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**Datasheet for the decision  
of 19 June 2007**

**Case Number:** T 0365/05 - 3.5.01

**Application Number:** 94910727.0

**Publication Number:** 0637200

**IPC:** G06F 17/60, A01K 67/02

**Language of the proceedings:** EN

**Title of invention:**

Method of bovine herd management

**Patentee:**

CORNELL RESEARCH FOUNDATION, INC.

**Opponents:**

Arbeitsgemeinschaft Deutscher Rinderzüchter e.V. et al.

**Headword:**

Bovine herd management/CORNELL RESEARCH FOUNDATION

**Relevant legal provisions:**

EPC Art. 56, 112, 116

**Keyword:**

"Inventive step (no - no technical problem solved)"  
"Referral to the Enlarged Board of Appeal (refused)"  
"Oral submissions by an accompanying person in opposition  
appeal proceedings (authorized)"

**Decisions cited:**

G 0001/95, G 0004/95, T 0208/84, T 0115/85, T 0390/90,  
T 0931/95, T 1194/97, T 1053/98, T 0641/00, T 0154/04

**Catchword:**

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Case Number: T 0365/05 - 3.5.01

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.01  
of 19 June 2007

**Appellant:** Cornell Research Foundation, Inc.  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 9 February 2005  
revoking European patent No. 0637200 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** S. Steinbrener  
**Members:** S. Wibergh  
G. Weiss

## Summary of Facts and Submissions

- I. This appeal is against the decision of the opposition division to revoke European patent No. 0 637 200 on the ground that claim 1 of the sole request did not involve an inventive step (Article 100(a) with Article 56 EPC) over a standard computer system including a database. The appealed decision also dealt with objections in particular under Article 100(a) with Article 53(b) EPC and Article 100(b) EPC (corresponding to Article 83 EPC), both being found unconvincing.
- II. In the notice of appeal the appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained in unamended form (main request). A set of amended claims according to a first auxiliary request was filed with the statement setting out the grounds of appeal.
- III. In the reply to the grounds of appeal the respondents (joint opponents) requested that the appeal be dismissed.
- IV. The Board summoned the parties to oral proceedings. In an annexed communication the Board summarized the issues to be discussed and expressed doubts whether the objection under Article 53(b) EPC was justified. Referring to decisions T 26/81 and T 49/99, the Board indicated that the discussion would be focussed on the question whether the problem of improving the management of a bovine herd in order to increase the milk productivity was of a technical nature and was solved by technical means.

- V. In preparation for the oral proceedings both the appellant and the respondents filed statements by technical experts concerning the objection under Article 83 EPC.
- VI. By letter dated 17 May 2007 the appellant filed three amended sets of claims forming second to fourth auxiliary requests.
- VII. The appellant's *main request* is for the patent in the version as granted. Claim 1 reads:
- "A method of bovine herd management comprising the steps of:
- a) gathering data on milk production for each member of a herd on a routine basis;
  - b) using a mathematical herd management model to modify the data to determine the actual productivity of each cow in the herd;
  - c) establishing a database for each member of said herd, based upon the modified data of step (b); and
  - d) continuously updating said database;
- said method being characterised by:
- e) making physical changes to said herd based upon information in said database, in order to increase milk productivity of said herd,
- wherein the gathering of data of step (a) includes obtaining quantitative and qualitative milk production data for each member of a herd on a routine basis, and wherein the mathematical herd management model of step (b) comprises at least one equation that includes individual member adjustment factors that account for an individual member's productivity changes, resulting from effects based upon age, pregnancy, position on a

lactation curve, a month of freshening and random and fixed residuals".

Claim 1 of *auxiliary request 1* is distinguished from the main request only by being directed to a "method of increasing the milk productivity of a bovine herd" rather than to a method of bovine herd management.

The set of claims in accordance with *auxiliary request 2* is identical with the claims according to the main request except that dependent claim 5 is cancelled.

In claim 1 according to *auxiliary request 3* feature e) has been amended to read:

"e) making physical changes to said herd based upon information in said database, in order to increase milk productivity of said herd, the physical changes including one or more of:

- i) culling the less productive members from a herd,
- ii) breeding the more productive members in a herd;
- iii) changing a herd's feed formulations to maximize milk production; or
- iv) changing the environmental conditions in which a herd is housed".

