BL O/055/05

4 March 2005

PATENTS ACT 1977

APPLICANT	Citibank N.A.
ISSUE	Whether patent application number GB 0019522.2 is excluded by section 1(2)
HEARING OFFICER	P M Marchant

DECISION

1 Patent application number GB 0019522.2 entitled ASystem and method for assuring the integrity of data used to evaluate financial risk or exposure@, was filed on 9 August 2000 in the name of Citibank, N.A. The application claims priority from an earlier United States application with a date of 9 August 1999.

2 The application concerns a method and system for detecting abnormalities in input data to financial risk management systems. The specification explains that traders in financial instruments such as derivatives commonly use computerised systems to analyse market conditions relevant to financial products and calculate the risks associated with current portfolios. Such calculations are becoming increasingly complex. Whereas in the past, errors in the input data to the systems may have been detected manually, that task is now becoming too large, and the object of the present invention is to detect errors automatically.

3 The system compares a set of input data with historical values representing a previous set of input data and uses statistical methods to determine the likelihood that changes in the input data are the result of one or more errors in the data rather than authentic variations. Where such a change is detected, the degree of likelihood that it is due to an error is indicated to a user, and the user is thereby alerted to the extent to which errors are probable.

4 In his first substantive examination report of 9 April 2003, the examiner objected that the subject matter of the application was unpatentable in view of section 1(2), sub-sections (a) and (c) of the Act, because it related to a mathematical method, a method of performing a mental act, and a computer program. The applicant=s agent replied arguing to the contrary. His view was that such a system could not practicably be performed as a mental method since it had to operate in real time and could only do so if implemented as a computer system. He said the system was an improved computerised system and was not a mental act or a method of doing business. He also considered that it was not simply a mathematical method since a system which analyses data and provides a confidence factor concerning a

probable error rate was providing a technically significant outcome. He pointed out that such a system could act in a similar way in respect of data representing medical information from a patient to provide a diagnosis.

5 In the same examination report, the examiner also cited prior art disclosing the use of a similar system for detecting fraud in financial transactions. In response, some limiting amendments were made to the claims, requiring that the inventive system must first calculate a measure of the information content of the data, and then perform statistical analysis of that measure. The examiner considered in the light of representations made by the agent, and these amendments that the claims were distinguished from the cited prior art.

6 In his second report of 8 September 2004, the examiner maintained his objection that the invention was excluded from patentability, this time as relating to a mental act, a business method and/or a computer program. He analysed a number of aspects of the invention which might potentially involve a technical effect but could find none. He also cited the previous Office decision, O/215/04, relating to a patent application in the name of "*Optimumportfolio.com, LLC*" which concerns the automatic selection of investment portfolio content based on known mathematical techniques. This system had the effect merely of speeding up what was previously done by a person without the use of a computer, and had consequently been found unpatentable. The agent replied that the present method and system were for error detection which was not inherently excluded from patentability, and the fact that it operated on financial data did not alter that position. He compared the present system to the systems for detecting errors in data encoding of compressed images for example, for which patents were commonly granted. The present system was in his view distinguished from the *Optimumportfolio* case by the fact that it was performing a function that simply could not be done by a person.

7 The difference of opinion between the examiner and the applicant remained unresolved, and the matter came before me at a hearing on 2 February 2005 at which the applicant was represented by Mr Graham Wotherspoon of Murgitroyd & Company, assisted by Mr Ian Lindsay.

The Invention

8 There is a further aspect of the invention beyond the description in paragraphs 2 to 5 above that is pertinent to the decision. That is whether the method used to perform the error calculation is itself new, or alternatively whether the method is well known and it is only its application to financial data that is new. Although the invention is based on the known concept of the information content of messages, and makes use of known statistical techniques, as described on pages 7 and 8, the specification does not suggest that the method as a whole is already known. Furthermore, although some similar prior art was found in the search carried out under section 17, amendments were made which, correctly in my view, satisfied the examiner that the claims were adequately distinguished from it. The prior art cited by the examiner in his examination report related to the detection of fraud, and as the agent pointed out in his letter of 11 August 2004: "It is not immediately apparent that

methods successful in detecting fraud would be successful in detecting errors." Furthermore, none of the prior art found in the search discloses the calculation of the information content of the input data, as now required by the claims. I will consequently proceed for the purposes of making this decision on the basis that the method itself, not merely its application to financial errors, is new.

