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Aktenzeichen / Case Number / N^o du recours : T 65/86 - 3.5.1

Anmeldenummer / Filing No / N^o de la demande : 83 102 545.7

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Bezeichnung der Erfindung: System for detecting and correcting contextual
Title of invention: errors in a text processing system
Titre de l'invention :

Klassifikation / Classification / Classement : G06F 15/20

ENTSCHEIDUNG / DECISION

vom / of / du 22 June 1989

Anmelder / Applicant / Demandeur : I.B.M.

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence : Text processing/IBM

EPÜ / EPC / CBE Articles 52(1), 2(c) and (3), 56

Schlagwort / Keyword / Mot clé : "Method for performing mental acts" -
"mix of technical and non-technical features" -
"inventive step (denied)"

Leitsatz / Headnote / Sommaire

Headnote follows



Case Number : T 65/86 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 22 June 1989

Appellant : International Business Machines Corporation
Old Orchard Road
Armonk, N.Y. 10504 (US)

Representative : Siccardi, Louis
Companie IBM France
Département de Propriété Industrielle
F-06610 La Gaude (FR)

Decision under appeal : Decision of Examining Division 065
of the European Patent Office
dated 16 October 1985 , refusing
European patent application
No. 83 102 545.7 pursuant to
Article 97(1) EPC

Composition of the Board :

Chairman : P.K.J. van den Berg

Members : W.J.L. Wheeler

E. Persson

Summary of facts and submissions

- I. European patent application No. 83 102 545.7 (publication No. 93 249), filed on 15 March 1983 and claiming priority from a previous application US 373543 of 30 April 1982, was refused by a decision of the Examining Division 065 of the European Patent Office dated 16 October 1985. That decision was based on Claims 1 to 3 (part) as published and Claim 3 (part), Claims 4 to 10 (part) as filed with a letter dated 8 August 1985, and claim 10 (part) as published.
- II. The reason given for the refusal was that the subject-matter of the claims was not acceptable under Article 52(1) EPC. In Claims 1 to 5 was claimed a method which was a collocation of an algorithm based on non-technical information, which was excluded from patentability by Article 52(2) and (3) EPC, and directions for the use of a known text processor system, which did not involve an inventive step within the meaning of Article 56 EPC having regard to the following prior art documents:
- IEEE Transactions on Communications, Vol. COM-30, No. 1 (January 1982), pages 105 to 110, (Document D1);
- Communications of the ACM, Vol. 23, No. 12 (December 1980), pages 676 to 687, (Document D2);
- US-A-4 308 582, (Document D3).
- Furthermore, in Claims 6 to 10 was claimed a system whose structural features did not involve an inventive step within the meaning of Article 56 EPC.
- III. On 29 October 1985 the Appellant filed a notice of appeal against this decision. The fee for appeal was paid on the

same day. The statement of grounds was filed on 4 February 1986, accompanied by a new set of claims, of which Claim 1 is worded as follows:

- "1. A method for automatically detecting and correcting contextual homophone errors in a text document, in a text processing system comprising a processor (11) with a memory (23) and a process execution unit (24), a keyboard (10) with graphic symbol keys and control keys including a display cursor control key and a data enter key, said keyboard being connected to the input (21) of said processor (11) for entering data into a keystroke queue portion (26) of said memory (23), a text buffer portion (27) of said memory (23) being connected to said keystroke queue portion (26) for receiving data therefrom, and a display refresh buffer (12) connected to the output (23) of said processor (11) for controlling the generation of characters on a screen (40) of a display device (14) said method being characterized in that it includes the steps of:
- a) defining sets of homophones and storing, under control of said execution unit (24), said sets of homophones in a portion (31) of said memory (23);
 - b) defining contextual characteristics for each said homophones and storing, under control of said execution unit (24), said characteristics in a portion (32) of said memory (23);
 - c) storing in a portion (34) of said memory (23) a set of data segments related to each homophone;
 - d) entering, from said keyboard (10) a text document into said text buffer portion (27) and said display refresh buffer (12) for displaying by said display device (14);

e) controlling said execution unit (24) of said processor (11) to scan word-by-word the contents of said display refresh buffer (12) and to compare each scanned word to the said sets of homophones stored in said memory portion (31), in order to determine whether homophones are present in said display refresh buffer (12);

f) controlling said execution unit (24) to compare the data segments surrounding each homophone found in step e) to the defined contextual characteristics stored in portion (32) for the homophone;

g) highlighting on said display device (14) each homophone whose surrounding data segments do not compare with said defined contextual characteristics;

h) controlling said execution unit (24) to access those sets of data segments stored in said memory portion (34), and related to said highlighted homophones, and to cause said display device (14) to display said sets of data segments;

i) moving said display cursor, through actuation of said cursor control key, underneath a data segment selected among the displayed set of data segments related to an highlighted homophone;

j) actuating said data enter key on the keyboard (10) to cause said cursored data segment to be substituted for the highlighted homophone in the said text document."