Furthermore, dependent claims 4-7 are cancelled.

The set of claims in accordance with *auxiliary request 4* is identical with the claims according to the main request except that dependent claims 8 and 9 are cancelled.

VIII. In the letter dated 17 May 2007 the appellant's authorized representative furthermore announced that he would be accompanied at the oral proceedings by Mr. P.,

who was a qualified UK patent attorney, and requested that Mr. P. be allowed to address the Board under his supervision pursuant to decision G 4/95.

- IX. By a submission dated 18 May 2007, the respondents raised an objection against claim 1 under Article 52(1),(2) EPC. In addition, it was announced that the respondents' authorized representative would be accompanied at the oral proceedings by three technical experts, Messrs. L., G. and W., who were competent to speak on matters concerning sufficiency under Article 83 EPC as well as on any technical issues the Board might wish to discuss. It was requested to allow the technical experts to speak at the hearing.
- X. By letter dated 7 June 2007 the appellant, referring to decision G 10/91, stated that it did not agree to the ground of opposition pursuant to Article 52(1),(2) EPC being introduced into the proceedings.
- XI. Oral proceedings were held on 19 June 2007. The appellant requested that the respondents' technical experts should not be heard since the subject-matter they would address had not been specified. The respondents in their turn requested that the appellant's accompanying UK attorney Mr. P. should not be allowed to speak for the same reason, and indicated that only one of the respondents' technical experts, Mr. L., might make submissions, and only with respect to the issue of sufficiency of disclosure.

In exercise of its discretion, the Board authorized both Mr. P. and Mr. L. to make submissions.

XII. The appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the main request (claims as granted) or alternatively on the basis of one of auxiliary requests one to four as filed with letters dated 16 June 2005 and 17 Mai 2007, respectively. As a further auxiliary request the following question should be referred to the Enlarged Board of Appeal:

"How is the technical problem to be defined if the actual novel and creative concept making up the core of the claimed invention resides in the realm outside any technological field?"

XIII. The respondents requested that the appeal be dismissed.

XIV. At the end of the oral proceedings the Board announced its decision.

## **Reasons for the Decision**

### 1. *Accompanying persons*

1.1 In decision G 4/95 - Representation/BOGASKY (OJ EPO 1996, 412), the Enlarged Board of Appeal ruled that, during oral proceedings in the context of opposition appeal proceedings, a person accompanying the professional representative of a party may be allowed to make oral submissions on specific legal or technical issues on behalf of that party in addition to the complete presentation of the party's case by the professional representative. The professional representative should request permission for such oral

submissions to be made. The request should state the name and qualifications of the accompanying person, and should specify the subject-matter of the proposed oral submissions. The request should be made sufficiently in advance of the oral proceedings so that all opposing parties are able properly to prepare themselves in relation to the proposed oral submissions.

- 1.2 In the present case the appellant has requested that the respondents' technical expert Mr. L. should not be allowed to make submissions.

Mr. L.'s presence was announced in good time in accordance with the criteria set out in decision G 4/95. The respondents confirmed at the oral proceedings that Mr. L. would not speak about anything else than the issues of Article 83 EPC according to his affidavit on file. Thus the Board could see no reason not to allow Mr. L. to make oral submissions on this subject.

- 1.3 The respondents have requested that the appellant's accompanying UK Patent Attorney, Mr. P., should not be allowed to make submissions. In the respondents' view, the appellant's letter dated 17 May 2007 had not indicated on which subject Mr. P. would speak, contrary to the criteria set out in decision G 4/95.

The Board observes that the appellant's letter mentioned Mr. P.'s qualifications. The comments made in the letter may be understood as being presented in the name of both the authorized representative and Mr. P. Therefore it can be regarded as implicit that Mr. P. assisted the authorized representative in the case and thus was to speak on the same topics as the authorized



representative. One of the major purposes of the criteria set out in decision G 4/95 is that the opposing party should not be taken by surprise by oral submissions made by an accompanying person. In the present case the respondents had all the information necessary in order to prepare themselves for the oral proceedings and, hence, could not be surprised by any explanations on the part of Mr. P. Furthermore, the assistance of Mr. P. was counter-balanced by the pleading of a second authorized representative on the side of the respondents.