9 Claim 1 was amended during prosecution as mentioned above and now reads:

> *1) A method for detecting abnormalities in input data to a financial transaction system, the method comprising:*
>
> > *a) receiving a set of input data to a financial risk management system;*
> >
> > *b) receiving one or more historical values, each historical value representing a previous set of input data;*
> >
> > *c) calculating the information content of the input data; and*
> >
> > *d) performing a statistical analysis of the calculated information content relative to the one or more historical values to determine the likelihood that changes to the input data are the result of one or more errors.*

10 Claim 9 is the only other independent claim. This relates to a system having integers which perform the same functions as are performed by the method steps of claim 1, further limited by hardware elements such as "a data processing server" and "a computer storage device" within which the functions are performed.

The Law

11 The provisions in the Act relating to excluded matter are in section 1(2) which reads:

> *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.

12 These provisions are ones which by virtue of section 130(7) of the Act are so framed as to have as nearly as practicable the same effects in the UK as the corresponding provisions of, inter alia, the European Patent Convention. Consequently decisions by the European Patent Office Boards of Appeal relating to excluded matter are of persuasive value in considering these matters under the Act.

13 It has been established by the Courts that an invention will not be excluded from patentability by this provision if it involves a technical effect or makes a technical contribution. It is this technical aspect which saves an invention from being regarded as excluded matter Aas such@ and therefore confers patentability. In *Fujitsu Limited=s Application* [1997] RPC 608 in the Court of Appeal, Aldous LJ said at page 614:

> AHowever it is and always has been a principle of patent law that mere discoveries or ideas are not patentable, but those discoveries and ideas which have a technical aspect or make a technical contribution are. Thus the concept that what is needed to make an excluded thing patentable is a technical contribution is not surprising. That was the basis for the decision of the Board in *Vicom*. It has been accepted by this court and by the E.P.O. and has been applied since 1987. It is a concept at the heart of patent law.@

14 It is consequently necessary in addressing the issue of patentability under section 1(2) of the Act to determine firstly whether the invention falls within one or more of the excluded areas, and if it does, whether it is saved from exclusion by the fact that it involves a technical contribution.

15 Mr Wotherspoon opened by adopting the position set out in the *Fujitsu* decision. He also said it was his understanding on the basis of prior UK decisions in this field that it should be the substance of the invention, rather than the form of the claims that determines whether the subject matter of an application will be regarded as complying with section 1(2). Also that the determination of patentability had to be assessed on the claimed invention as a whole. I agree with those remarks.

Discussion

16 Mr Wotherspoon's proposition was that the system claimed was for the assessment of errors in data. He said that was a technical activity which could arise in a range of different applications nothing to do with financial calculations. He gave as examples errors arising in a stream of data from a medical system, or the output of an electrocardiogram. His view was

that error detection in such a system was clearly a technical activity and was such that it would not give rise to any concern as to its patentability. The fact that the current system operated on financial data did not prevent it having a technical effect.

17 While leaving open for the moment the question whether error correction is necessarily a technical activity, the point Mr Wotherspoon was making is consistent with the Patent Office's approach to the assessment of technical contribution in potentially excluded applications. In a Practice Notice issued on 24th April 2002, it was stated that the Office intended to follow the guidance suggested by the decision of Neuberger J in *Kirin Amgen Inc v Roche Diagnostics GmbH* [2002] RPC 1, that inventions which involve a technical contribution will not be refused merely because they relate to business methods or mental acts.

18 To address the first part of the test for patentability, I think it is undoubtedly the case that the invention falls within the scope of the excluded matter listed in section 1(2). It does not sit very clearly under a single one or other of the exclusions listed; it has aspects of a scheme, rule or method of doing business and aspects of a mathematical method. But I am confident since the invention lies in the statistical manipulation of data relating to a financial transaction system, that it falls within these exclusions.

