Intellectual Property Office

BL O/550/16

22 November 2016

PATENTS ACT 1977

APPLICANT	Logined B.V.
ISSUE	Whether patent application number GB1305712.0 complies with section 1(2)
HEARING OFFICER	Joanne Pullen

DECISION

1 Patent application GB1305712.0 entitled "Ordered multipoint geostatics simulation using non-symmetric search mask" was filed on 28th March 2013, claiming an earliest priority date of 3rd April 2012. It was published as GB 2501984 on 13th November 2013.

2 Following three rounds of examination and argument, the examiner remained of the view that the claimed invention was excluded from patentability under section 1(2). With the situation unresolved the applicant asked to be heard and the matter came before me at a hearing on the 13th September 2016. The applicant was represented by Mr Russell Sessford of Forresters LLP. Also present were hearing assistant Mrs Emma Porter and examiner Mr Huw Thomas.

3 The first examination report, dated 10th September 2013 and the second examination report, dated 11th August 2015, each included an objection to the patentability of the invention as a computer program and a mathematical method as such.

4 However, the third examination report, dated 10th May 2016, and the pre-hearing report, dated 15th August 2016, each contained a patentability objection relating only to the invention as a computer program as such and each report was silent with regard to the mathematical method patentability objection. The applicant submitted observations and amendments in response to the objections in these reports.

5 Upon a preliminary review of the papers approximately a week before the scheduled hearing, I considered that I should be addressed at the hearing on both computer program and mathematical method objections that the examiner had (at various times) sustained, and that my decision should cover both these matters.

6 The applicant was notified of my views by email slightly less than a week before the hearing was due to take place. The applicant's attorney objected to my request that I be addressed on the mathematical method objection.

7 At the hearing, I was therefore addressed on the question of the scope of the hearing, as well as hearing submissions on the substantive issues before me. My decision therefore deals first with the preliminary points raised in relation to my request to hear submissions on the mathematical method objection at the hearing.

Scope of hearing

8 Submissions relating to the scope of the hearing were raised by the applicant in numerous emails in the week before the scheduled hearing and further arguments were provided at the hearing. The applicant's arguments against the mathematical method exclusion to patentability being discussed at the hearing included submissions on estoppel, substantive legitimate expectation, procedural legitimate expectation, Article 6 of European Convention on Human Rights, the principles of natural justice and a procedural irregularity under rule 107. I will deal with them in turn below.

9 Mr Sessford argued that the Office was estopped from raising the mathematical method objection because the examiner raised the matter in his first and second examination reports but (by implication of his silence on the issue) had dropped the objection when he issued his third examination report.

10 I do not agree. Examiners are required by statute to object to patent applications which, in their judgment, are non-compliant. Ideally, examiners raise all significant objections in their first examination report, and sustain those objections in later reports if they judge the objection not to have been met. But there are times when an examiner takes a further look at a patent application during re-examination, and they must be free at that stage to raise all objections that they judge to be outstanding at that point - regardless of what previous examination reports might have said, or not said. If Parliament had intended for an examiner not to raise an objection to a potentially invalid patent in these circumstances, I think that would have been a major feature of the patent system which would have been spelled out on the face of the Act. I do not believe there was any intention to tie an examiner's hands in this way, and to prevent valid objections from being raised (or reinstated) at later examination stages. The clear and simple requirement of the Act is that a patent must be compliant with the Act and Rules in order to be granted. Examiners must therefore be able to raise objections at any time before grant.

11 Additionally, Mr Sessford argued that the applicant had a substantive legitimate expectation that the mathematical method objection had been overcome and the applicant had a right to rely on that substantive legitimate expectation.

12 It is my understanding that substantive legitimate expectation arises only when a person with the required authority comes to a conclusion; in the patent application process a conclusion is only reached with either the grant or refusal of a patent.

13 Mr Sessford also argued that there was a procedural legitimate expectation that the pre-hearing report should include an outline of all outstanding objections and the applicant had the right to rely on that procedural legitimate expectation.

14 I agree that it is highly desirable for all of the outstanding objections which are to be considered at a hearing should be raised in the pre-hearing report, but the overriding consideration is the validity of the granted patent. As I have already noted, examiners should be free to raise objections which cast doubt upon validity at any time prior to grant.

15 I do not see why that should not also apply to hearing officers in the sort of circumstances that have arisen in this case. In other words, I do not think there is any principle which means a hearing officer cannot request that he or she is addressed on a further point relating to the validity of the patent which has not appeared in the pre-hearing report - particularly if the hearing officer thinks it relevant to the matter which is already before them. But I agree, of course, that this must be done in a way which gives the applicant adequate opportunity to make submissions to the hearing officer on the point in question.