In exercise of its discretion, the Board therefore authorized also Mr. P. to speak under the supervision of the authorized representative.

2. *Referral to the Enlarged Board of Appeal*

2.1 Under Article 112(1)(a) EPC, a board of appeal shall, during proceedings on a case, refer any question to the Enlarged Board of Appeal if it considers that a decision is required in order to ensure uniform application of the law, or if an important point of law arises. Even if a fundamentally important point of law is concerned it remains at the discretion of the board whether or not to refer it (see T 390/90 - Crystalline paper filler/GUSSINYER, OJ EPO 1994, 808, point 2.1).

2.2 The question suggested by the appellant in the present case (cf point XII *supra*) has been answered in the earlier decision T 641/00 - Two identities/COMVIK (OJ EPO 2003, 352). This decision states that "where the claim refers to an aim to be achieved in a non-technical field, this aim may legitimately appear in

the formulation of the problem as part of the framework of the technical problem that is to be solved, in particular as a constraint that has to be met" (cf the reasons, point 7). The aim or the claimed concept may be novel (cf. the reasons, points 12-14), but if they do as such not make a contribution to the technical character of the invention, they are not part of the technical solution and, hence, may appear in the formulation of the problem. The deciding board noted (reasons, point 7) that this principle was in line with the earlier decisions T 1053/98 (not published in OJ EPO) and T 931/95 - Controlling pension benefits system/PBS PARTNERSHIP (OJ EPO 2001, 441). The Board is not aware of any subsequent decision of the boards of appeal which contradict decision T 641/00. Hence, this jurisprudence is well established and a referral of this question is thus not required (cf in connection with this issue also the recent decision T 154/04 - Estimating sales activity/DUNS LICENSING ASSOCIATES, to be published in the OJ EPO, points 4-17).

- 2.3 Thus, the appellant's request for referral of the question presented during the oral proceedings to the Enlarged Board of Appeal is refused.

*The appellant's main request*

3. *The subject-matter of claim 1*

- 3.1 Claim 1 is directed to a method of bovine herd management. It comprises steps of collecting, storing and manipulating data on milk production, followed by a step of "making physical changes to said herd... in order to increase milk productivity of said herd". The

"physical changes" include culling (slaughtering or otherwise removing cows from the herd), breeding, and changing the feed formulation or the environmental conditions (cf dependent claims 4-7). The expression "in order to increase milk productivity of said herd" reflects the ultimate goal of the invention as set out in the description (cf paragraph [0005]): the best lactating constituents of the herd are determined and bred whereas less productive bovines are recognized and culled. Claim 1 thus encompasses breeding but is not limited to it. Its subject-matter is mainly a method of collecting and processing milk production data in order to provide information on which a decision to make physical changes to the herd can be taken.

- 3.2 The "actual productivity" is defined in the patent (paragraph [0013]) as "milk production for an individual cow at a particular point in time, with respect to average production data established for that cow over time minus individual adjustment factors determined from the herd database". It is thus a quality measure of an individual cow.
- 3.3 The "milk productivity of said herd" is not defined in the patent but will be a function of the productivity of each individual cow.
- 3.4 The expression "*continuously* updating said database" should in the appellant's view be interpreted in the light of the description as indicating updates on the test days. This would imply approximately monthly updates. The respondents have rejected this reading on the grounds that any such limitation should have been included in the claim.

The Board agrees with the respondents that the word "continuously" cannot be interpreted in the narrow way proposed by the appellant. The claim requires that all available updates are made, but not when or how often.

4. *Exclusion under Article 52(2) EPC*

The respondents raised this ground of opposition for the first time before the Board. However, as the appellant did not agree to its being admitted into the proceedings, it cannot be considered (G 1/95 - Fresh grounds for opposition/DE LA RUE, OJ EPO 1996,615).

