Intellectual Property Office

BL O/209/18

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PATENTS ACT 1977

APPLICANT	Ventana Medical Systems, Inc.
ISSUE	Whether patent application GB1210743.9 complies with section 1(2)
HEARING OFFICER	J E Porter

DECISION

Introduction

1 Patent application GB1210743.9, entitled "Virtual Microscopy", was filed on 18 June 2012, claiming a priority date of 16 June 2011. It was published as GB 2492218 A on 26 December 2012.

2 Following substantive examination, and several further rounds of correspondence between the examiner and the applicant's attorneys, the examiner remains of the view that the invention defined by the claims relates to no more than the presentation of information and a computer program as such, and so is excluded from patentability by section 1(2) of the Patents Act.

3 The applicant was offered an opportunity to be heard, and the matter came before me at a hearing on 2 February 2018. The applicant was represented by its attorney, Mr Andrew Alton, from Urquhart-Dykes and Lord LLP. Also present were the examiner Mr Steven Scott, the hearing assistant Mr Gareth Prothero, and an observer.

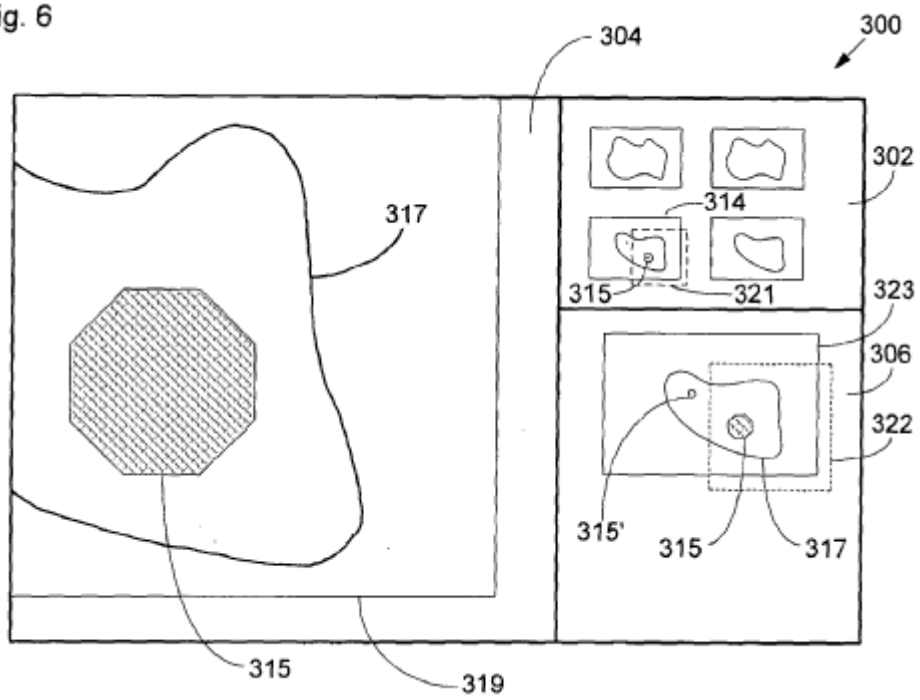
The invention

4 The patent application relates to a viewer for a "virtual slide"; in other words, it provides a means for viewing microscope slides that have been digitally scanned. The description explains that virtual microscopy hardware and software are already available, and can be used by a pathologist to carry out a diagnosis. However, the high resolution scanning of microscope slides gives rise to very large image data files. The invention seeks to allow the user to view slides more efficiently and reliably using the viewing software.

5 A virtual microscopy method is described in which a number of virtual slides, such as scanned tissue sample slides, are stored on a computer system. Figure 6 of the application is reproduced below. Viewer software associated with the computer system controls a user interface 300. The software allows all of the slides from a particular subject to be displayed in a first region 302 of the interface at a first (low)

magnification. A second region 304 displays one of the slides shown in the first region at a second, higher magnification. A third region 306 provides the same image at an intermediate magnification. A visual indication guide 321 in the first region indicates the part of the slide image being shown at the higher magnification in the second region. The virtual microscope is controllable by a user such that any area of interest from any of the slides shown in the first region can be shown at higher magnification levels in the second and third regions.

