



features/feature is then, based on various predefined probabilities, picked out eg as the theme or “thesis statement” of the essay.

- 8 The predefined “features” are items previously identified as being representative of the required “theme” by experts manually marking essays. For example, it is noted that “thesis statements” often appear near the beginning of the essay, are associated with “belief” words and often have various phrases associated with them. A computer program has been developed using an algorithm which associated various probabilities to each of these features and to which a list of predefined (eg “belief”) words can be inputted for use in finding the theme (eg thesis statement) of an essay.
- 9 There are two independent claims, the first (claim 1) being the method of essay analysis using predetermined features and probabilities and the second (claim 20) relating to training the program using previously manually marked essays. These independent claims read as follows:
  1. A method for automated analysis of an essay, the method comprising: accepting an essay, determining whether each of a predetermined set of features is present or absent in each sentence of the essay; for each sentence in the essay, calculating a probability that the sentence is a member of a certain discourse element category, wherein the probability is based on the determinations of whether each feature in the set of features is present or absent; and choosing a sentence as the choice for the discourse element category, based on the calculated probabilities.
  20. A process of training an automated essay analysis method, the process comprising: accepting a plurality of essays; accepting manual annotations demarking discourse elements in each of the plurality of essays; accepting a set of features that purportedly correlate with whether a sentence in an essay is a particular type of discourse element; calculating empirical probabilities relating to the frequency of the features; and calculating empirical probabilities relating features in the set of features to the discourse elements.
- 10 Also referred to at the hearing as claims the applicant would rely on if the above claims were found against were claims 18, 19 & 21 reading as follows:
  18. The method of claim 1 further comprising outputting the choice.
  19. The method of claim 1 further comprising outputting a revision check list.
  21. The process of claim 20 further comprising performing the method of claim 1 on each of the plurality of essays and judging the performance of the method of claim 1 compared to the manual annotations and if the performance of the method of claim 1 is inadequate, modifying the set of features and repeating the method of claim 1.

## **The law**

- 11 The relevant parts of the Patents Act, 1977, read:

“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 –

...

...

**(c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer**

...

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.”

### **Interpretation**

12 According to the principles laid down by the Courts when considering categories excluded by s.1(2), the question of whether an invention is excluded should be approached by construing the claimed invention as a whole, without regard for its constituent features or integers, and determining whether the whole invention solves a technical problem, or makes a contribution to the art in a non-excluded field, or whether the invention is, in substance, no more than an excluded item or is merely an excluded item in disguise. Thus, to analyze an invention involving a mental act method or a computer program it is necessary to decide whether the invention does or does not involve a technical contribution.

13 In matters of patentability, it has been established both in UK and EPO practice that an invention which makes a technical contribution will be held to be patentable notwithstanding that it may fall into one of the categories in Section 1(2) of the Act. This principle follows in particular the decision of the Court of Appeal in *Fujitsu Limited's Application* [1997] RPC 608 and the words of Aldous LJ at page 14, lines 40-46:

"However, 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 the EPO and has been applied since 1987. It is a concept at the heart of patent law."

14 That this test should apply across all the areas covered by Section 1(2) was made clear in the Patent Office Practice Notice issued on 24 April 2002 entitled "Patents Act 1977: interpreting section 1(2)".

15 It is also a well established principle in UK patent law that when assessing whether an invention relates to excluded subject matter, it is the substance of the invention that is important, not its form. For example, in *Fujitsu's Application* [1997] RPC 608 Aldous LJ, having quoted Fox LJ from *Merrill Lynch's Application* [1989] RPC 561, says at page 614, lines 31-42:

" ..Fox LJ was making it clear that it was not sufficient to look at the words of the claimed monopoly. The decision as to what was patentable depended upon substance not form....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."

- 16 Mr. Prichard strongly urged me to have regard to the decisions of the EPO and in particular that of *Hitachi* (Auction method T 0258/03) in coming to a decision. EPO board of appeal decisions are persuasive on us where they are not contrary to the Court decisions but UK Court decisions are binding on us.
- 17 Indeed, a Patent Office Practice notice dated 24<sup>th</sup> November 2004 and headed "Patent applications relating to methods of doing business", inter alia, referred to this EPO decision and stated that "Whilst the general approach set out in *Hitachi* may seem somewhat different from the general approach laid down by previous UK court decisions, we are of the view that the traditional UK approach and the *Hitachi* approach will almost always come to the same end result. Applicants should particularly note the conclusion in *Hitachi* that circumventing a technical problem through modification of a business method (rather than solving it by technical means) cannot contribute to the technical character of a computer-implemented invention."
- 18 Besides this, the principles to be applied under UK law in deciding whether an invention makes a technical contribution have been rehearsed repeatedly in various decisions of the Comptroller's hearing officers in recent times including many decisions considering *Hitachi*. These can all be found on the Patent Office website at <http://www.patent.gov.uk/patent/legal/decisions/index.htm> .
- 19 Besides *Hitachi*, the following decisions were referred to in the hearing:
- IBM/Text processing* (T65/86); *IBM/Document abstracting and receiving* (T22/85); *Sohei/General Purpose Management System* (T 769/92); *Texas Instruments/Language understanding System* (T236/91); *Fujitsu Limited's Application* [1997] RPC 608; *Vicom Systems Inc* (T 208/84); *Gales Application* [1991] RPC 305; *Kirin-Amgen Inc's Patent* [2002] RPC 422; *Wang Laboratories Inc's Application* [1991] RPC 463.