Claims 2 to 5 are dependent on Claim 1. In particular claim 3 is also considered to be dependent on claim 1, since, although it contains a clearly wrong reference to

claim 3, it comprises further features concerning step h), the latter occurring only in claim 1.

- IV. In the statement of grounds the Appellant stated that the new Claim 1 related to a new method of operating a text processing system, which provided the system with the capability of automatically detecting, in a text document, homophones which appeared to be syntactically mismatched and prompting the operator in suspicious cases only, thus enabling the operator to replace a misused word by a correct one retrieved by the system.

The claimed method was a combination of steps performed by the operator (steps a to d, i and j) and steps performed by the system. The latter steps created new functional relationships between the system components. The system claimed in the new Claim 1 therefore had technical character and was an "invention" within the meaning of Article 52(1) EPC.

Regarding inventive step, the Appellant argued that the system described in D1 did not have the capability of automatically detecting contextual homophone errors or prompting the operator in suspicious cases only: it merely allowed its users to request display of a word whose definition was not clear to them. D2 concerned only the correction of spelling errors. D3 concerned the selection of control parameters and bore no relationship to the claimed invention.

- V. In reply to a communication from the Board, in which it was stated that there did not appear to be anything disclosed in the present application which involved an inventive step in a field not excluded from patentability, the Appellant agreed with the Board that the actual selection of the word to replace the highlighted homophone

(in step i of Claim 1) involved a mental act, but argued that steps such as steps c) to h) and step j) of Claim 1 were not mental acts.

The Appellant referred to T 26/86 (OJ EPO, 1988, 19) and argued that the statements made there to the effect that if an invention made use of technical and non-technical means, the use of non-technical means did not detract from the technical character of the overall teaching, and that the EPC did not prohibit the patenting of inventions consisting of a mix of technical and non-technical elements, applied to the present case.

The Appellant agreed with the Board that the claimed method involved the use of hardware controlled by a computer program, but pointed out that this did not mean that the method claimed in Claim 1 was itself a program. Following T 26/86, the claimed method was patentable irrespective of whether or not the hardware without the program formed part of the state of the art.

- VI. The Appellant requests that the decision under appeal be set aside and a patent granted on the basis of Claims 1 to 5 filed on 4 February 1988.

Reasons for the decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.
2. As can be seen from the opening words of Claim 1, the claim is directed to a method for automatically detecting and correcting contextual homophone errors in a text document.

A "contextual homophone error" occurs when one of a number of confusable words, such as "affect" and "effect" for example, has been used in an inappropriate context. In the opinion of the Board, a contextual homophone error is a purely linguistic error and has no technical significance at all.

3. Claim 1 goes on to specify that the method is carried out in a text processing system comprising a processor with a memory and a process execution unit, a keyboard with graphic symbol keys and control keys including a display cursor control key and a data enter key, said keyboard being connected to the input of said processor for entering data into a keystroke queue portion of said memory, a text buffer portion of said memory being connected to said keystroke queue portion for receiving data therefrom, and a display refresh buffer connected to the output of said processor for controlling the generation of characters on a screen of a display device.

The Appellant does not dispute the fact that the above mentioned hardware is conventional.

4. In step a) of Claim 1, namely "defining sets of homophones and storing, under control of said execution unit (24), said sets of homophones in a portion (31) of said memory (23);" information required solely for linguistic purposes is entered and stored in a manner which is conventional from a technical point of view.
5. In step b) of Claim 1, namely "defining contextual characteristics for each said homophone and storing, under control of said execution unit (24), said characteristics in a portion (32) of said memory (23);" information required solely for linguistic purposes is entered and

stored in a manner which is conventional from a technical point of view.