Fig. 6



6 The most recent set of claims was filed on 9 January 2018. Claim 1 is reproduced below:

1. A method for displaying virtual slide images on a display device of a virtual slide viewing device to a pathologist to carry out a diagnosis of a case, comprising:

automatically displaying images of a plurality of slides in a first region of the display device at a first magnification, wherein said first region is continuous and said plurality of slides comprise all of the slides of the case to be diagnosed by the pathologist using the virtual slide viewing device, and wherein each slide of the plurality of slides has a respective section of tissue mounted thereon;

displaying an image of at least a part of at least one of the plurality of slides in a second region of the display device at a second magnification, wherein said second magnification is greater than said first magnification, and wherein said image of at least a part of at least one of the plurality of slides has the same orientation in the second region as a corresponding part of the images of the plurality of slides in the first region;

displaying an image of at least a part of at least one of the plurality of slides in a third region of the display device at a third magnification, wherein said third magnification is greater than said first magnification and less then [sic] *said second magnification;*

receiving user input to the virtual slide viewing device by user interaction of the pathologist with the first region to view any different region of any of the plurality of slides in the second region; and

changing at least the image displayed in the second region responsive to said user input to display the different region of any of the plurality of slides in the second region of the display device, and wherein said plurality of slides are always displayed in the first region during the method and a visual indication is displayed in the first region of the part or parts of the plurality of slides displayed in the first region which are also currently being displayed in the second region.

7 Method claims 2 to 34 are dependent on claim 1. There are also claims to a virtual slide imaging device (claim 35), a computer readable medium (claim 36), and a pathology method (claim 37), as reproduced below:

35. A virtual slide image viewing device, comprising:

a display device; and

a data processing device in communication with the display device, wherein the data processing device is configured to carry out the method of any of claims 1 to 34.

36. A computer readable medium storing computer program code which when loaded into a data processing device configures the data processing device to carry out the method of any of claims 1 to 34.

37. A pathology method, comprising:

creating a tissue sample block;

preparing a plurality of microscope slides, each microscope slide having a section of the tissue block mounted thereon;

scanning the plurality of microscope slides to generate virtual slide image data providing a virtual slide image for each microscope slide;

storing the virtual slide image data in a database; and

displaying the virtual slide images using the method of any of claims 1 to 34 or using the virtual slide image viewing device of claim 35.

The law

8 Section 1(2) declares that certain categories of subject matter, often referred to as "excluded matter", are not inventions for the purposes of the Act. It says:

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 There was agreement between the examiner and the applicant that the assessment of patentability under section 1(2) is governed by the judgment of the Court of Appeal in *Aerotel*[1]*,* as further interpreted by the Court of Appeal in *Symbian*[2]*.*

10 In *Aerotel*, the court reviewed the case law on the interpretation of section 1(2) and approved a four-step test for the assessment of excluded matter, as follows:

Step one: properly construe the claim

Step two: identify the actual contribution (although at the application stage this might have to be the alleged contribution)

Step three: ask whether it falls solely within the excluded matter

Step four: check whether the actual or alleged contribution is actually technical in nature.

11 The Court of Appeal in *Symbian* made clear that the *Aerotel* test is not intended to provide a departure from the previous requirement set out in case law, namely that an invention shall not be considered to relate to excluded matter if it provides a "technical contribution". The *Aerotel* test has subsequently been endorsed by the Court of Appeal in *HTC*[3] and in *Lantana*[4]*,* where it was stated (at paragraph 64):

"…that it is the claim as a whole which must be considered when assessing the contribution which the invention has made, and that it is not permissible simply to cut the claim into pieces and then consider those pieces separately and without regard to the way they interact with each other".

12 Also referred to were the five "signposts" useful in determining whether a computer program provides a technical contribution, as set out by the court in *AT&T/CVON*[5] and as updated in *HTC*. They are:

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 applications being run.

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[1] *Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application* [2006] EWCA Civ 1371; [2007] RPC 7
[2] *Symbian Ltd's Application* [2008] EWCA Civ 1066; [2009] RPC 1
[3] *HTC Europe Co Ltd v Apple Inc* [2013] EWCA Civ 451; [2013] RPC 30
[4] *Lantana Ltd and The Comptroller General of Patents, Designs and Trade Marks* [2014] EWCA Civ 1463; [2015] RPC 16
[5] *AT&T Knowledge Ventures/CVON Innovations v Comptroller General of Patents* [2009] EWHC 343 (Pat); [2009] FSR 19

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.

