

**Internal distribution code:**

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

**D E C I S I O N**  
**of 29 June 2004**

**Case Number:** T 0030/01 - 3.4.2

**Application Number:** 92911842.0

**Publication Number:** 0581871

**IPC:** G01B 9/02

**Language of the proceedings:** EN

**Title of invention:**

Apparatus for optical imaging and measurement

**Patentee:**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, et al

**Opponent:**

Herbert Schwind GmbH & Go. KG

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54(2), 87(1), 88, 111(1), 115(1)

**Keyword:**

"Entitlement to priority (no) - no explicit or implicit disclosure of specific arrangement"

"Document published during priority interval - state of the art (yes)"

"Remittal for further prosecution"

**Decisions cited:**

G 0002/98, T 0061/85, T 0651/01, T 0823/96, T 0744/99,  
T 0818/00

**Catchword:**

-



Case Number: T 0030/01 - 3.4.2

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.2  
of 29 June 2004

**Appellant:** MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
(Proprietor of the patent) 28 Carleton Street  
Room E32-300  
Cambridge MA 02139 (US)

**Representative:** Geyer, Werner, Dr.-Ing.  
Patentanwälte  
Geyer, Fehners & Partner  
Perhamerstrasse 31  
D-80687 München (DE)

**Respondent:** Herbert Schwind GmbH & CO. KG  
(Opponent) Mainparkstrasse 6-10  
D-63801 Kleinostheim (DE)

**Representative:** Nöth, Heinz, Dipl.-Phys.  
Eisenführ, Speiser & Partner  
Arnulfstrasse 25  
D-80335 München (DE)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 30 October 2000  
revoking European patent No. 0581871 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** M. A. Rayner  
**Members:** F. J. Narganes-Quijano  
J. H. P. Willems

## Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal against the decision of the opposition division revoking European patent No. 0581871 (based on European application No. 92911842.0 filed on 29.04.1992 as International application No. PCT/US92/03536 and published as International Publication No. WO92/19930).

The opposition filed by the respondent (opponent) against the patent as a whole was based on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC together with Articles 52(1), 54 and 56 EPC).

In the decision under appeal the opposition division referred *inter alia* to the following documents:

E4: D Huang *et al.*, "Optical coherence tomography",  
Science, Vol. 254, 22 November 1991 (US),  
pages 1178 to 1181

E7: GB-A-2191855

and held that the subject-matter of claim 1 as granted was novel but did not involve an inventive step (Articles 52(1) and 56 EPC) with regard to the prior art cited in the decision. The opposition division also held that the invention defined in claim 1 as granted was entitled under Articles 87(1) and 88 EPC to priority from US application No. 692877 of 29.04.1991 and that for this reason document E4 did not constitute prior art within the meaning of Article 54(2) EPC.

II. In its statement setting out the grounds of appeal the appellant contested the reasoning followed by the division in the assessment of inventive step.

III. In reply to the notice of appeal the respondent

- contested the finding of the opposition division that the claimed invention, and in particular the feature relating to the provision of a probe module comprising light steering means for scanning the sample, was entitled to the claimed priority, and concluded that document E4 constitutes prior art within the meaning of Article 54(2) EPC;
- submitted that claim 1 as granted did not define patentable subject-matter under Articles 52(1), 54 and 56 EPC with regard to document E4 or alternatively with regard to the documents relied upon by the opposition division in the decision under appeal;
- referred to the documents cited in the observations presented during the appeal proceedings by a third party pursuant to Article 115(1) EPC and incorporated into his argumentation a major part of the submissions made by the third party; and
- requested the dismissal of the appeal.

IV. Oral proceedings were appointed by the Board. In a communication accompanying the summons the Board drew the attention of the parties to the opinion of the

Enlarged Board of Appeal G 2/98 (OJ EPO 2001, 413), noted that the opposition division, in view of its positive decision regarding entitlement to priority, did not assess the content of document E4, and informed the parties that, depending on the outcome of the issues to be discussed during the oral proceedings and on the views of the parties, the Board might consider it appropriate to remit the case to the first-instance department for further prosecution.

- V. Following the summons to oral proceedings the appellant filed by letter dated 28 May 2004 sets of amended patent documents according to a main and first to third and fifth auxiliary requests, and requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of one of the sets of amended patent documents, the fourth of the auxiliary requests consisting of a request for remittal of the case.

