Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 29 June 2018

Case Number: T 0661/13 - 3.2.02

Application Number: 02780070.5

Publication Number: 1454586

IPC: A61B10/00

Language of the proceedings: EN

Title of invention:
CHAOLOGIC BRAIN FUNCTION DIAGNOSIS APPARATUS

Applicants:
Electronic Navigation Research Institute, an Independent Administrative Institution
Mitsubishi Space Software Co., Ltd.

Headword:

Relevant legal provisions:
EPC Art. 83

Keyword:
Sufficiency of disclosure (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0661/13 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 29 June 2018

Appellants: Electronic Navigation Research Institute, an Independent Administrative Institution
42-23, Jindaijihigashi-machi,
7-chome
Chofu-shi,
Tokyo 182-0012 (JP)

Mitsubishi Space Software Co., Ltd.
4-1, Hamamatsucho 2-chome
Minato-ku,
Tokyo 105-6137 (JP)

Representative: Stork Bamberger Patentanwälte PartmbB
Meiendorfer Strasse 89
22145 Hamburg (DE)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted on 14 September 2012 refusing European patent application No. 02780070.5 pursuant to Article 97(2) EPC**

Composition of the Board:

Chairman E. Dufrasne
Members: M. Stern
S. Böttcher

Summary of Facts and Submissions

I. The applicants lodged an appeal against the decision of the Examining Division, despatched on 14 September 2012, refusing European patent application No. 02 780 070.5 on the grounds that claim 1 lacked clarity and its subject-matter lacked an inventive step.

II. Notice of appeal was filed on 13 November 2012, and the fee for appeal was paid on the same day. A statement setting out the grounds of appeal was received on 14 January 2013.

III. The appellants requested that the decision under appeal be set aside and that a patent be granted on the basis of one of the main request and the first auxiliary request, both filed with letter dated 14 January 2013.

IV. On 29 March 2018 the appellants were summoned to attend oral proceedings. In a communication annexed to the summons the Board presented its provisional opinion raising objections under Articles 83, 84 and 123(2) EPC.

V. In a letter dated 31 May 2018, the appellants announced that they would not be attending the oral proceedings, without presenting any comments on the objections raised in the Board's communication, in particular under Article 83 EPC.

VI. Oral proceedings took place on 29 June 2018 in the absence of the appellants (in accordance with Rule 115(2) EPC and Article 15(3) RPBA).

VII. Claim 1 of the main request reads as follows:

"1. A chaos theoretical brain function diagnosis apparatus for diagnosing a brain function of a subject (20) by giving a load to a functional site of a living organism of the subject (20), receiving a reaction emitted from the living organism of the subject (20) as an electric signal, and analyzing the electric signal, the apparatus being adapted to select at least two from among a voice signal (40), a nystagmus signal (50), a pulse wave signal (60) and a gravity center swinging signal (70) as the electric signal; to calculate chaos theoretical indexes such as Lyapunov exponents according to a chaos theoretical technique; to detect changes in the chaos theoretical indexes with passage of time; and to collectively evaluate and diagnose the brain function,
wherein the chaos theoretical brain function diagnosis apparatus comprises:
nystagmus signal processing means (58) for dividing the nystagmus signal (50), which is input from a nystagmus measuring instrument (30) to the chaos theoretical brain function diagnosis apparaws and converted into a digital signal, into processing units, and removing data other than nystagmus data, in particular vibration data;
chaos theoretical index calculation means (44) adapted for analyzing nystagmus data with data other than the vibration data removed in the nystagmus signal processing means (58), by using a chaos theoretical technique, calculating a chaos theoretical index, and storing the calculation results of the chaos theoretical index in an evaluation and diagnosis database (46); and
chaos theoretical index change state detection means (45) adapted for detecting a changed state of the chaos theoretical index by comparing the calculation result

of the chaos theoretical index with a chaos theoretical index of the nystagmus signal (50) of the same person at a different time point previously stored in the evaluation and diagnosis database (46)."

