United States District Court,
E.D. Michigan, Southern Division.

3D SYSTEMS, INC,
Plaintiff.
v.
ENVISIONTEC, INC., Envisiontec GMBH; and Sibco, Inc,
Defendants.

Feb. 6, 2008.

Alan N. Harris, Susan M. Kornfield, Bodman, Ann Arbor, MI, Sidney David, Jonathan A. David, Lerner, David, Westfield, NJ, for Plaintiff.

R. Terrance Rader, Steven R. Hansen, Rader, Fishman, Bloomfield Hills, MI, for Defendants.

"***MARKMAN***" FN1 ***MEMORANDUM AND ORDER*** FN2

FN1. Markman v. West View Instruments, Inc., 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) (claim construction is for the court).

FN2. The Court originally scheduled this matter for hearing. Upon careful review of the relevant papers, however, the Court finds that oral argument is not likely to aid the decision making process. *See* E.D. Mich. LR 7.1(e)(2).

AVERN COHN**, District Judge.**

I. BACKGROUND

A.

This is a patent case, the subject matter of which is a stereolithographic process. The process works generally as follows:

(1) Generate a three-dimensional object design in a computer aided design ("CAD") system and store the design data in a CAD file;

(2) Compile data from the CAD file into numerous thin "slices" of data, each slice representing a thin cross-sectional layer of the three-dimensional object;

(3) Coat a layer of curable building material adjacent to a previously solidified layer of coating material;

(4) Expose the layer of curable liquid material to "synergistic stimulation," *e.g.,* light to solidify the layer of curable liquid building material at those locations which collectively represent the cross-section object to be formed; and

(5) Repeat steps (3) and (4) until the three-dimensional object is formed.

Four (4) patents owned by plaintiff 3D Systems, Inc. (3D) are claimed to be infringed as follows:

(A) U.S. Pat. No. 5,630,981, METHOD FOR PRODUCTION OF THREE-DIMENSIONAL OBJECT BY STEREOLITHOGRAPHY, the paradigm claim FN3 of which is Claim 11, a copy of which is attached as Exhibit A. The Abstract reads:

FN3. *See* Pretrial Order No. 2 (Dkt.59).

A system for generating three-dimensional objects by creating a cross-sectional pattern of the object to be formed at a selected surface of a fluid medium capable of altering its physical state in response to appropriate synergistic stimulation by impinging radiation, particle bombardment or chemical reaction, successive adjacent laminae, representing corresponding successive adjacent cross-sections of the object, being automatically formed and integrated together to provide a step-wise laminar buildup of the desired object, whereby a three-dimensional object is formed and drawn from a substantially planar surface of the fluid medium during the forming process.
(B) U.S. Pat. No. 5,902,537, RAPID RECOATING OF THREE-DIMENSIONAL OBJECTS FORMED ON A CROSS-SECTIONAL BASIS, the paradigm claim of which is Claim 81, a copy of which is attached as Exhibit B. The Abstract reads:

Methods and apparatus for use in building three-dimensional objects on substantially a cross-sectional basis including counter-rotating rollers, ink jet recoaters, spinning members which sling material, applicator bars that dispense material via a meniscus and/or independently dispensed streams, and also including methods and apparatus to determine a preferred region over which to form a layer and to check for building errors.

(C) U.S. Pat. No. 4,999,143, METHODS AND APPARATUS FOR PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY, the paradigm claim of which is Claim 35, a copy of which is attached as Exhibit C. The Abstract reads:

An improved stereolithography system for generating a three-dimensional object by creating a cross-sectional pattern of the object to be formed at a selected surface of a fluid medium capable of altering its physical state in response to appropriate synergistic stimulation by impinging radiation, particle bombardment or chemical reaction, information defining the object being specially tailored to provide built-in supports for the object, reduce curl and distortion, and increase resolution, strength, accuracy, speed and economy of reproduction, the successive adjacent laminae, representing corresponding successive adjacent cross-sections of the object, being automatically formed and integrated together to provide a step-wise laminar buildup of the desired object, whereby a three-dimensional object is formed and drawn from a substantially planar surface of the fluid medium during the forming process.