The respondent for its part notified the Board that it had decided not to attend the oral proceedings and made no submissions in response to the Board's communication and the new requests of the appellant.

- VI. Oral proceedings before the Board were held on 29 June 2004 in the absence of the respondent.

At the oral proceedings the appellant maintained its requests as formulated with the letter dated 28 May 2004, and expressed its agreement with the intention of the Board to remit the case.

At the end of the oral proceedings the Board gave its decision.

VII. The set of amended patent documents according to the main request of the appellant includes claims 1 to 9, the independent claims 1 and 7 reading as follows:

" 1. Apparatus for interferometrically imaging the internal structure of a sample comprising:

- a two beam interferometer having a reference beam path (30) with a reference reflector (44) and a measuring beam path (26) leading to the sample (84),

- a short coherence length optical radiation source (12, 12a, 12b, 79) providing light to the two beam interferometer (30, 26, 44),

- a probe module (28) arranged in said measuring beam path (26) at its terminating portion, which probe module (28) comprises means for scanning the sample (84) by steering the direction of light propagation applied to the sample (84) which means scan the beam in transverse direction over the sample to provide two- or three-dimensional imaging,

- means (46, 46') for changing the longitudinal depth within said sample (84) for which the light reflected within the sample (84) interferes with light reflected at the reference reflector (44), wherein the means (46) change the longitudinal depth by changing the relative length of the reference beam path (30) and the measuring beam path (26) in accordance with a predetermined velocity profile having an instantaneous velocity at each point on the profile,

- means (22) for combining light reflected at said reference reflector (44) and light reflected within the sample (84), wherein the resulting combined optical

output has interference fringes at length matched points of the reference and measurement beam paths (26, 30) and has an instantaneous modulating frequency including a Doppler shift frequency,

- a detector (52, 52') detecting the superimposed light and generating an output signal having the instantaneous modulating frequency,

- a demodulator (56) for demodulating said output signal, and

- a computer processing the demodulated output signal of said detector (52, 52') which computer generates two- or three-dimensional longitudinally resolved image information of the internal structure of said sample (84) which image information includes information obtained from reflected or scattered radiation received from various depths within said sample (84)."

" 7. Apparatus for interferometrically imaging or measuring of the internal structure of a sample comprising:

- a two beam interferometer having a reference beam path (30) with a reference reflector (44) and a measuring beam path (26) leading to the sample (84),

- a frequency modulated spectrally coherent optical radiation source (12, 12a, 12b, 79) providing light to the two beam interferometer (30, 26, 44),

- a probe module (28) arranged in said measuring beam path (26) at its terminating portion, which probe module (28) comprises means for scanning the sample by steering the direction of light propagation applied to the sample (84),

- means for changing the longitudinal depth within said sample (84) for which the light reflected within

the sample (84) interferes with light reflected at the reference reflector (44) which means for changing the longitudinal depth include means (78) for modulating the frequency of the source (79) output with interference resulting in a signal having a frequency proportional to the difference between the path lengths of the measuring and the reference beam paths (26, 30),

- means (22) for combining light reflected at said reference reflector (44) and light reflected within the sample (84),
- a detector (52, 52') detecting the superimposed light, and
- means for processing the output signal of said detector (52, 52') which means generate a longitudinally resolved image of the internal structure of said sample (84) which image includes information obtained from reflected or scattered radiation received from various depths within said sample (84)."

The wording of the amended claims according to the first to third and the fifth auxiliary requests of the appellant is not relevant to the present decision.

VIII. During the appeal proceedings the parties submitted detailed arguments in support of their respective requests. The arguments of the parties, as far as they concern issues which are relevant to the present decision, can be summarized as follows:

Appellant's arguments

According to the paragraph bridging pages 8 and 9 of the priority document, the probe may be scanned to obtain two or three dimensional measurements, the



measurements being carried out on the sample itself. Thus, the skilled person would understand that probe scanning means are provided for the scanning operation and that what is properly scanned is the sample. In addition, according to the paragraph bridging pages 38 and 39 of the priority document the probe and/or beam may be laterally scanned on a sample area of interest by means of a probe beam steering mechanism in the sample arm, thereby implying the provision of light steering means assigned to the probe for laterally scanning the probe. This conclusion is also supported by claim 30 of the priority document; although it is not absolutely clear in the wording of the claim that the term "including" relates to the probe, the skilled person would understand that it is the probe which includes the means for scanning the beam over the sample.