13 While the examiner has not raised an objection under section 4A(1) of the Act, this provision was referred to by the applicant's attorney in his arguments, particularly with reference to the Comptroller's decision in *Aueon*[6]. Section 4A(1) reads:

A patent shall not be granted for the invention of –

(a) a method of treatment of the human or animal body, or

(b) a method of diagnosis practised on the human or animal body.

Arguments and analysis

14 As I have noted above, the examiner is of the opinion that the invention as defined in the claims relates to no more than a computer program and the presentation of information as such. His arguments on these points are comprehensively set out in his pre-hearing report of 15 December 2017, and in his further examination report of 31 January 2018. The applicant's position has been set out in responses to the examination reports through its attorneys, particularly the skeleton arguments filed on 29 January 2018, which were further elaborated upon at the hearing itself.

15 In order to determine whether the invention defined in the claims is excluded from patentability by virtue of section 1(2), I shall apply the four steps of the *Aerotel* test.

Step one: properly construe the claim

16 The examiner's pre-hearing report of 15 December 2017 was issued before the feature of the third region – having intermediate magnification – was introduced into claim 1. Nevertheless, his view set out in that report was that the "virtual slide images" referred to in the claim are "little more than standard computer graphic image files" and that the claimed magnification of the images is relevant only in that the images are hierarchically stored by reference to a magnification level. The fact that the slides are pathology slides has, he contends, "little or no actual effect" in terms of how they are stored or handled by the computer.

17 For these reasons, the examiner submitted that claim 1 (at that time) should be construed as relating to a method of displaying images in a first and a second region, the display in the second region being in response to user input, whilst always displaying the images in the first region with a visual indication of the parts displayed in the second region. It is clear from the examiner's further report of 31 January 2018 that the addition into the claim of the third region, having intermediate

[6] *Aueon Inc's application* BL O/248/13

magnification, did not change his view that the claim should be construed as relating to the display of images generally, and not limited to a pathology context.

18 In his skeleton arguments of 29 January 2018, and at the hearing, the applicant's attorney submitted that this construction omits some important substance of the independent claims. He argues that it does not acknowledge that claim 1 is defined as a method suitable for use by a pathologist to carry out a diagnosis of a case, in which all the slides of the case, being images of tissues, are automatically and always displayed in a first display region which the pathologist can interact with, in order to view any different region of any of the plurality of slides at a higher magnification in a second region.

19 In my view the attorney's arguments are persuasive on this point. Claim 1 is explicitly directed to a method for displaying images (on a display device) to a pathologist in order to enable the pathologist to carry out a diagnosis of a case. This requires the presence of virtual slides i.e. images of tissue samples. I do not think it follows that claim 1 should be construed more broadly as a method for viewing more general images. Such a construction departs too far from the wording of the claim, which is unambiguous in terms of the nature of the image being viewed, and the purpose for which the image is being displayed at various magnifications.

20 In the description as filed there is almost nothing that lends weight to the view that the invention is directed to display of images more generally – aside from what appears to be a brief generalising paragraph right at the end of page 34. I do not consider that this brief paragraph, weighed against the rest of the description, should mean that the claims are to be construed as any wider than their pathology context (and the attorney agreed at the hearing that the brief generalising paragraph would need addressing, were I to remit the application to the examiner for further processing).

21 The points made by the examiner in his pre-hearing report – that the images are standard computer image files and that the slides' medical content has little or no effect on how the images are handled by the computer – are ones that should properly be considered under later steps of the *Aerotel* test, rather than being taken as points of claim construction under step one.

22 On a separate point, and as noted above, claim 1 was amended on 9 January 2018 and introduced the feature of displaying an image of at least a part of one of the slides in a third region of the display device at a third intermediate magnification (greater than the first magnification but less than the second). I do not think anything necessarily turns on it for the purposes of this decision, but it seems there is only support for such a feature where it is displaying an intermediate magnification of the same one of the slides as is being displayed in greater magnification in the second region, so as to provide "some further navigational context to the user" – as indicated in figure 6 and at page 22 line 25 to page 23 line 1 of the description as filed.