16 This point about having adequate opportunity to make submissions leads me on to Mr Sessford's further points. He argued that there was not prior and proper notice of the mathematical method objection because no detailed objection had been provided, and that the lack of prior and proper notice breached the right to a fair trial, as set out in Article 6 of the European Convention on Human Rights, and also went against the principles of natural justice. Art.6 ECHR has been incorporated into UK law by the Human Rights Act 1998. Article 6(1) starts by saying "In the determination of his civil rights and obligations….everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law." Further provisions follow which are not relevant to Mr Sessford's point.

17 In terms of the principles of natural justice, it is helpful to quote the relevant passage in the Patents Hearings Manual, which reads, at para 1.23:

> *The principles of natural justice have developed in the UK under common law. If a hearing is conducted in accordance with these principles it is likely to be a "fair hearing" in the meaning of Article 6 of the Convention. The principles may be summarised as follows:*
>
> *(1) no party may act as a judge in his or her own cause;*
>
> *(2) a party must know, in detail, the case he or she has to answer;*
>
> *(3) all interested parties must have an opportunity to be fully heard and/or represented on all relevant matters affecting their interests;*
>
> *(4) no decision may be arrived at before the admissible evidence and representations have all been fully heard and thoroughly considered; and*
>
> *(5) the decision must be arrived at in good faith and in accordance with the law, and not for some ulterior, albeit well meaning, motive such as general administrative convenience, sometimes in the guise of "policy".*

The hearing officer should take care to act at all times in accordance with these principles.

18 As the hearing officer, I was very aware in the run-up to the hearing that the applicant required adequate notice to prepare to address me on the potential exclusion of the invention as a mathematical method as such.

19 The applicant was notified that a mathematical method objection may be explored at the hearing in the email dated 7th September 2016. In the days leading to the hearing, there were many options offered to the applicant to ensure that the hearing could progress on a fair basis. These options included:

i) postpone the hearing entirely, and allow the examiner to prepare and issue a further pre-hearing report including a mathematical method objection;

ii) proceed with the hearing, consider the computer program exclusion only, and remit the application to the examiner after the hearing (if necessary) to consider the mathematical method exclusion at that stage; or

iii) proceed with the scheduled hearing, consider both the computer program and mathematical method exclusions, and then (if necessary) extend the compliance period by two months and allow further written submissions relating to the mathematical method exclusion shortly after the hearing if necessary.

20 After consideration of the options available, the applicant selected option 3 and filed their request to extend the compliance date on 20th September 2016. I also assured the applicant that a further request to extend the compliance period would be looked upon favourably by the Office should it be necessary.

21 Given the options that were available to the applicant, I can see no reasonable basis for concluding that there has been a breach of Article 6 or indeed a breach of the principles of natural justice.

22 I am content that the hearing proceeded on a fair basis in accordance with the principles of natural justice.

23 Finally, at the hearing, Mr Sessford argued that rule 107 of the Patents Rules 2007 should be used to rectify the procedural error that the pre-hearing report did not contain a detailed objection to the exclusion of the invention as a mathematical method.

24 For the reasons set out in paragraphs 14 and 15 above, I disagreed that any procedural irregularity had occurred. While it is highly desirable for all of the outstanding objections to be contained in a pre-hearing report, the overriding consideration must be the validity of the granted patent

The invention

25 Geostatics is a discipline concerned with spatially distributed random variables, usually applied to 2d or 3d modelling problems in the earth sciences. Multipoint geostatics simulation generates numerical values such that they match a preset spatial correlation, or known structural properties, while optionally matching predetermined measured data. In one simulation method, a search mask of a limited number of pixels, or voxels in 3D, is used to isolate a small area of the model. Unknown pixels in the search mask are simulated using the known, or previously simulated, pixels within the search mask area, using conditional probability algorithms. If there are numerous unknown pixels in the search mask area, the calculation of each unknown pixel becomes very complicated and hence computationally expensive.

26 The application relates to a method of increasing the computational efficiency of a multipoint geostatics method by employing an ordered path through the unassigned cells in combination with using a non-symmetric search mask that excludes one or more not-yet-simulated cells from the search mask during the simulation. Essentially, the search mask is made to be non-symmetric to reduce the number of pixels which are unknown, which simplifies the computation of the pixel currently being simulated. The simulation produced by this method is as good as, but not better than, the more computationally expensive simulation.