VIII. Claim 1 of the first auxiliary request reads as claim 1 of the main request, but with the following amendments in its opening clause:

"1. A chaos theoretical brain function diagnosis apparatus adapted for diagnosing a fall in the function level of a brain ~~function~~ of a subject (20) ..."

Reasons for the Decision

1. The appeal is admissible.

2. Article 83 EPC

2.1 The invention claimed concerns a brain function diagnosis apparatus which analyses at least two patient signals selected from the group of a voice signal, a pulse-wave signal, a swinging-of-gravity-center signal or a nystagmus (or ocular movement) signal, and which evaluates and diagnoses a brain function (page 4, third paragraph, and page 40, last paragraph of the original application). The signal analysis is performed using a chaos theoretical technique to obtain chaos theoretical indexes (such as Lyapunov exponents), and the changes of these indexes are analysed to evaluate and diagnose brain function, in particular to diagnose whether a disease is present in the brain and to judge the progress situation and the state of the disease (page 1, first paragraph).

The description mentions on page 2, paragraph 3, and page 3, paragraph 4, that progressive brain diseases, such as Alzheimer's, Parkinson's or Creutzfeldt-Jakob (or mad cow) diseases, cannot be observed in their initial state before subjective symptoms occur, at least not by using simple methods such as x-ray imaging or brain wave measurements. Hence, an object of the apparatus of the invention is to evaluate and diagnose the initial state and the progress state of a brain disease relatively easily and without applying unreasonable load on the patient.

2.2 The application does not, however, disclose any specific details regarding the fundamental technical aspects of such an apparatus, leaving the skilled person on their own to put the claimed invention into practice.

2.3 Firstly, when applying chaos theory analysis to measured values of physiological parameters, the skilled person is confronted with a large variety of complex mathematical algorithms to choose from. Page 32, paragraph 2, discloses determining a fall in the brain function from observing a fall in the first Lyapunov exponent and a change in Kolmogorov-Sinai entropy. The Lyapunov exponents of a dynamical system are quantities that characterise the rate of separation of infinitesimally close trajectories in phase space. There are, however, several methods for calculating Lyapunov exponents from limited experimentally measured data, since the data do not fully explore the phase space. The application does not provide any details allowing the skilled person to know which method to use.

Secondly, the application is silent as to which chaos theoretical indexes should be calculated from two or more of the physiological variables defined in claim 1, and no indication is given as to the specific brain function or disease with which the calculated indexes should be correlated. Whilst page 32, paragraph 3, mentions the possibility of analysing the swinging of the gravity center or the nystagmus from a fall in the first Lyapunov exponent, the application does not explain in detail how the skilled person should be able to perform the method of "selecting two or more from among calculation results of chaos theoretical indexes for voice, nystagmus, pulse wave and gravity center, combining a plurality of calculations results, and collectively evaluating and diagnosing relative changes of chaos theoretical indexes, [so that] it is possible to conduct evaluation and diagnosis with a precision higher than the case of a single calculation result." (page 33, paragraph 2).

The application does not give any detailed example in which two or more of said physiological variables are analysed using chaos theory to assess and diagnose a brain function or disease. To merely posit such analysis and diagnosis does not enable the person skilled in the art to carry out the invention without undue burden.

2.4 In conclusion, the application is confined to merely expressing a desideratum or the summary of an ambitious and lengthy research programme. It does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

2.5 Instead of reciting the diagnosing of a brain function as in claim 1 of the main request, claim 1 of the first auxiliary request recites the diagnosing of a fall in the function level of a brain function. This slight amendment clearly does not help to overcome the aforementioned objections, which thus apply, mutatis mutandis, to the first auxiliary request as well.

2.6 The Board therefore concludes that the application does not meet the requirements of Article 83 EPC.

3. The appellants chose not to comment on or otherwise react to the above objections, which were raised by the Board in its written communication and at the oral proceedings, which the appellants did not attend.

In view of the aforementioned objections, the Board does not consider it necessary to enter into the analysis of further deficiencies mentioned in its communication.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Hampe E. Dufrasne

Decision electronically authenticated