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Bezeichnung der Erfindung: Automatic spelling checking and correction  
Title of invention: process in a text processing system  
Titre de l'invention :

Klassifikation / Classification / Classement : G 06 F 15/20

**ENTSCHEIDUNG / DECISION**

vom / of / du 14 March 1989

Anmelder / Applicant / Demandeur : International Business Machines Corporation

Patentinhaber / Proprietor of the patent /  
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence : Spelling checking/IBM

EPÜ / EPC / CBE Art. 52(1), (2), (3)

Schlagwort / Keyword / Mot clé : "Exclusion from patentability"

**Leitsatz / Headnote / Sommaire**

Europäisches  
Patentamt

European Patent  
Office

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Boards of Appeal

Chambres de recours

Case Number : T 121/85



**D E C I S I O N**  
of the Technical Board of Appeal 3.5.1  
of 14 March 1989

**Appellant :** International Business Machines Corporation  
Armonk  
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USA

**Representative :** Bonneau, Gérard  
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**Decision under appeal :** Decision of Examining Division 065  
of the European Patent Office  
dated 23 November 1984 refusing  
European patent application  
No. 81 108 545.5 pursuant to Article  
97(1) EPC

**Composition of the Board :**

**Chairman :** P.K.J. van den Berg  
**Members :** W.B. Oettinger  
W. Persson

## Summary of Facts and Submissions

- I. European patent application number 81 108 545.5, filed on 20 October 1981 claiming a priority of 19 December 1980 and published under number 54 658, was refused by a decision of Examining Division 2.2.01.065 dated 27 November 1984.

The reason given for the refusal was that the process claimed in Claim 1 filed on 3 December 1983, as well as in the dependent Claims 2 to 6, is a computer program as such within the meaning of Article 52(2)(c) and (3) EPC and no patentable invention within the meaning of Article 52(1) EPC could be identified in the application.

According to the precharacterising portion of Claim 1 the claimed invention related to an "automatic spelling checking and correction process for parsing the words of a text in a word processing system" comprising a processor, buffers and other memories, and the claimed invention was characterised by a number of "steps processed under the control of said processor" resulting in the information whether a word was correctly spelled.

- II. On 29 January 1985, the Applicant lodged an appeal against the decision and paid the appeal fee.

A statement of grounds of appeal was filed on 28 March 1985 contesting the Examining Division's finding.

- III. In a communication, dated 27 March 1987, the Board expressed as its provisional opinion that the process claims then on file were unallowable for a more general reason stemming from Art. 52(1) EPC in that these process claims only recited the internal functioning within a

device but it also indicated that objections under the more specific provision of Art. 52(2) might arise later on during the procedure.

It further considered that no amendment leading to acceptable claims were envisageable.

In respect of such amendments, specifically the following was noted:

- (a) No specific new system,
- (b) no specific new method of operating a system, and
- (c) no specific new use of a system within a technical process

appeared to be disclosed.

IV. Together with a response the Appellant filed, on 19 November 1987, amended claims.

Independent Claims 1 and 4 read as follows:

"1. Automatic spelling checking and correction system comprising control means (1), a text buffer (2) for storing a string of character codes including intermixed text codes and special codes such as word delimiter codes, control codes and punctuation codes to be examined, a word buffer (4) for storing a single word to be examined for the correctness of its spelling, and a dictionary memory (6) for storing the list of correctly spelled characters; said system being characterised in that it comprises:

a first memory for storing particular character codes used as word delimiters for the parsing of the words to be examined,

a first logic in said control means for scanning the string of character codes in said text buffer, comparing each character code of the string to the delimiter codes stored in said first memory, and transferring each segment of character codes between two delimiter codes from said text buffer to said word buffer,

a second memory for storing control and punctuation codes, and

a second logic in said control means for comparing each character code of said segment in said word buffer to said control and punctuation codes stored in said second memory, and removing the control and punctuation codes, if any, from said segment, and

a third logic in said control means for comparing the remaining code segment in said word buffer to the words stored in said dictionary memory, thereby determining whether said remaining code segment corresponds to a correctly spelled word.

4. Method of operating the system according to Claim 1, 2 or 3 characterised by the following steps:

scanning the string of character codes in said text buffer (2) and comparing each character code of the string to the particular character codes stored in said first memory for finding a word delimiter code and the next succeeding word delimiter code,

transferring the segment of character codes between said word delimiter code and the next succeeding word delimiter code found in said first memory, from said text buffer to said word buffer (4),

removing control codes and punctuation codes from said segment stored in said word buffer by comparing with control and punctuation codes stored in said second memory, and

comparing the remaining segment stored in said word buffer to the words stored in said dictionary memory for determining whether said segment corresponds to a correctly spelled word."

Claims 2 and 3 relate to definitions of the word delimiter codes and of the control codes.