In addition, even if it were assumed that the priority document, and in particular claim 30, was not unambiguously clear as to whether the light steering means are provided or not in the probe, the skilled reader would then be faced with these two alternatives and would therefore recognize the provision of the light steering means in the probe as a particular implementation of the teaching of the priority document implicitly disclosed in the document. This derivation is in line, for instance, with the German jurisprudence and doctrine in respect of the assessment of novelty, and is not in conflict with the opinion G 2/98 of the Enlarged Board of Appeal since the opinion does not stipulate that the features of the invention must be "immediately derivable", but only "directly and unambiguously derivable" from the priority document.

Therefore, the priority document discloses the subject-matter of claim 1, including a probe module comprising light steering means as recited in the claim, and consequently document E4 does not constitute prior art in respect of the invention defined in claim 1.

Respondent's arguments

The priority document discloses a probe at the terminating portion of the measuring beam path. The document, however, fails to disclose the provision of light steering means in the module itself, the passage at the end of page 38 of the priority document mentioning only a "probe beam steering mechanism in the sample arm", i.e. in the measuring beam path.

## **Reasons for the Decision**

1. The appeal complies with the requirements mentioned in Rule 65(1) EPC and is therefore admissible.
2. *Main request: Priority - State of the art*

The respondent has contested the opposition division's view that the invention according to the patent is entitled to priority from US application 692877 of 29 April 1991 and submitted that document E4 published in November 1991, i.e. after the priority date but before the date of filing 29 April 1992 of the patent, constitutes prior art within the meaning of Article 54(2) EPC. In view of the further submission of the respondent that the content of document E4 is

highly relevant for the assessment of patentability, and since in the Board's view the content of the document would appear to be even closer to the claimed subject-matter than any of the documents relied upon by the opposition division for the assessment of novelty and inventive step, the question arises whether the Board is in a position to endorse the assessment of entitlement to priority made by the opposition division and confirm the negative finding of the opposition division relating to the status as prior art of document E4. This question is to be considered in the light of the principles laid down in opinion G 2/98 (OJ EPO 2001, 413) of the Enlarged Board of Appeal.

## 2.1 Claim 1 - Entitlement to priority

Claim 1 of the main request is directed to an apparatus for interferometrically imaging the internal structure of a sample, the apparatus comprising, among others, a probe module. The question of whether the invention defined in claim 1 is entitled to the claimed priority under Articles 87(1) and 88 EPC depends on whether claim 1 and the priority document concern "the same invention", i.e. whether the skilled person can derive the claimed subject-matter, and in particular - as disputed by the respondent - the features relating to the probe module, directly and unambiguously, using common general knowledge, from the priority document as a whole, see in this respect G 2/98 (*supra*), "Conclusion" together with point 9 of the reasons.

### 2.1.1 The main line of argument advanced by the appellant in support of the entitlement to priority of the features relating to the probe module defined in claim 1 relies

on claim 30 and on the paragraphs bridging pages 8 and 9, and pages 38 and 39 of the priority document.

According to the paragraph bridging pages 38 and 39 of the priority document, in the previous passages "the beam has been projected only along a single axis. However, by using a probe beam steering mechanism in the sample arm, the probe and/or beam may [...] be laterally scanned on a sample area of interest". The reference in this passage to a "beam steering mechanism" for laterally scanning the probe and/or beam as opposed to projecting the light beam "only along a single axis" supports the provision of "means for scanning the sample by steering the direction of light propagation applied to the sample" as defined in claim 1 according to the appellant's main request. However, while present claim 1 specifies that the probe module is "arranged in [the] measuring beam path at its terminating portion, which probe module comprises" the light steering means and therefore requires the light steering means to be provided in the probe module at the terminal portion of the measuring beam path, the priority document specifies the provision of the probe at the terminal portion of the sample arm (see paragraph bridging pages 8 and 9, and claim 30), i.e. of the measuring beam path according to the terminology of claim 1, but only refers to "probe beam steering mechanism **in** the sample arm" [*emphasis added*] (last paragraph of page 38), i.e. in the measuring beam path, and therefore fails to specifically disclose the provision of the light steering means in the probe. In addition, the reference in this paragraph to the "probe and/or beam" being "laterally scanned on a sample area of interest" does not necessarily imply that the probe