27 There are 22 current claims of which claims 1 and 12 are independent and which read as follows:

Claim 1:

A method of increasing computational efficiency in a computer when performing geostatics modelling in modelling of discrete properties of a subsurface, comprising:

determining, based upon a predetermined order for simulating cells a non-symmetric search mask that, during simulation of a cell, excludes at least one not-yet-simulated neighbouring cell from a corresponding symmetric search mask; and

running a multipoint statistics simulation of an n-dimensional grid in the predetermined order and using the non-symmetric search mask, where n is at least 2 and wherein the non-symmetric search mask is non symmetric about at least one dimension of the n-dimensional grid.

Claim 12:

An apparatus comprising:

at least one processor; and

program code configured upon execution by the at least one processor to increase computational efficiency in the apparatus when performing geostatics modelling in modelling of discrete properties of a subsurface, by determining, based upon a predetermined order for simulating cells a non-symmetric search mask that, during simulation of a cell, excludes at least one not-yet-simulated neighbouring cell from a corresponding symmetric search mask; and running a multipoint statistics simulation of an n-dimensional grid in the predetermined order and using the non-symmetric search mask, where n is at least 2 and wherein the non-symmetric search mask is non symmetric about at least one dimension of the n-dimensional grid.

28 Two auxiliary claim sets were included with the skeleton arguments dated 6th September 2016, but these have not been officially filed and so do not form a part of the application as yet. They may be included in the application at a later date, provided they are filed officially before the end of the compliance period, and it was agreed to consider them during the hearing.

29 It was agreed that method and apparatus claims 1 and 12 would stand or fall together, as would the method and apparatus claims of each of the two auxiliary claim sets.

The Law

30 The exclusions under section 1(2) of the Patents Act 1977 that the invention is not patentable because it relates to a program for a computer as such and a mathematical method as such were considered; the relevant provisions of this section of the Act are shown in bold below:

> *Section 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.*

31 As explained in the notice published by the UK Intellectual Property Office on 8 December 2008[1], the starting point for determining whether an invention falls within the exclusions of section 1(2) is the judgment of the Court of Appeal in *Aerotel/Macrossan*[2].

32 The interpretation of section 1(2) has been considered by the Court of Appeal in *Symbian Ltd's Application*[3]. *Symbian* arose under the computer program exclusion, but, as with its previous decision in *Aerotel*, the Court gave general guidance on all exclusions under 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*

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[1] http://www.ipo.gov.uk/pro-types/pro-patent/p-law/p-pn/p-pn-computer.htm
[2] *Aerotel Ltd v Telco Holdings Ltd* and *Macrossan's Application* [2006] EWCA Civ 1371; [2007] RPC 7
[3] *Symbian Ltd v Comptroller-General of Patents*, [2009] RPC 1

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*[4] which rested on whether the contribution was technical; and that any differences in the two approaches should affect neither the applicable principles nor the outcome in any particular case. But the *Symbian* judgment does make it clear, that in deciding whether an invention is excluded, one must ask does it make a technical contribution? If it does then it is not excluded.

33 Subsequent court decisions (e.g. *HTC v Apple*[5], *Lantana*[6]) have maintained this approach to the assessment of excluded matter, and is therefore still appropriate for me to proceed on the basis of the four-step approach explained at paragraphs 40-48 of *Aerotel/Macrossan* namely:

> *1) Properly construe the claim;*
>
> *2) Identify the actual contribution (although at the application stage this might have to be the alleged contribution);*
>
> *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) Check whether the actual or alleged contribution is actually technical.*

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35 Mr Sessford agreed that this was the correct approach to take.

Construe the claims

36 I do not think this presents any real problems as both the applicant and the examiner appear to agree as to the meaning of the claims. Mr Sessford confirmed this at the hearing.

Identify the actual contribution

37 Paragraph 43 of *Aerotel*/*Macrossan* explains that identification of the contribution is essentially a matter of determining what it is - as a matter of substance and not form – that the invention has really added to human knowledge having regard to the problem to be solved, how the invention works and what its advantages are.

38 Having reviewed all of the information before me, it is clear to me, from the form of the claims and from several specific references in the description that the problem to be solved by this invention is better computational efficiency in geostatistics modelling over prior art methods. The invention achieves this by using a new mathematical method using the steps specified in the independent claims, which in

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[4] *Merrill Lynch's Application* [1989] RPC 561
[5] HTC V Apple [2013] EWCA Civ 451
[6] *Lantana v Comptroller-General of Patents* [2013] EWHC 2673

simple terms, reduce the number of unknowns in a calculation to allow the method to be carried out in fewer steps. It is stated in the description, and it was confirmed at the hearing by Mr Sessford, that the method of the invention does not produce a better quality end result than those produced by prior art methods.

39 Mr Sessford relies heavily on the similarities between the application at hand and the facts of *VICOM*[7] stating that what the present invention provides is a "contribution in a technical process – image generation/manipulation – which includes an improvement in computational efficiency."