19 It is necessary therefore to decide whether the invention involves a technical contribution. The method of claim 1 and the system of claim 9 involve the detection of abnormalities in input data to a financial transaction system. For the invention to be patentable on the above analysis, the error detection arrangement itself, irrespective of the financial context, must involve a technical contribution. Mr Wotherspoon's proposition was that the error detection system was equally capable of use in a range of different applications, some of which are themselves technical. That, in his view necessarily meant the error detection system must involve technical activity. I do not think this is the right way to make the assessment. Placing the arrangement in a technical environment may suggest that it is itself a technical system but I don't think it necessarily follows that it is. The apparent technical character of the system in that case may derive from the application within which the system is embedded rather than from the error detection arrangement itself. I do not think that analysis advances the assessment and I need to consider the error detection itself separately of any application since it is that in which a technical contribution must be demonstrated if it is to escape exclusion.

20 Before doing so, I need to set out what I understand by the reference to "information content" in the claims. Page 7 of the specification explains that the information content of a message is the amount of information, measured for example in bits, needed to send the message over a data channel. It is explained in terms of Shannon information theory which relates to the information content of messages and their transmission over communication channels. I believe the perhaps more familiar idea of bandwidth is an equivalent concept, though the specification does not say so. In bandwidth terms, the higher the information content of a message, the higher the bandwidth of the signal and of the communication channel needed to transmit it. In any event, since the claims require the calculation of the information content of the input data, and "information content" in the present context relates to the quantity of message bearing data in a data channel, I consider that the method of claim

1 requires a physical data channel for its execution and that it could not be carried out say by an individual with pencil and paper.

21 The error detection system itself in this view involves receiving input data, receiving historical data corresponding to the input data, calculating the information content of the input data, and carrying out statistical analysis on the calculated information content of the input data relative to the historical input data in order to determine the likelihood of abnormalities in the input data. And this must occur, in claim 1 as in claim 9, in a physical data channel.

22 The question before me therefore is whether such processing of input data does or does not involve a technical contribution. It seems to me that the calculation of the likelihood of errors *per se* in data is a mathematical process rather than a technical activity. It may be that such a method in which the data being manipulated itself related to a technical activity could result in a technical contribution. I am thinking of activities such as the compression of image data or medical measurement data examples given by Mr Wotherspoon. However in those circumstances, it is the fact that the data relates to a recognizably technical activity which confers a technical character on the method as a whole. In the present case, where the data being manipulated is financial data, or, if the context is to be ignored, undefined data, then there appears to be nothing to provide the method with any technical character.

23 I am not dissuaded from that view by considering the types of error that the system is designed for. Page 14 of the specification refers to data errors arising from "business/systems operations" and from "human faults, system failures and whatnot". It appears that the system is concerned with errors arising for any reason including such physical effects as power failure and electrical interference as well as errors in the financial content of the data. It is possible to envisage an error detection system concerned with and containing elements adapted for the detection of such physical errors which would confer a technical character on the invention. However as the claim and the disclosure stand, while the invention is capable of detecting physical as well as information errors, there is no particular adaptation to this aspect which involves a technical character in the same way as the examples quoted above. The claims consequently appear to relate to non-technical activity.

24 Having considered these matters, I consider that the invention as defined in the independent claims does not involve a technical contribution.

Summary

25 It is consequently my view that the present invention relates to a scheme, rule or method for doing business and/or a mathematical method. It does not involve a technical contribution, since the method and system for data manipulation employed by the invention relate to a mathematical method and there is no technical character to the data with which the invention is concerned. I consequently find that the invention is excluded from patentability under section 1(2) of the Act and I refuse the patent application.

26 I have carefully considered the dependant claims and the disclosure of the specification and

can find nothing to suggest that it would be possible to draft claims that overcome this finding of non-patentability.

27 As discussed at the hearing, the section 20 period for this application expired on 11th February 2005. If the applicant wishes to appeal this decision, it will be necessary for it to apply for an extension of the section 20 period.

Appeal

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

P MARCHANT
Deputy Director acting for the Comptroller