beam steering mechanism is arranged in the probe itself or, as contended by the appellant, that the probe is being scanningly moved so as to steer the direction of propagation of the light beam; in particular, none of the passages of the priority document excludes construing the scanning operation of the probe in the sense that the light beam is scanned over the probe and then over the sample, i.e. in the sense that the direction of the light beam incident on and transmitted by the probe towards the sample is being steered by means located in the measuring beam path optically upstream of the probe so as to scan the light beam over the probe and then over the sample.

As regards the paragraph bridging pages 8 and 9 of the priority document, this paragraph only states that the probe "may be scanned to obtain two or three dimensional measurements" and is silent as to the provision of light steering means and the location of these means relative to the probe. In addition, as already discussed above, the indication that the probe "may be scanned" does not point unambiguously to the probe - or elements of the probe - being moved so as to steer the direction of propagation of the light beam.

The appellant has also referred to claim 30 of the priority document, the claim defining "a system [...] wherein said second optical path terminates in a probe for applying a beam of said radiation to said sample, and including means for scanning said beam in transverse direction over said sample [...]". It is, however, unclear in the formulation of the claim whether the grammatical subject of the participle "including" is the system or the probe. Consequently,

even if it were assumed for the sake of argument that the means for scanning defined in the claim correspond to light steering means as disclosed in the paragraph bridging pages 38 and 39 of the description, the formulation of the claim would not allow the unequivocal conclusion that the light steering means are provided in the probe, all the more so as this specific construction of the claim would then not appear to be supported by the description of the priority document as discussed above.

- 2.1.2 According to an alternative line of argument advanced by the appellant, even assuming that the priority document, and in particular claim 30, is not unambiguously clear as to whether the light steering means are provided or not in the probe, nonetheless the skilled person would, though possibly not immediately, at least directly and unambiguously derive the provision of the light steering means in the probe from the implicit disclosure of the priority document, i.e. as one of the two possible alternative implementations of the teaching of the document. This line of argument, however, also fails to convince the Board. As already noted above, the description of the priority document unmistakably indicates the provision of the light steering means "in the sample arm" (page 38, last paragraph) and, in the absence of any other express disclosure pointing to other alternative arrangements, this precise disclosure deprives of support the appellant's construction of the disclosure of the priority document, and in particular of claim 30, as implicitly disclosing the provision of the light steering means in and outside the probe as two complementary alternative implementations of the

disclosure of the document - let alone as disclosing any specific one of these two alternatives by way of "implicit disclosure" by reference to the common general knowledge, see in this respect decisions T 823/96 (point 4.5 of the reasons), T 744/99 (point 4.5 of the reasons), and T 818/00 (point 1.1 of the reasons), none of them published in OJ EPO.

The further contention of the appellant that the derivability from the priority document of the provision of light steering means in the probe is in line with the so-called "novelty test", in particular in view of the German jurisprudence and doctrine on novelty, cannot be followed either. In the absence of any express or implied disclosure in the priority document of the provision of light steering means in the probe, the appellant's contention is manifestly at variance with the case law developed by the Boards of Appeal in this respect and according to which a specific embodiment encompassed by, and falling within the terms of a generic disclosure is, in the absence of any explicit or implicit disclosure of the specific embodiment, generally acknowledged as being novel over the generic disclosure, even when the implementation of the latter only leaves open the choice between two alternative embodiments (see for instance decision T 651/91, not published in OJ EPO, point 4.3 of the reasons). Furthermore, and for the same reasons, the appellant's contention is also at variance with the criterion consistently applied by the Boards of Appeal that a generic disclosure implicitly encompassing two or more alternative embodiments can generally not give rise to a right of priority in respect of a specific one of the embodiments that is neither explicitly nor

implicitly disclosed (see for instance decision T 61/85, not published in OJ EPO, point 10 of the reasons), the latter criterion being a particular form of the "disclosure test" laid down in G 2/98 and constituting the logical corollary of the case law mentioned above and the established principle - confirmed in opinion G 2/98, *supra*, points 8.1 and 8.4, see also T 744/99, *supra*, points 4.3 to 4.5 of the reasons - that no right to priority can be acknowledged for an invention that is regarded as novel over the disclosure of the corresponding priority document.

