated at paragraph 44 of *Aerotel/Macrossan*, although this cannot be conclusive. As Jacob LJ states, “[i]n the end the test must be what contribution has actually been made, not what the inventor says he has made”, and the examiner is not bound to accept what the applicant says.”

20 In *Aerotel/Macrossan*, Jacob LJ set out some additional factors of relevance to identifying the contribution:

- The problem said to be solved: an invention usually solves a problem; the problem and its solution are almost always relevant to the assessment of the contribution; an explicit statement may be included in the description, but not always – it may simply be derived from the nature of the invention.
- How the invention works may be simply the definition of the features of the invention in the claims, but it is often more useful to consider in terms of what the invention does as a matter of practical reality.
- Finally, the advantages of the invention are normally closely linked to the problem being addressed, in the sense that the advantage is often that the problem is resolved.

21 The examiner identifies the contribution as follows:

“to be a method of selecting an optimal garment for an athlete when performing over a specified route by inputting data including article specific data such as garment data, journey data such as altitude and distance and athlete specific data such as power output of an athlete to a computer simulation to analyse the performance of multiple articles when worn by an athlete to identify the garment(s) whose wearing by the athlete would provide them with the most favourable performance. The advantage of such would be to provide more accurate selection of garments likely to increase an athlete’s performance”.

22 The attorney has identified the actual contribution as follows:

By following the claimed method of computer simulation, with “*the computer determining and outputting which article of clothing from a*

plurality of articles of clothing will have the most favourable performance for the specific route and specific athlete, the athlete's performance is improved when the athlete wears the selected article of clothing during performance of the route." Thus, "by virtue of the claimed method, the athlete's performance of the specific route can be improved by improving the accuracy in selecting an optimized article of clothing for the athlete and for the specific route."

- 23 I do not believe that the attorney's and the examiner's assessments of the alleged contribution differ in substance (the difference being in their respective views of the answer to *Aerotel/Macrossan* at step 3) and I note that the examiner also holds this view as set out at paragraph 6 of his pre-hearing report dated 1 September 2022.
- 24 I agree that the substance of the contribution is in the identification of the most suitable athletic garments based upon a simulation. In view of paragraph 44 of *Aerotel/Macrossan*, I will thus accept the applicant's assertions of their contribution.

Step (3): Ask whether the contribution falls solely within the excluded subject matter?

- 25 I do not believe that there is any disagreement that claim 1 involves a computer-implemented simulation. The question is whether the invention amounts to a computer programme as such and is therefore excluded from patentability. One way in which this can be assessed is by considering the five AT&T/CVON signposts which are often indicative of a technical effect in computer-implemented inventions. Only one signpost needs to be satisfied for there to be a strong indication that the invention is technical in nature and thus not excluded under s.1(2).
- 26 I will first very briefly deal with the other AT&T/CVON signposts (signposts 2-5) as listed above. Whatever the actual contribution is, it is clearly not in altering how the computer itself runs. As such, signposts two-five are clearly not met and are not relevant to the assessment of technical effect..
- 27 Turning now to consider the first AT&T/CVON signpost which asks whether the claimed technical effect has a technical effect on a process which is carried on outside the computer; I note that the examiner argued that "*as the simulation is run on a standard computer and produces/controls nothing external to the computer I consider the contribution to fall solely within the definition of excluded matter provided by s1(2) of the Act, namely a computer program.*"
- 28 In response, the attorney has argued that claim 1 clearly does not fall solely within excluded subject-matter because the program outputs the identity of the article associated with the most favourable performance indicator outside of the computer and the athlete wears the article outside of the computer. The attorney further referred to section 1.29.5 of the Manual of Patent Practice where it states explicitly that inventions involving computer simulations can be patentable, and even that if they are applied to a technical process or solve a technical problem, will likely not be excluded. She further argued that "*therefore, simply because the claimed method involves a simulation, that does not mean that it is automatically excluded from patentability*". The attorney has highlighted the precedent set by *Halliburton* where Birss HHJ concluded that the invention concerned, which related to the simulation of drilling performance and subsequent calculation of drill bit parameters based on that

simulation, was patentable (even without the subsequent manufacture of the drill bit). She also pointed out that the claimed method as now amended explicitly requires the athlete to wear the identified article during performance of the planned journey.