6. In step c) of Claim 1, namely "storing in a portion (34) of said memory (23) a set of data segments related to each homophone," information required solely for linguistic purposes is entered and stored in a manner which is conventional from a technical point of view.
7. In step d) of Claim 1, namely "entering, from said keyboard (10) a text document into said text buffer portion (27) and said display refresh buffer (12) for displaying by said display device (14);" information required solely for linguistic purposes is entered and stored in a manner which is conventional from a technical point of view.
8. In step e) of Claim 1, namely "controlling said execution unit (24) of said processor (11) to scan word-by-word the contents of said display refresh buffer (12) and to compare each scanned word to the sets of homophones stored in said memory portion (31), in order to determine whether homophones are present in said display refresh buffer (12);" data are compared in a manner which is conventional from a technical point of view for the sole purpose of determining whether the data in the display refresh buffer meet certain purely linguistic criteria.
9. In step f) of Claim 1, namely "controlling the execution unit (24) to compare the data segments surrounding each homophone found in step e) to the defined contextual characteristics stored in portion (32) for the homophone;" data are compared in a manner which is conventional from a technical point of view for the sole purpose of determining whether the data in the display refresh buffer meet certain purely linguistic criteria.

10. In step g) of Claim 1, namely "highlighting on said display device (14) each homophone whose surrounding data segments do not compare with said defined contextual characteristics;" the outcome of the comparisons performed in step f) is displayed to the operator in a manner which is conventional from a technical point of view. The information displayed is required solely for linguistic purposes, namely to indicate to the operator those of the detected homophones which are suspected of being incorrectly used.
11. In step h) of Claim 1, namely "controlling said execution unit (24) to access those sets of data segments stored in said memory portion (34), and related to said highlighted homophones, and to cause the display device (14) to display said sets of data segments;" information which is required solely for linguistic purposes, namely to assist the operator in selecting a homophone for inclusion in the text, is retrieved and displayed in a manner which is conventional from a technical point of view.
12. In step i) of Claim 1, namely "moving said display cursor, through actuation of said cursor control key, underneath a data segment selected among the displayed set of data segments related to a highlighted homophone;" the actual selection is made by the operator using only his skill and judgement. The selection of one of several displayed options by positioning the cursor under it is conventional from a technical point of view.
13. In step j) of Claim 1, namely "actuating said data entry key on the keyboard (10) to cause said cursored data segment to be substituted for the highlighted homophone in the said text document." one item of data having only linguistic significance is replaced by another item of data having only linguistic significance. This is done in

a manner which is conventional from a technical point of view.

14. It seems to the Board that a person who wishes to detect and correct homophone errors in a text document, doing everything by himself with pencil and paper, would have to proceed in a similar way and follow the same sequence of steps a) to j) as described in Claim 1, but without using the technical facilities described there:

- (A) he would define sets of homophones and either hold them in his head or write them down;
- (B) he would define contextual characteristics for each of said homophones and either hold them in his head or write them down;
- (C) he would ascertain possible replacement words and their correct meanings and usage for each of said homophones and either hold them in his head or write them down;
- (D) he would take up a text document to be checked and
- (E) scan it word by word, comparing each scanned word with the sets of homophones defined in step (A) to determine whether any homophones are present in the text document;
- (F) he would compare the words surrounding each homophone found in step (E) with the contextual characteristics defined in step (B) for that homophone,
- (G) mark on the text document each homophone whose surrounding words do not satisfy said defined contextual characteristics,

- (H) consider the possible word(s) and their correct meanings and usage for each of said marked homophones,
 - (I) choose a replacement word and
 - (J) substitute the chosen word for the marked word in the text document.
15. Proceeding in this way, the said person would only use his skill and judgement and would consequently perform purely mental acts within the meaning of Article 52(2)(c) EPC. The schemes, rules and methods, i.e. the steps as enumerated under the foregoing items (A) to (J), for performing these mental acts are not inventions within the meaning of Article 52(1) EPC.
16. The Board recognises that the use of technical means for carrying out a method, partly or entirely without human intervention, which method, if performed by a human being, would require him to perform mental acts, may, having regard to Article 52(3) EPC, render such a method a technical process or method and therefore an invention within the meaning of Article 52(1) EPC, i.e. one which is not excluded from patentability under Article 52(2)(c) EPC. This is because paragraph 3 of Article 52 EPC makes it clear that patentability is excluded only to the extent to which the patent application relates to excluded subject-matter or activities as such. In the opinion of the Board, while it follows that the EPC does not prohibit the patenting of inventions consisting of a mix of excluded and non-excluded features (in conformity with T 26/86, OJ EPO, 1988, 19), it does not necessarily follow that all such mixes are patentable. Since patentability is excluded only to the extent to which the patent

application relates to excluded subject-matter or activities as such, it appears to be the intention of the EPC to permit patenting in those cases in which the invention involves some contribution to the art in a field not excluded from patentability. In other words, inventions involving such a contribution must be considered to constitute inventions within the meaning of paragraph 1 of Article 52 EPC.