### **Argument**

- 20 Mr. Pritchard addressed me at some length on these precedent cases. I think that the gist of his argument can be summed up by quoting paragraph 4.5 of the *Hitachi* decision "Hence, in the Board's view, activities falling within the notion of a non- invention 'as such' would typically represent purely abstract concepts devoid of any technical implications". Thus, Mr. Pritchard argued and accepted that something purely abstract such as a 'machine that calculated times tables or pi...is a purely abstract concept and therefore unpatentable'. Thus, there was common ground between us in accepting that something purely abstract was not patentable, that a technical contribution was what was needed to make something otherwise falling foul of Section 1 (2) patentable, that the technical contribution could be found in the hardware or software parts of the system and that the 'hurdle of technical effect

to be overcome' does not have to be high.

- 21 I think I need to deal a bit more with his submissions on *Sohei* where he quoted paragraph 3.7 where the Board said "...However, the implementation in the claimed system and by the claimed method of the said 'interface' in the form of the said 'transfer slip' is not merely an act of programming but rather concerns a stage of activities involving technical considerations to be carried out before programming can start". In other words, this was viewed by Mr. Pritchard as requiring technical input before the programming could start and this was what he viewed the technical contribution effectively was both in *Sohei* and in the application in suit.
- 22 However, even setting out to provide a program to determine eg pi could involve technical considerations as to how to go about it. And, if this argument were to be accepted, this could mean that any computer program had, at some stage, technical considerations since, how to go about programming it would require some thought and analysis and hence would not of necessity be excluded from patentability. This clearly can not be, and has been held on a number of occasions not to be, right.
- 23 Relevant to this argument is the comment of Aldous L J at page 620 of *Fujitsu* where, quoting from his earlier judgment in *Wang*, he said "The method may well be different when a computer is used, but to my mind it still remains a method for performing a mental act, whether or not the computer program adopts steps that would not ordinarily be used by the human mind.". This I think is on all fours with this application.
- 24 He then went on to compare *Sohei* with this application which he viewed as a method of allowing a machine to perform something which was not previously capable of being performed by a machine. And, as he later stated, the applicant's solution provided an "objective way" or means of analyzing an essay and this was the technical problem that was solved. He viewed it as allowing an analysis to take place automatically and "objectively" and replacing a 'subjective human means'.
- 25 Instructive in determining if this is so, is claim 21, set out above, from which it is clear that the programming method used is amended until it provides a result comparable with that of manual marking and that it is the results from manual marking which are used to set up the computer program used. The actual words or phrases used are input based on previous manually annotated essays and the probabilities are previously determined on the basis of the same.
- 26 It is also clear from the specification – see Tables 1, 2 & 4 - that the percentage agreement between two experienced markers is of the order of 50-60 % and that this is the order of agreement reached comparing the computerized method with these experienced manual markers. Indeed, the applicant's conclusion is stated at the last 3 lines on page 18 "Results from both experiments indicate that the algorithm's selection of thesis statement agrees with a human judge **almost as often** (my emphasis) as two human judges agree with each other. And at lines 3-5 on page 19 is stated "...this will increase human agreement...and the reliability of the automatic thesis selection since the classifiers are built using the manually annotated data".

- 27 Further in this respect, it is pointed out that the program is developed on the basis of known facts ie that thesis statements are often found at the beginning of essays, that they often contain “belief” words and certain phrases and using an existing rhetorical structure parser.
- 28 In other words, the automatic method is following what is done manually and the probabilities used are adjusted until reasonable agreement is reached between manually annotated essays and machine analyzed essays. Thus, it is clear that what is being carried out here amounts to no more than a method of performing a mental act which is carried out on a general purpose computer using a computer program. I cannot see a technical contribution in the proposed method. This application seems to be no more than automating a process that has been done previously using pen and paper. It is established UK law under *Fujitsu* that simply automating a process that could be done manually – a mental act – does not of itself necessarily confer a technical contribution.
- 29 Mr. Pritchard also referred me to *Texas Instruments* as quoted in paragraph 1.26.13 of the Office Manual of Patent Practice in which application a computer automatically produced a list of suitable words or phrases to follow words or phrases already entered by an operator. This was seen as being technical since it was not seen as primarily concerned with linguistics but rather ultimately operating the computer. However, Mr. Pritchard did not address my attention to the beginning of this paragraph, in which it is stated that both the Office and the EPO do not see applications relating to the field of linguistics as being a technical field. This application is firmly in the field of linguistics as Mr. Pritchard acknowledged.
- 30 I do not think I need to consider further his arguments with respect to the two *IBM* cases which are essentially as summarised in paragraph 20 above.
- 31 Mr. Pritchard also referred me to claims 18 & 19 set out above. Claim 18 merely relates to actually displaying the chosen thesis statement and it is clear from page 4 that the “revision check list” is a standard list of questions and not specific to a particular essay. Accordingly, neither of these claims would seem to add anything patentable.

### **Conclusion**

- 32 I have read the specification thoroughly and I have been unable to identify any subject matter which might form the basis of a patentable invention. The invention relates to a method for performing a mental act and a computer program which, without making a technical contribution, are excluded from patentability by virtue of section 1 (2) (c). I therefore refuse the application under section 18 (3).

## **Appeal**

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

**S E Chalmers**

Deputy Director acting for the Comptroller