40 The application at hand makes no reference to solving problems in the field of image generation and image manipulation and there is clearly no direct advantage provided by the invention that relates to these fields. There are, however, a number of references made in the submissions that suggest that the claims could be considered as generating and/or manipulating an image.

41 I am not convinced that the contribution can lie in the field of image processing merely due to a suggestion that the claims could be considered to relate to image processing. The allowable claims of *VICOM* are unambiguous in that they relate to image processing. There is no similar limitation on the claims of the present case, nor is it suggested in the specification as a whole that the invention should be interpreted in such a way.

42 In summary, I consider the contribution to lie in using the improved mathematical method steps contained in the claims to achieve the increased computational efficiency when performing geostatistics modelling.

Does the contribution fall solely within excluded subject matter? Is the contribution technical in nature?

43 There is no doubt in my mind that the contribution is a new mathematical method implemented via a computer program. The fact that the invention is a new mathematical method effected in software does not mean that it is automatically excluded from patentability as a mathematical method and/or computer program as such. What matters is whether or not the mathematical method and/or the program provides a technical contribution.

44 In identifying the actual contribution above I have covered some of the points relating to whether the contribution is technical.

45 I am largely in agreement with the applicant that the field of image processing could be considered technical in nature, as was the case in *VICOM*. Much has been submitted by the applicant around the Office's interpretation of *VICOM*, however, these submissions are moot as I do not find that the actual contribution resides in the field of image processing.

46 A useful, but not binding, guide as to whether a contribution is technical can be gained by reference to the 'signposts' set out by Lewison J (as he then was) in

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7 *Vicom Systems Inc* T0208/84 [1987],

AT&T/CVON[8], with the caveat that the signposts are not to be treated as an exhaustive list. The signposts were modified slightly by Lewison L J in *HTC v Apple* and now read as follows:

> *i) Whether the claimed technical effect has a technical effect on a process which is carried on outside the computer.*
>
> *ii) Whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the application being run.*
>
> *iii) Whether the claimed technical effect results in the computer being made to operate in a new way.*
>
> *iv) Whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer.*
>
> *v) Whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.*

47 The signposts were discussed at the hearing in relation to the computer program exclusion. I do not believe there is any reason to consider them separately for the mathematical method exclusion.

48 Mr. Sessford stated that the signposts were not that helpful in this case and so they were discussed only briefly, but he agreed that the program did not have a technical effect on a process which was carried on outside the computer, and that the program did not provide a technical effect which operated at the level of the architecture of the computer; the first two signposts do not help to identify a technical contribution.

49 Mr Sessford stated that new program was making the computer run in a new way, but admitted that this was no more than any new program can make any processor operate in a new way; the third signpost does not help to identify a technical contribution.

50 Although the computer itself is using less processing power, this is due to a more efficient program and/or more efficient way of modelling, not a more efficient computer as a whole; the fourth signpost does not help to identify a technical contribution.

51 Using a non-symmetric search mask to exclude at least one not-yet-simulated neighbouring cell in a multipoint statistics simulation program simplifies the simulation calculation for the current cell, and the reduced size of the calculation for each cell increases the efficiency of the simulation carried out. The problem of the complicated calculations necessary when too many not-yet-simulated cells are present in the search mask appears to be circumvented by the program of the

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

application, rather than overcome. The fifth signpost does not help to identify a technical contribution.

52 The invention as claimed is not related to a technical process or limited to a technical process in the way that allowable claims in precedent decisions, such as VICOM, have been.

Auxiliary requests

53 The claims of the first and second auxiliary requests are very similar to the claims on file. They each provide clarification around the steps of the mathematical process and additionally characterise the sub-surface property and the conditioning data respectively.

54 The reference to real world data in the claims on file ('in modelling of discrete properties in a subsurface'), which is reinforced to various degrees in the first and second auxiliary claim sets, changes the form of the claims rather than the substance of the contribution as identified above. The contribution remains an improved mathematical method which is implemented via a computer program, regardless of whether the method is applied to real world data.

55 Having considered all of the evidence available to me, including the arguments made at the hearing, I do not consider the invention to provide a technical contribution, and as such it would seem to fall squarely within the mathematical method and computer program exemptions of section 1(2).

Conclusion

56 In light of my findings above, I conclude that the invention as claimed is excluded under section 1(2) because it relates to a mathematical method and a computer program as such. I have reviewed the specification and the auxiliary requests and I do not think that any saving amendment is possible. I therefore refuse the application under section 18(3)

Appeal

57 Any appeal must be lodged within 28 days

JOANNE PULLEN

Deputy Director, acting for the Comptroller