2.1.3 The Board concludes that the provision of light steering means in a probe module at the terminating portion of the measuring beam path as defined in claim 1 is neither directly nor unambiguously derivable from the priority document within the meaning of G 2/98. Accordingly, the priority document and the subject-matter of claim 1 do not concern the "same invention" as required by Article 87(1) EPC and consequently the invention defined in claim 1 of the main request is not entitled to priority under Articles 87(1) and 88 EPC.

2.2 Independent claim 7 - Entitlement to priority

Independent claim 7 is also directed to an apparatus for interferometrically imaging the internal structure of a sample comprising a probe module, the claim reciting the same features of the probe module of claim 1 referred to in point 2.1 above. Consequently, the invention defined in claim 7 is not entitled to priority either (Articles 87(1) and 88 EPC) for the same reasons put forward in point 2.1 above with regard to claim 1. Moreover, the non-entitlement to priority



of claim 7 was not disputed by the appellant during the proceedings in view of the additional features incorporated by way of amendment into the claim and relating to the provision of a frequency modulated, spectrally coherent optical radiation source for which no counterpart is disclosed in the priority document.

2.3 Status of document E4 as prior art

As the subject matter defined in independent claims 1 and 7 of the main request is not entitled to the claimed priority and document E4 has been published before the date of filing of the patent, the Board concludes that the disclosure of document E4 constitutes prior art within the meaning of Article 54(2) EPC in respect of the appellant's main request.

3. *Further prosecution*

Each of independent claims 1 and 7 according to the main request results from substantial amendments made to granted claim 1 on which the contested decision is based, and these amendments affect the whole basis on which the decision under appeal was made.

Furthermore, the Board finds - without giving detailed reasons that might risk prejudicing the assessment of the case by the opposition division in the subsequent prosecution of the case as ordered below - that the disclosure of document E4 appears to be of significant relevance for the assessment of the patentability of the subject-matter now claimed and - as already set out in point 2 above - the document even appears to be

closer to the invention than any of the documents relied upon by the opposition division in its decision. In addition, although document E7 was already considered during the first-instance proceedings, the inclusion in amended claim 7 of a frequency modulated, spectrally coherent optical radiation source calls for a reassessment of the content of document E7 in view of the measures taught in the passage at lines 34 to 50 on page 2 and in claims 4 and 13 and which were not addressed during the first-instance proceedings.

All these circumstances substantially alter the factual framework of the case under appeal compared with that upon which the contested decision had been based and therefore results in the Board being presented with a fresh case requiring further examination in relation to both the formal and substantive requirements of the EPC. In addition, it is current practice that any fresh assessment of a case should normally be carried out by the first instance so that the parties are not deprived of the possibility of a subsequent review.

In view of the foregoing, the Board considers it appropriate in the circumstances of the case to make use of its discretionary powers under Article 111(1) EPC and to remit the case to the opposition division for further prosecution on the basis of the amended claims according to the appellant's requests, it being noted that during the oral proceedings the appellant has given its express agreement with this course of action and that the respondent did not avail itself of the opportunity to comment on the Board's provisional position previously communicated to the parties that

the case could possibly be remitted for further prosecution (see points IV to VI above).

In addressing the remitted case, it will be necessary for the opposition division to consider not only the substantive merits of the case in the light of documents E4 and E7 and the remaining prior art on file, but also the formal admissibility of the amended claims according to the present requests of the appellant, and in particular the compliance of the amendments with the formal requirements of the EPC (Article 102(3) together with Articles 84 and 123(2,3) EPC) and - if deemed necessary - the admissibility under Rule 57a EPC of the amendments to the dependent claims. The opposition division would also have to consider whether to admit (Article 114(1) EPC) or disregard (Article 114(2) EPC) the observations presented during the appeal proceedings by the third party (Article 115(1) EPC) and partially incorporated by reference in the respondent's own case (see point III above).

**Order**

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

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar:

The Chairman:

P. Martorana

M. A. Rayner