5. *Inventive step*

5.1 Since the Board is in any case barred from deciding whether the claimed method of bovine herd management is excluded or not under Article 52(2) EPC, it appears convenient to compare the invention with a known herd management method and identify the common features without considering in how far these are of a technical character.

5.2 One of the documents mentioned in the decision under appeal is:

D2: Frod, M.: "The Production Index", Conference for Milk Producers - Breeding Better Cows, September 13-15, 1977.

Document D2 describes a mathematical concept for calculating a "Production Index" developed as an aid for dairy farmers in making comparisons between animals

in a herd. Information about the age, lactation number and month of calving (freshening) of each cow is stored in a database (cf p.1, first two paragraphs). The latest completed lactations are adjusted in accordance with this information and recorded. By comparing the current adjusted yield of an individual cow with a herd average it is possible to measure the relative performance of an individual cow's latest lactation to that of the whole herd (cf p.1, third paragraph to p.2, fourth paragraph and the numerical example given). This data ("Production Index") is intended as a guide when animals are selected for culling or breeding (cf p.3, "Uses").

5.3 D2 undisputedly discloses a method of bovine herd management comprising gathering quantitative and qualitative milk production data for each member of a herd on a routine basis. The data is stored in a database, processed by a computer and may be used for making physical changes to the herd. As to the differences between the invention and this prior art, the appellant argues that the following features of claim 1 are new:

- 1) the mathematical model includes, in addition to the factors age, position on a lactation curve and month of freshening, the factors *pregnancy* and *random and fixed residuals*;
- 2) the "*actual productivity*" (cf point 3.2 above) is determined;
- 3) the database is based upon *modified* data;
- 4) the database is *continuously* updated; and
- 5) the physical changes to the herd are based upon the *modified* information stored in the database

(whereas in D2 they are arguably based upon information computed from stored raw data).

- 5.4 The Board first notes that distinguishing feature 5) is a direct consequence of features 1) to 3) and therefore needs no special consideration.
- 5.5 Distinguishing feature 4) presupposes the appellant's narrow interpretation of the word "continuous" as implying monthly updates. In D2 at least some data updates are on a yearly basis, relating to completed lactations, as eg the "Production Index" values. However, with the broad interpretation of "continuous" which the Board holds to be appropriate (cf point 3.4 above), this difference vanishes.
- 5.6 Distinguishing features 1) to 3) all concern the mathematical model. This model is the hub of the invention, as is clear from both the description and the appellant's argumentation. It must therefore be determined what problem is solved by features 1) to 3).
- 5.7 The appellant argued at the oral proceedings before the Board that the invention solves the technical problem of providing a method of managing a bovine herd to increase the milk yield by producing and recording more accurate information on the milk production of an individual cow in the herd.
- 5.8 In the Board's view, the distinguishing features are of descriptive nature: although they may more accurately reflect each cow's relative performance, they do not actually optimize the herd's milk production, nor does

their application as claimed necessarily yield a technical effect.

Claim 1 specifies that physical changes are made "in order to increase milk productivity of said herd". Noting that any herd is a "living, changing, shifting entity" (description, paragraph [0007]), the Board observes that the milk productivity of a herd can be increased not only by improving the yield from individual cows (for example by changing the feed formulation) but also by changing the composition of the herd, in particular by culling less-productive members (cf claim 4). In the latter case, which from now on is the only "physical change" the Board will consider, there is not necessarily any change in the milk production of each individual cow. The question is then if a change in the productivity of the *herd* can be regarded as a technical effect if the yield from *each member* remains constant. (Whether or under what circumstances a change in the milk production of an individual cow is a technical effect is thus an issue the Board need not go into.) The Board judges that such a change in the herd productivity cannot be a technical effect already for the reason that this entity depends on the definition of the herd. The herd productivity can be arbitrarily modified by defining individual animals as not belonging to the herd. As the respondents have pointed out (cf the letter dated 18 May 2007, p.14), even the sale of a cow changes it. This is not a technical effect but a direct reflection of the composition of the herd for counting or business purposes. The herd productivity thus merely describes the herd in much the same way as, say, the number of its members does. It is, to employ the language of

decision T 1194/97 - Data structure product/PHILIPS (OJ EPO 2000,525), a piece of cognitive information rather than functional data. The Board thus disagrees with the appellant's view that applying an algorithm to obtain a more accurate representation of the herd's productivity is a technical solution to a technical problem (cf grounds of appeal, p.15).