23 I construe claim 1 as relating to a method for displaying virtual slide images on a display device, suitable for allowing a pathologist to carry out a diagnosis of a particular case. The method involves automatically displaying the images of all of a plurality of slides of tissue sections relating to the case in a first region at a first magnification. An image of at least a part of at least one of the plurality of slides is

displayed in a second region at a second magnification and in the same orientation, where the second magnification is greater than the first magnification. An image of at least part of the one of a plurality of slides is also displayed in a third region at a third magnification, which is greater than the first magnification but less than the second. A user is able to interact with the first region to view any different region of the plurality of slide images so as to change the image displayed in the second region. The images of the plurality of slides are always displayed in the first region and a visual indication is displayed in the first region of the part of the plurality of slides being displayed in the second region.

24 There is no difficulty in construing claim 35 as a virtual slide image viewing device, which comprises a display device communicating with a data processing device. The data processing device carries out the above method for displaying virtual slide images. Claim 36 is equally straightforward to construe as a computer-readable medium storing code which, when loaded into a data processing device, configures that device to carry out the above method for displaying virtual slide images.

25 Claim 37 is directed to a pathology method which comprises creating a tissue sample block, preparing a number of microscope slides each with a section of the tissue block mounted upon it, and scanning each slide to generate virtual slide image data and thus a virtual slide image for each slide. The virtual slide image data is stored in a database and the virtual slide images are displayed using the claim 1 method for displaying the images or the claim 35 viewing device.

Step two: identify the contribution

26 As the attorney notes in his skeleton arguments, in paragraph 43 of the *Aerotel* decision it is stated that identifying the contribution "*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*". With reference to paragraph 48 of the decision in *HTC*, the question to be asked is "*what does the invention contribute to the art as a matter of practical reality over and above the fact that it relates to a program for a computer? If the only contribution it makes is excluded matter then it is not patentable*".

27 Paragraph 44 of the *Aerotel* decision states that at the application stage this step generally involves considering the alleged contribution, *i.e.* what the applicant says is his contribution – though the court also states that "*In the end the test must be what contribution has actually been made, not what the inventor says he has made*".

28 Following on from his construction of claim 1, the examiner suggests at paragraphs 13 and 14 of the pre-hearing report that slide viewers are commonly known and the inclusion of the pathologist in the claim does not alter the substance of the invention. He submits that the contribution is no more than software for presenting images in the manner claimed.

29 The applicant's attorney submitted in his skeleton arguments and at the hearing that the contribution should not be assessed purely in terms of what is defined in the claims, but should include "what the claimed invention actually results in" – the practical, real-world consequences of the invention as defined by the claims. The

attorney also distinguished between, as he saw it, the contribution provided by claims 1, 35 and 36, and the contribution provided by claim 37.

30 In terms of claims 1, 35 and 36, he submitted that the contribution should be considered to be a virtual microscope that improves how a pathologist can make a diagnosis, or in other terms an improved apparatus for making a pathology diagnosis.

31 In his skeleton and at the hearing the attorney explained in detail how the claimed invention made the pathologist's diagnostic process more efficient and effective. In particular, he argued how it enables the pathologist to spend more time looking at the parts of the slides that matter (because less time is spent chopping and changing between slides); and it allows the pathologist to spend more time comparing the parts of the slides that matter. In further elaboration of this assessment the following advantages have been put forward (in the skeleton argument at paragraph 3.4 onwards, and discussed further at the hearing):

> i. The third region allows the pathologist to spend less time on an 'overview' of any given slide at a relatively low magnification, and therefore more time at higher magnification on the parts that matter.
>
> ii. It is possible to navigate more quickly to a new region of interest compared to optical microscopes or conventional virtual microscopes, through the ability to select a part of the slide shown in the first region. It is also possible quickly to view a different slide in the second region with a single user interaction in the first region. To do this using optical microscopy involves changing slides. In conventional virtual microscopy a user may need to select a file for a different slide, then wait for the image to be rendered before panning and/or zooming to a desired part.
>
> iii. When searching for regions of interest to view at higher levels of magnification in the second region, the pathologist can use the first region to pan to a region of interest with a single pan action, rather than laboriously scrolling across a highly magnified image.
>
> iv. It allows a pathologist quickly to identify regions on the same or different slides that they want to compare, for instance the same region of two different slides. As was submitted by the attorney at the hearing, this is considered by the applicant to be a particularly useful feature of the invention, as it is something that is very time consuming to do using optical microscopy or conventional virtual microscopy.