Claims 5 to 7 further subdivides the removing step and Claim 8 defines subword divider codes used in these substeps.

- V. The Appellant submits that the claimed invention is a technical solution to a technical problem, new, inventive and capable of industrial application.

The subject-matter of the system claims, which can be implemented by a data processor set up to operate in accordance with a specified program or, alternatively, as combinational logic or as a special purpose processor using micro-code to perform the same function, cannot be regarded as relating to a computer program as such.

That the described embodiment is implemented in hardware or software is not relevant, and it would be inappropriate to make a distinction between these implementations.

VI. It follows from the notice of appeal and the statement of grounds that the Appellant requests to set aside the appealed decision and grant a patent based on the Claims 1 to 8 filed on 19 November 1987 and on the description and drawings as published.

#### Reasons for the Decision

1. The appeal complies with Articles 106-108 and Rule 64 EPC and is, therefore, admissible.
2. The mere fact that the category of claim has been changed does not give rise to an objection under Article 123(2) EPC because the originally claimed process expressly required a system for carrying it out and the combination of all the features of the system as claimed at present is fully disclosed in the application as originally filed.
3. As to the substance, the Board has come to the conclusion that the subject-matter claimed is not a patentable invention within the meaning of Article 52(1) EPC for the following reasons.
4. The subject-matter of all claims is in the field of text processing and that activity is carried out by a text processing system including a processor. The preferred embodiment described is a program-controlled general-purpose computer, the program instructions causing the processor to carry out the text processing.

The issue to be decided in the present case is whether this subject-matter is excluded from patentability by Art. 52(2)(c) EPC, having regard to Art. 52(3) EPC.

5. According to the introductory part of Claim 1, protection is sought for an automatic spelling checking and correction system. From the description it becomes clear that the invention is concerned with the spelling of written human language.

Such spelling is basically not of a technical but of a linguistic nature. A correctly spelled word represents an abstract linguistic information and a correct spelling relates therefore to the correctness of an information and not to any physical entity. A wrong spelling can be detected by performing mental acts with no technical means involved.

This does not necessarily mean that a system automatically performing, instead of a human being, the same spelling checking act is excluded from patentability. Rather, this will depend on whether the manner in which it is automated, involves features which make a contribution in a field outside the range of matters excluded from patentability under Art. 52(2) in connection with Art. 52(3) EPC.

- 5.1 According to the wording of Claim 1, the system would also appear to perform a spelling correction function.

For such a facility in principle the same would apply as for the spelling checking (paragraph 5).

At this point it is noted, however that, in view of what the application documents disclose and what they do not disclose in this respect, the reference to spelling correction must be understood as merely meaning that the detection of a wrong spelling allows a subsequent correction to be made, manually, by the user of the system. So strictly speaking the subject-matter of Claim 1



does not provide for spelling correction which is carried out automatically. Claim 1 only comprising features which pertain to an automatic spelling checking system will therefore be construed as being a claim for such a checking system solely.

- 5.2 According to the "means" part of the precharacterising portion of Claim 1, the system comprises: control means, a text buffer, a word buffer, and a dictionary memory.

The function of the control means is not specified in the preamble. The text buffer is intended for storing a string of character codes (including intermixed text and special codes). The word buffer is intended for storing a single word to be examined for the correctness of its spelling. And the dictionary memory is intended for storing the list of correctly spelled characters (this is understood as meaning the list of character strings representing correctly spelled words).

Control means, buffers and a memory all being conventional parts of a computer, and the function of buffers and memories always being that of storing data, the contribution made by their aforementioned functions relates only to the kind of data stored in said buffers and memory. Those data are, however, featured only by linguistic properties: In the case of the text buffer, the stored character strings represent words still combined with additional codes such as, for instance, punctuation codes; in the case of the word buffer, the stored character strings represent pure words; in the case of the dictionary memory, the character strings represent correctly spelled words. So, these features do not make a contribution in a field outside the linguistic significance of the data stored either.

- 5.3 According to the characterising portion of Claim 1, the system comprises a first and second memory and first, second and third logic (in said control means).

Memories and logics are all conventional means in any computer, and storing, comparing etc. are all conventional functions of memories or logics, respectively. So it is left to examine what contribution is made by the particulars in the individual functions defined in the characterising features:

- A first memory stores particular character codes used as word delimiters for the parsing of the words to be examined.
- A first logic scans the string of character codes (in the text buffer), compares each code to the delimiter codes (stored in the first memory), and transfers each segment of codes between two delimiters to the word buffer.
- A second memory stores control and punctuation codes.
- A second logic compares each code of said segment (in the word buffer) to the control and punctuation codes (stored in the second memory), and removes these latter, if present, from said segment.
- A third logic compares the remaining code segment (in the word buffer) to the words stored in the dictionary memory, thereby determining whether the word represented by said remaining code segment is correctly spelled.