- 5.9 This of course does not mean that the possibility of identifying high-productive and less-productive members of a herd has no consequences at all. Providing the herd manager with information about the herd on a collective and individual basis is no doubt crucial for efficient herd management. Generally, however, processing or presenting cognitive information is not a technical task.

In this respect the appellant (cf grounds of appeal, p.15) has referred to decision T 115/85 - Computer-related invention/IBM (OJ EPO 1990,030), according to which giving visual indications automatically about conditions prevailing in an apparatus or system is a technical problem. It should however be noted that the invention in that case automatically detected an event occurring within the system and indicated that event. The present invention, however, detects only routine information (milk quantity and quality), and this in a routine way (the particulars of which are not even disclosed). Only the processing of the informational content is said to be new.

- 5.10 The appellant has furthermore argued that the mathematical model itself is of a technical nature since mathematical methods, together with discoveries



and scientific theories, underpin all of science and technology (cf grounds of appeal, p.19). For this view, if taken in a categorical sense, the Board can however find no support in the jurisprudence of the boards of appeal. The landmark decision T 208/84 - Computer-related invention/VICOM (OJ EPO 1987,14), to which also the appellant has referred, states in its paragraph 5 the following:

"A basic difference between a mathematical method and a technical process can be seen, however, in the fact that a mathematical method or a mathematical algorithm is carried out on numbers (whatever these numbers may represent) and provides a result also in numerical form, the mathematical method or algorithm being only an abstract concept prescribing how to operate on the numbers. No direct technical result is produced by the method as such. In contrast thereto, if a mathematical method is used in a technical process, that process is carried out on a physical entity (which may be a material object but equally an image stored as an electric signal) by some technical means implementing the method and provides as its result a certain change in that entity."

It may be true that the method of claim 1 of the patent-in-suit is not an abstract concept in the above sense since it operates not on pure numbers but on data representing physical entities, viz amounts of milk. But the method does not in itself result in a change in the amount of milk (whereas in decision T 208/84 the processing alone indeed served to transform the image

represented by the data). It merely provides information about the herd which a human uses for culling and breeding purposes, ie for a decision-making process in operations management.

- 5.11 It follows that the computation of an "actual productivity" (as opposed to the computation of some other quality measure) and the storage of modified data (as opposed to the storage of unmodified data), ie distinguishing features 2 and 3 as defined at point 5.3 above, have no technical effect. The same applies to the method's use of partly different input data, ie distinguishing feature 1.
- 5.12 Since, apart from their straight-forward implementation, the claim features not known from D2 do not contribute to the solution of a technical problem, they cannot be considered when assessing the inventive step (cf T 641/00, *supra*). Thus, the subject-matter of claim 1 is obvious (Article 56 EPC).

*The appellant's auxiliary request 1*

6. Claim 1 of auxiliary request 1 differs from the independent claim of the main request in that it is directed to a "method of increasing the milk productivity of a bovine herd" instead of a method of bovine herd management. But this difference is of no importance for the argumentation developed above. The request must thus be refused for the same reasons as the main request.

*The appellant's auxiliary requests 2 and 4*

7. Auxiliary requests 2 and 4 involve the same independent claim as the main request. Thus, they must also be refused.

*The appellant's auxiliary request 3*

8. Compared with the main request, claim 1 of auxiliary request 3 has been amended by the addition:

"... the physical changes including one or more of:  
i) culling the less productive members from a herd,  
ii) breeding the more productive members in a herd;  
iii) changing a herd's feed formulations to maximize milk production; or  
iv) changing the environmental conditions in which a herd is housed..."

The first kind of physical change, the culling of less-productive members, is the option already considered in connection with the main request (cf point 5.8 above). Thus, the same arguments apply and auxiliary request 3 must also be refused.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

D. Sauter

S. Steinbrener