32 As a matter of practical reality, therefore, the attorney argued that the invention allows pathologists to work differently – more effectively and efficiently and using different workflows when they view and compare slides of a case. He also emphasised that the invention does not simply automate or virtualise conventional optical microscopy.

33 Having carefully considered the different views of the examiner and the attorney, I start by concluding that I do not agree with the examiner that the contribution in this instance is completely independent from the particular application in which it is

intended to be used. In particular, I do not agree that, just because virtual slide viewers are generally known, the contribution is simply software for presenting general images in the manner claimed.

34 That said, some of the advantages put forward by the attorney are those which arise when using any virtual microscope as opposed to an optical one – such as the change in behaviour of pathologists discussed in the skeleton argument at paragraphs 3.4.2.1 and 3.4.2.2. The attorney was of course not suggesting that the present invention was the first virtual microscope, and I must bear in mind the prior art documents cited by the examiner in his search report. In particular, it was known in the art to present a slide image in a first region at a low magnification image for display at higher magnifications in a second and third region. However, nothing in the cited prior art suggests that it was known to present all of the slides relating to a particular case at a low magnification in a first area, so as to allow a part of any one of those slides to be selected for viewing at high and intermediate magnifications in respective second and third regions.

35 It is also important to note that the contribution made by the invention does not, in my view, go so far as to encompass a new clinical insight or an improved diagnostic method. The medical data captured and presented on the slides is itself conventional. The same is true of the learning and insight that the pathologist must bring to bear when diagnosing a condition based upon the clinical information presented. There is nothing added to the sum of human knowledge in this regard. The invention does not make a contribution in medical terms regarding the clinical analysis which a pathologist must undertake, when presented with the information, in order to make a diagnosis.

36 But I am persuaded by the arguments that the particular method of displaying the slides specified in the claims gives rise to certain advantages that would assist the pathologist in carrying out their work. It seems credible in my view that the consequence of the claimed method is that it not only provides a helpful general overview of all of the slides relating to a particular case, but that it also allows the pathologist to view and compare parts of different slides at high magnification more quickly and easily than previously. This conclusion is consistent with the advantages set out at the beginning of the specification, which refer to improving the efficiency with which a user can view the virtual slides, and allowing the user “to more efficiently use the viewing software”.

37 This means, in my opinion, that the contribution of claim 1 can be regarded as an improved way of displaying virtual slides in a virtual microscope. The improved display allows a pathologist to work more efficiently, by allowing them to view all the slides of a particular case in a first region, from which an area of interest can be selected for viewing quickly at higher magnifications in the second and third regions.

38 The attorney’s arguments as regards the contribution applied equally to independent claims 35 and 36 – the claims to a virtual slide image viewing device and to a program on a medium. I agree that the arguments as to the contribution made by the invention of these claims are on all fours with those for claim 1. For that reason I conclude that claims 1, 35 and 36 all provide the contribution I have identified above.

39 In terms of claim 37 – directed to a pathology method – the attorney argues that the claim "includes further technical features of a method of pathology" including the preparation of the slides and the imaging of them. He argues that the contribution made by claim 37 is therefore an improved (more efficient) method of carrying out pathology when compared to pathology methods which use existing virtual or optical microscopes.

40 There are two reasons why I do not agree with this view. First, my reasoning in paragraph 35 above applies equally to this claim. Second, I bear in mind that nothing has been added to the sum of human knowledge by the present invention in terms of the steps involved in the preparation and imaging of the slides. Neither is there any particular connection between the improved display of the virtual slides and their preparation and imaging which means that the contribution should be viewed holistically as the whole preparation, imaging and display method.

41 Where the contribution really lies in claim 37 is in the displaying of the virtual slides once they are acquired and stored. That display takes place in accordance with the display method of claim 1 or the display device of claim 35. It follows that the properly understood contribution made by claim 37 is the same as that made by the other independent claims.