Apparently, all these functions relate merely to the linguistic meaning of the data stored, scanned, compared,

transferred etc. in coded form, namely to their property of either being or not being "real" word characters, and if they are, to their property of either being "correct" or "wrong" characters of that word.

It follows that the data processing defined by the functional features of the individual system elements relates to the linguistic evaluation, on the basis of linguistic rules, of data representing linguistic information, for the purpose of achieving a linguistic result, and that the actual processing involves only conventional techniques of storing etc. coded data.

Therefore neither in a field outside linguistics nor outside conventional computer functioning any contribution is made by the present invention as claimed.

- 5.4 Moreover, the functioning of the computer is, in the only embodiment which has been described and which is preferred (page 24 lines 30-33), under control of a program.

No contribution is consequently made in a field outside computer programming either.

- 5.5 The present case is, for the above reasons, to be distinguished from cases where a program-controlled computer is used for processing data or signals which represent physical entities in a technical process, because in such cases a contribution is made in a field outside the range of matters excluded from patentability, in particular outside computer programming. For instance, in one case already decided (T 208/84, OJ EPO 1987, 14), this contribution consisted in enhancing or restoring the technical quality of digitally processed images; in another (T 26/86, OJ EPO 1988, 19), it consisted in controlling an X-ray tube so as to ensure optimum exposure

with efficient protection against overloading of the tube.

In contrast to such cases, the claimed spelling checking system has no comparable technical effect and makes no contribution, based on such a technical effect, to the art.

- 5.6 No different conclusion can be drawn from the fact, expressed in the last paragraph of the description that the claimed invention could be implemented as a special purpose processor utilising microcode rather than as a programmable general purpose computer which is the preferred implementation.

Firstly, it is questionable whether an implementation using microcode is, in fact, a real special purpose processor. As far as the Board can see, the processor can be, even in this case, of the general-purpose type controlled by "operating system" or "system software" instructions which can be regarded as a program even if they do not constitute a user program.

But even if a real special-purpose computer is considered, in the absence of any clue to the contrary, such an implementation would only reside in the straightforward realisation of an algorithm expressing the linguistic rules to be applied to the linguistic data in the same way as it is realised by a user program for a general-purpose computer.

Nothing in the disclosure would point to a contribution made by this implementation which goes beyond the fields of linguistics and computer functioning directly derived, like a program, from the linguistic rules to be applied.

5.7 In response to the Board's objection, that a specific new word processing system appears not to be disclosed, and to its reservation that the Board might come back to an Art. 52(2) (c) and (3) objection, the Appellant has submitted that the invention as now claimed is a technical solution of a technical problem. This submission is, however, unconvincing.

As regards the problem, the determination of word boundaries has to do with the linguistic significance of the individual characters of a string and is thus a linguistic problem. No technical problem of the computer is to be solved.

As regards the solution, technically the computer does not work in an unusual way. Functionally it works according to the linguistic rules to be applied. For instance, removing all those character codes from a string which do not pertain to a "word", e.g. a punctuation code, is in effect nothing else but what a human being checking the spelling of words would do, namely disregard any characters not pertaining to a word, e.g. a punctuation mark.

Even if it remains true that internally the computer functions technically, the effect of this function, namely the resulting information about the correctness of the spelling of a word, is a purely linguistic, i.e. non-technical result.

The Appellant agrees that the system can be implemented by a data processor set up to operate in accordance with a specified program, and this implementation is the only one described and preferred. This confirms the impression given by the description that protection is sought particularly for the software solution of the linguistic problem posed, i.e. checking the spelling of a word. As

this solution does not contribute anything outside the fields of linguistics and of computer programming, no other conclusion can be drawn than that the subject-matter of Claim 1 is excluded from patentability by the provision of Art. 52(2)(c) and (3) EPC.

System Claim 1, and its dependent Claims 2 and 3, cannot therefore be allowed.

6. Method Claim 4 is formally independent insofar as it defines a different claim category, but refers back to Claim 1 and repeats all the functions of the system elements defined in Claim 1.

Already for this latter reason, Claim 4 cannot be allowed because its subject-matter contributes no more to the art than the subject-matter of Claim 1, that is, it makes no contribution outside the fields of linguistics and computer programming.

No different conclusion can moreover be drawn from the fact that the claimed method is for a "method of operating the system". Claim 4 does not specify any method steps which go beyond conventional operating steps such as, for instance, entering text data.

Method Claim 4, and its dependent Claims 5 to 8, cannot therefore be allowed either.

7. The reasoning given here is in line with an earlier decision T 38/86 dated 14 February 1989 (to be published).

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

S. Fabiani

P.K.J. van den Berg