- 29 In further support of her argument, the attorney cited the judgement of Floyd J (as he then was) in *PKTWO* where the earlier Comptroller's decision was overturned on the basis of a reassessment of the actual contribution of a claim which was found to include the additional features concerning the generation of a more rapid and reliable alarm notification and thus whether the actual contribution was technical (step 3 of test outlined in *Aerotel/Macrossan*). In that case, the Hearing Officer was considered to "have lost sight of the contribution... as a whole". The attorney draws similarities between that case and the present application because here "although the item of clothing itself may not be novel, the athlete wearing the article during performance of the specific route because it has been identified by the computer as having the most favourable performance indicator based on specific data relating to the article, the specific route, and the athlete, was not known and thus forms part of the contribution to human knowledge made by the application"
- 30 In response to the attorney's arguments based on the precedent set by *Halliburton*, the examiner drew a distinction with the present invention: "*Halliburton*...[concerned] *designing drill bits which is a technical process, so the simulation was providing data to produce a drill bit having specific properties whereas this application merely selects garments based on required properties, it does not design or manufacture them.*" Similarly, the examiner distinguished the precedent set in *PTKW* because "as there is [no] design or manufacturing process associated with the method it merely selects from available garments based on simulation data. There is no improvement in the selection method outside of the computer program and therefore I do not consider this application to be similar to than in *PTKW*." In addition, the examiner also referred to the decision of the Comptroller in office decision BL O/002/16 (*The Boeing Company*)⁷ as supporting their conclusion in the present case. Accordingly, the examiner has indicated that he considers that "the wearing of the selected article is not a technical process" such that AT&T/CVON signpost one is not met.
- 31 In this decision, I now have the opportunity to look afresh at the question as to whether the actual contribution is technical and thus whether method claim 1 falls solely within the area of excluded subject matter. In reading both *Halliburton* and *PKTWO*, I am unable to identify a requirement that a technical contribution must necessarily encompass design and/or manufacture.
- 32 In considering *PKTWO*, I notice that Floyd J (as he then was) ruled that "when assessing technical contribution, it was helpful to have regard to the task which the program or programmed computer performed...If the task that a program or computer performed was simply producing a different screen display, there was no relevant technical effect. It was too "abstract". However, if the effect outside the computer could in principle fairly be described as a physical concept, process or effect, then the same considerations did not apply." Furthermore, in *PKTWO*, the necessity to assess the contribution as a whole was emphasised (see paragraph 31).

⁷ For text of office decision BL O/002/16, see <https://www.ipo.gov.uk/p-challenge-decision-results/o00216.pdf>

- 33 Turning to the ruling of Birss J in *Halliburton*, see paragraph 33, I note that when the contribution as a whole is considered, there is a clear interaction between different types of invention excluded under s1(2):

“If the task the system performs itself falls within the excluded matter and there is no more to it, then the invention is not patentable (see Symbian para.53 above). Clear examples are from the cases involving computers programmed to operate a method of doing business, such as a securities trading system or a method of setting up a company (Merrill Lynch and Macrossan)....”

- 34 Birss J went on to explain **when and why** it is that an invention involving a technical contribution going beyond a computer program as such is excluded:

“...Inventions of that kind are held not to be patentable but it is important to see why. They are more than just a computer program as such. For example, they self-evidently perform a task which has real world consequences. As Fox L.J. said in Merrill Lynch (p.569 at line 27), a data processing system operating to produce a novel technical result would normally be patentable. However that is not the end of the analysis. He continued: “however it cannot be patentable if the result itself is a prohibited item” (i.e. a method of doing business). When the result or task is itself a prohibited item, the application fails.”

- 35 It thus seems to me that once an in-computer simulation produces any form of technical solution applicable outside of the computer, then the objection that the invention is a program for a computer will fail except when the contribution falls within another category of excluded matter. In Comptroller’s decision BL O/002/16⁷, this is precisely what happened when computer simulation for estimating the cost of moving fuel from one location to another using vehicles and associated personnel and which allows a user to assess the impact of adjusting the resources used was refused as a computer implemented business method. In contrast, the present invention does not concern a method of doing business or presenting information or any other notionally abstract process.

- 36 Accordingly, it is my view that AT&T/CVON signpost one is met and that the invention of claim 1, as amended, provides a technical effect on a process which is carried on outside the computer.

- 37 The final step of the Aerotel test is to check whether the actual or alleged contribution is actually technical in nature. I have already answered that above – the invention is indeed technical in nature.

Conclusion

- 38 Taking all of the above into account, I find that the claims presently on file do not define a program for a computer excluded from patentability under section 1(2)(c).

- 39 I note that the search on this application for prior art under section 17(4) was deferred pending the decision as to whether the invention complies with the requirements of section 1(2)(c) or not. As a consequence, the application is now remitted back to the

examiner for further processing, including the search, to be completed as soon as possible.

- 40 I further note that the compliance date under section 20 of the Act and rule 30 of the Patents Rules 2007, as amended (the Rules), has been extended to 29 December 2022 and that this latest extension necessitated the exercise of the Comptroller's discretion under rule 108(3) of the Rules. Given the imminence of the compliance date and the fact that I am remitting the case to the examiner for further processing, it is likely that a further extension to this date will be necessary to complete the processing of this case. Should this prove to be the case, I consider that one such further request to extend the compliance date should be looked on favourably.

Appeal

- 41 Any appeal must be lodged within 28 days after the date of this decision.

Dr L Cullen

Deputy Director, acting for the Comptroller