Steps three and four: does the contribution fall solely within excluded matter/is it technical in nature?

42 The third and fourth steps of the *Aerotel* test involve asking whether the identified contribution falls entirely within the excluded categories, and then checking whether it is technical in nature. Given that the consideration as to whether the contribution is technical in nature has a direct bearing on whether it falls solely within excluded matter, and the arguments that have been put before me in this case, it seems appropriate to consider these two steps together.

43 The attorney's first argument in relation to steps 3 and 4 is one that relates to methods of diagnosis and the exclusion in section 4A of the Act. I understand his point here as being that the invention is not a method of diagnosis of the type which is excluded under section 4A(1), but that it is a method of diagnosis "in the general sense" (paragraph 1.5 of his skeleton argument).

44 He then argues that it must follow from the wording of the Act that "inventions whose substance lie in the field of diagnosis are technical" (paragraph 3.7 of his skeleton argument), because the Act regards them as "inventions" (albeit in some cases excluded under section 4A) rather than being regarded as not inventions at all, under section 1(2). He points out that the *Manual of Patent Practice* at paragraph 4A.07 refers to methods of diagnosis not being excluded if they are performed on tissues or fluids removed permanently from the body, and refers to other examples in the *EPO Examination Guidelines*. As the attorney puts it, the IPO and the EPO "clearly envisage some diagnostic methods which are inventions" and the Act "recognises methods of diagnosis, and apparatus for use in methods of diagnosis, as being inventions and not excluded under Section 1(1)(d) and 1(2)".

45 This is a similar line of argument to that put before me by the attorney in *Clawson*[7]. I thought then that that argument needed to be treated with great caution, and I think that is also the case for the present invention.

46 The attorney's argument concerns whether the invention in a general sense is a diagnostic method and thus (he argues) not excluded. But the point to be decided under steps 3 and 4 is whether the properly-identified contribution is excluded (or is technical). It is not whether the invention in a more general sense can be regarded as a method of diagnosis (and thus, the attorney submits, technical in nature). The contribution that I have identified in this case is an improved way of displaying the virtual slides in a virtual microscope. For the reasons given under step two, the contribution is in no sense a method of diagnosis. It follows that I do not think the attorney's argument on section 4A can assist with the question under steps 3 and 4 of whether that contribution is excluded (or is technical).

47 In the future, a case may perhaps arise where the properly-identified contribution under the *Aerotel* steps is a method of diagnosis of the type which is not excluded under section 4A. If such a case occurs, that would be the point at which to consider whether the Act must be read as saying that such a contribution must on principle be considered technical, or whether that is not the correct interpretation.

Presentation of information

48 In support of his position that the contribution is excluded as relating to the presentation of information, the examiner has made reference to the decision of the Patents Court in *Gemstar*[8] with regard to what was termed the 'Single Channel' patent, which concerned an on-screen TV guide. Here, a user was able to select a programme from a TV schedule in grid form by using a cursor, which caused the programme information to be presented as a list. It was held that display of the information itself was the presentation of information, as was the manner in which it was communicated. At paragraphs (58) and (59) of the judgment it was held that:

"(58)…One starts with the provision of TV programme information in a grid. This seems plainly to be the presentation of information. The raw information is the detailing of the programmes. This has to be given over somehow (otherwise it exists only in some abstract ether). If it were spoken, that would be a presentation. If it were a written list, that would be presentation. In fact it starts (in this patent) in a grid. That, equally, is presentation of that information. Then, as a result of cursor movement and marking, the information is then presented in a different format - a list. That end result is, equally, a presentation of information. All that has happened is that information is presented in a different way (and perhaps in a different quantity). So the starting point and the end point are, in my view, plainly presentation of information. The middle factor is the movement of a cursor, the marking of the chosen programme which (unstated in the claims) causes the display to change. That seems to me to be accurately described as part of the selection mechanism. No-one suggested that it involved a new technical step - selecting material on screen and clicking on it so as to cause a change in its appearance on screen was part of the common general knowledge by 1990.