17. In the opinion of the Board, paragraph 1 of Article 52 EPC, as qualified by paragraphs 2 and 3 of that Article, states in effect that European patents shall be granted for any inventions (except those excluded by virtue of paragraphs 2 and 3 of Article 52 EPC) which are susceptible of industrial application, which are new and which involve an inventive step.
18. The method claimed in Claim 1 of the present application does not appear to involve an inventive step. Once the step of the method for performing the mental acts in question (enumerated under the foregoing item 14) have been defined, the implementation of the technical means to be used in those steps, at least at the level of generality specified in Claim 1, involves no more than the straightforward application of conventional techniques of entering, storing, retrieving and comparing data, displaying, highlighting and selecting options from a menu, and must therefore be considered to be obvious to a person skilled in the technical art.
19. Although a computer program is not expressly recited in Claim 1, it is clear to a reader skilled in the art that the claim covers the case in which a computer program is used and, indeed, in the only embodiment disclosed in the application the text processing system is controlled by a set of programs and data stored in the memory.

20. The overall effect of the method claimed in Claim 1 is that signals representing one linguistic expression in the text document are replaced with signals representing another linguistic expression. These signals are not different from a technical point of view. They differ only in that they represent different linguistic expressions, which are purely abstract expressions without any technical significance. The overall effect of the method is thus not technical.
21. The present case is therefore distinguishable from the previous decisions T 208/84 (VICOM, OJ EPO, 1987, 14) and T 26/86 (X-ray apparatus, OJ EPO, 1988, 19). In T 208/84 the claimed method is patentable, even though it could be carried out by known hardware suitably programmed, because it makes a contribution in a field not excluded from patentability, namely a more efficient restoration or enhancement of the technical quality of an image. Similarly, in T 26/86 the claimed apparatus is patentable, even though the X-ray apparatus without the computer program was known, because it makes a contribution in a field not excluded from patentability, namely controlling the X-ray tubes so that optimum exposure is obtained with adequate protection against overloading of the X-ray tubes.
22. In the opinion of the Board, the method according to Claim 1 of the present application does not contribute to the art anything involving an inventive step within the meaning of Article 56 EPC in a field not excluded from patentability by Article 52(2)(c) EPC.
23. It follows that Claim 1 cannot be accepted. The same applies to the dependent Claims 2 to 5, which concern further details of steps (b), (c) and (h), according to

which only conventional operations are performed on non-technical data. These claims do not include anything which could involve an inventive step in a field not excluded from patentability by Article 52(2)(c) EPC.

24. As far as the disclosed embodiment is concerned, some of its hardware is explicitly acknowledged to be conventional. Near the bottom of page 4, it says: "The microprocessor may be an IBM Series 1, INTEL model 8086, or any of the functionally equivalent, currently available microprocessors." On page 5, line 14, it says: "The printer may be any suitable printer known in the art." The description of the remaining hardware is not very detailed and does not mention any feature which is not conventional, it being assumed in the application that a person skilled in the art would know of suitable devices which may be used. The manner in which the hardware devices are interconnected is indicated only in a very general way. The required functions and interactions are achieved by means of programs and data stored in the memory.
25. While it cannot be denied that there is an interaction between the programs and the hardware, since the programs without the hardware or the hardware without the programs could do nothing, but together they make it possible to perform the method claimed in Claim 1, this fact alone cannot confer patentability on either the method or the apparatus. Since the only conceivable use for a computer program is the running of it on a computer, the exclusion from patentability of programs for computers would be effectively undermined if it could be circumvented by including in the claim a reference to conventional hardware features, such as a processor, memory, keyboard and display, which, in practice, are indispensable if the program is to be used at all. In the opinion of the Board,

in such cases patentability must depend on whether the operations performed involve an inventive step in a field not excluded from patentability by Article 52(2) EPC.

26. In the present case, all the operations performed are conventional from a technical point of view and amount to no more than the processing of abstract data, for a non-technical purpose, by means of computer programs running on conventional hardware. The Board has found nothing in the claims, description and drawings of the present application which could be regarded as making a contribution to the art in a field which is not excluded from patentability by Article 52(2)(c) EPC.
27. In the opinion of the Board, therefore, the present application must be refused.
28. The reasoning followed in this decision is entirely in line with that applied in case T 38/86, decided on 14 February 1989 (to be published).

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

Fabiani

P.K.J. van den Berg