(59) I reach the same conclusion by standing back and looking at the thing overall. It is still the presentation of information with no, or no new, technical effect. Mr Birss sought to say that there was a technical effect, and it lay in a better use interface (his mantra in this part of the case). I think that that is a form of words which disguises the reality. Providing a better (or new) user interface is not a technical contribution…"

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[7] BL O/042/15

[8] *Gemstar-TV Guide International Inc v Virgin Media Ltd* [2009] EWHC 3068 (Ch); [2010] RPC 10

49 The examiner considers that the present application is similar to *Gemstar* in that it is about how information is displayed. In his view, the fact that the images are of pathology slides is not relevant.

50 One of the attorney's arguments is that the invention cannot be considered as the presentation of information as such, because the contribution is made "in the technical field of diagnosis". I think this point falls away, given the contribution as I have identified it – the contribution does not lie in a new diagnosis method or field.

51 However, the attorney also argues that the present invention is distinguished over *Gemstar* in that there is an effect in a technical process (diagnosis) that is external to the computer – whereas, for the 'Single Channel' patent of *Gemstar*, it was held that it was not considered technical to allow people to decide which TV programme to watch.

52 I agree that there are some parallels and some differences between the present application and the decision in *Gemstar* with regard to the 'Single Channel' patent. There is no doubt that the contribution of the present invention involves the presentation of the virtual slide information in a new and more helpful way. The displaying of visual information in the form of slide images relates to the presentation of information as does, it seems to me, the choice of providing the particular arrangement of the first, second and third regions at different magnifications.

53 Furthermore, in terms of using the virtual microscope, a part of one of the slides in the first region is displayed at higher magnifications in the second and third regions and, following user input, a different part of either the same slide, or a part of any of the other slides in the first region is selected for viewing in the second and third regions. By analogy to the above quoted part of *Gemstar*, I can see that it might be said that both the start and end points of using the virtual microscope involve the presentation of information, with the middle step of selecting the part of the slide to be viewed as not being a new technical effect. If so, this points towards exclusion.

54 However, that is not the end of the matter: as was made clear in *Gemstar*, and as is set out in the fourth step of *Aerotel*, it is also necessary to step back and look at whether there is an overall technical effect.

55 In this instance, the invention allows a user of the virtual microscope to view a part of any one slide of all those available for a given case at higher magnifications by always displaying all of the slides in the first region. Bearing in mind the contribution as I have found it to be, it seems to me that, overall, the contribution still amounts to no more than a better way to display and present information contained on the virtual slides. I do not think it matters whether the contribution is termed with reference to a better display of virtual slides or to a better virtual microscope. Either way, it is clear that the contribution concerns an improved way to display and navigate around virtual slide images at various magnifications.

56 On this basis, I am not persuaded that there is a "real world technical achievement outside the information itself", in the sense seen (for example) in the way that the third *Gemstar* patent involved a better electronic guide with a function having the physical effect of moving data between storage means, or in the way that the examples in the *EPO Examination Guidelines* discussed in paragraph 57 of *Gemstar*

do. I do not see a sound basis for accepting the attorney's contention (at paragraph 3.5.6 of the skeleton argument and at the hearing) that display of an image at a higher magnification is "moving data around" in a way which is akin to the physical effect of movement of data between disks referred to in paragraph 234 of *Gemstar*.

57 Finally, to the extent that the contribution can be characterised as a "better user interface", I note that in *Gemstar* the court rejected the argument that, of itself, providing a better or new user interface delivers a technical effect. Rearrangement or providing a different display of information remains the presentation of information.

Computer program

58 Both the examiner and the applicant agree that the *AT&T/CVON* signposts, while not definitive, are nevertheless useful in deciding whether an invention claimed as a computer program involves a technical contribution. The examiner gave his view regarding all five signposts; the attorney's view is that the first and fifth signposts are particularly relevant to the present application.

59 The examiner's position is that the first signpost points away from patentability, as the method of displaying information merely involves displaying information to a pathologist, and exhibits no control outside of the computer. The attorney says that it indicates patentability because a more rapid or efficient pathology diagnosis is a technical effect outside the computer.

60 On the fifth signpost, the applicant's attorney submits that the fifth signpost is met as the invention does not simply circumvent the problem of improving the speed with which a diagnosis can be carried out using a virtual microscope by automating a conventional diagnostic workflow. Rather, he says, it allows pathologists to adopt a new and different workflow. In contrast, in his pre-hearing report, the examiner states that according to the description there is a perceived problem concerning the handling and viewing of large image data files, but that the invention does not solve this issue as it concerns only where the images are viewed on a display device. In his view the invention is merely a circumvention of that problem.

61 Following on from my analysis of presentation of information above, I do not agree with the attorney's conclusions on the signposts. I return to the point that the invention provides a better way to display virtual slides. The manipulation of the image data to achieve the various presentations and magnifications is done wholly within the computer. To the extent that the improved display and arrangement of virtual slides can be said to be an effect which is external to the computer, it is an effect which lies wholly within the excluded area of presentation of information. It is not a technical effect external to the computer.

62 Neither does it seem to me to overcome a technical problem. As I have already said, the skilled pathologist does the intellectual or diagnostic thinking that they did before, but with information presented to them in an improved way. Again, if a problem with the previous display and representation of the virtual slides has been solved, then it is a problem that has been solved in the excluded area concerning presentation of information. Achieving a better presentation of the information to the user has not solved a technical problem.

63 For completeness, I agree that the second, third and fourth signposts do not assist. There is no suggestion that the contribution operates at the level of computer architecture, or that the software causes the computer to operate in a new way, or to operate more efficiently or effectively as a computer.

64 The attorney also relied on *Halliburton*[9] in support of the invention being more than a computer program as such. Just as the judgment at paragraph 71 of *Halliburton* asks "Is it more than a computer program as such?" and then answers the question "The answer is plainly yes. It is a method of designing a drill bit", so the attorney said in this case that "The answer is plainly yes. It is an improved virtual microscope for pathology".

65 For the reasons set out above, I do not think drawing this analogy leads to the right conclusion. The contribution in *Halliburton* was assessed as being "a computer implemented method of designing drill bits". The answer to whether it amounted to more than a computer program, by it being a contribution which did not fall wholly within an excluded field, followed from that assessment (and because it was also found not to be excluded as a mental act). The facts of this case are different, not least because the contribution insofar as it goes beyond a computer program lies wholly within another excluded field.

66 In similar vein, the attorney took paragraph 74 of *Halliburton*, which says this:

> *[…] Designing drill bits is obviously a highly technical process, capable of being applied industrially. Drill bit designers are, I am sure, highly skilled engineers. The detailed problems to be solved with wear and ability to cut rock and so on are technical problems with technical solutions. Accordingly finding a better way of designing drilling bits in general is itself a technical problem. The invention is a better way of carrying that out. […]*

and transposed it in the following terms:

> *Carrying out a diagnosis is a highly technical process, capable of being applied industrially. Pathologists are, I am sure, highly skilled doctors. The problems to be solved with efficiently viewing the relevant parts of virtual slide images at high magnification are technical problems with technical solutions. Accordingly finding a better virtual microscope for use by a pathologist to more efficiently make a diagnosis in general is itself a technical problem. The invention is a better virtual microscope for carrying out a diagnosis.*

67 Again I think this analogy is unsafe. Designing a drill bit was a "highly technical process" done by highly skilled people and, since that is where the contribution lay, it was not excluded. Carrying out a diagnosis may be a technical process and is no doubt done by highly skilled people, but that is not where the contribution lies in the present case. So the analogy breaks down. Furthermore, while the attorney says in his analogous *Halliburton* paragraph that problems associated with the viewing of high magnification images are technical, I do not see that this invention addresses technical problems to do with high magnification or high resolution image rendering or processing. I did not detect any suggestion at all that the contribution made by

[9] *Halliburton Energy Services Inc's Patent Application* [2011] EWCA 2508 (Pat); [2012] RPC 12

the invention concerned technical improvements to the way in which the standard-format digital images are processed.

68 In summary, I am of the view that the contribution made by the invention falls solely into excluded matter as the presentation of information, and is not "technical in nature". It is also a program for a computer as such. It therefore fails to comply with steps three and four of the *Aerotel* test.

Conclusion

69 I conclude that the claimed invention is excluded from patentability under section 1(2)(c) and (d) because it is no more than a program for a computer and the presentation of information.

70 I can find no other disclosure in the specification upon which patentable claims might be based. I therefore refuse the application under section 18(3) for failure to comply with section 1(2).

Appeal

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

Dr J E Porter
Deputy Director, acting for the Comptroller