(D) U.S. Pat. No. 5,651,934, RECOATING OF STEREOLITHOGRAPHIC LAYERS, the paradigm claim of which is Claim 2, a copy of which is attached as Exhibit D. The Abstract reads:

Apparatus and method for stereolithographically forming a three-dimensional object includes a vessel for holding a building material and a smoothing member for forming a uniform coating over a previously formed layer of the object. The smoothing member has a plurality of blades. The smoothing member is swept over a previously formed layer of the object, in at least two directions. Different clearances between the lower surface of the smoothing member and the upper surface of the previously formed layer are used to provide a uniform coating for a subsequent layer over the previously formed layer. The sweeping velocity of the smoothing member can be varied. Retractable needles are attached to the smoothing member for adjusting a blade gap between a lower surface of the smoothing member and the surface of the building

material.

B.

The devices manufactured by defendants Envisiontec, Inc., Envisiontec GMBH and Sibco, Inc. (collectively, Envisiontec) claimed to infringe are known as the Prefactory and the Vanquish.FN4

FN4. *See* Pretrial Order No. 1 (Dkt.52).

II. THE "*MARKMAN*" PROCESS

A.

Envisiontec initially identified claim terms which it said were ambiguous and required interpretation.FN5 3D responded with its interpretation of these terms FN6 and Envisiontec replied.FN7 The matter of interpretation ("*Markman*" hearing) was referred to a Special Master FN8 who filed a report and recommendation,FN9 and followed up with a supplemental report. FN10 Thereafter, each of the parties filed objections to the various of the Special Master's recommendations and replies to the opposite party's objections.

FN5. *See* Envisiontec's Second Amended Identification of Disputed Claim Terms (Dkt.60).

FN6. *See* 3D's Claim Interpretation of Words/Phrases Identified By Defendants (Dkt.63).

FN7. *See* Envisiontec's Claim Construction Brief (Dkt.67).

FN8. *See* Appointment and Order of Reference to Special Master (Dkt.64).

FN9. *See* Special Master's Report and Recommendation (Dkt.74)(R & R). The R & R comprehensively discusses the nature of the art, the patents-in-suit and the law applicable to claim construction. There is no need to repeat the discussion.

FN10. *See* Corrected Special Master's Supplemental Report Including Correlated Claim Charts and Identification of the Structure Disclosed in the Specification Support For The Means-Plus-Function Limitations Of The ' 53[7] and '143 Patents (Dkt.91) (Supplemental Report).

B.

The Special Master did not include a claim chart with his report. Also, he did not number the ambiguous claim words/phrases which he was called upon to interpret. At the request of the Court, the Special Master followed up with a claim chart.FN11 This chart, however, did not number the limitations. The parties then followed up with a comprehensive chart setting forth in numbered order the ambiguous claim words/phrases, their respective interpretations, and the Special Master's interpretations.FN12 The Special Master thereafter filed a supplemental report which included numbered claim charts as well as a description of the structures disclosed in the specifications relating to means-plus-function elements.FN13

FN11. *See* Special Master's Claim Charts For U.S. Patent Nos. 5,630,981; 5,651,934; 5,902,537; and 4,999,143 (Dkt.79).

FN12. *See* Amended Joint Submission of Correlated Claim Charts for U.S. Patent Nos. 5,630,981, 5,651,924, 5,902,537 and 4,999,143 Incorporating The Special Master's Claims Charts Filed On June 6, 2007 (Dkt.83).

FN13. *See* Supplemental Report (n. 10, supra).

In the discussion which follows, the numbered limitations which are discussed are those to which objections were filed as reflected in the charts accompanying the objections.FN14 As to limitations listed initially as ambiguous and interpreted by the Special Master and not now discussed, the Special Master's interpretation stands.

FN14. The limitations discussed are those reflected in 3D Systems, Inc.'s Exemplary Claim Chart Re: 3D's Objections to the Special Master's Construction (Dkt.92) and Defendants' Claim Chart Re: Objections to Special Master's Constructions of the Claims of U.S. Patent Nos. 5,630,981, 5,651,934, 5,902,537 and 4,999,143 (Dkt.93).

III. 3D'S OBJECTIONS

A.

'981 Patent**-Claim 11 Limitation 5**

"data representing the three dimensional object"

The substance of the phrase is replicated in the '143 patent (3) and (8) and the '537 patent (4) and (12). The interpretation of the phrase which follows carries over to the other limitations referenced above.

The Special Master interpreted the phrase as follows:

providing data representing adjacent cross sectional layers of the three dimensional object to be found which was generated on CAD system.

3D objects on the grounds that a claim "need not necessarily recite every feature necessary to enable operation of a working device," Rambus, Inc. v. Infineon Technologies, AG, 318 F.3d 1081, 1093 (Fed.Cir.2003), and therefore the phrase should read:

providing design data corresponding to the object

The Special Master accepted the principle of *Rambus* and went on to say (R & R p. 22):

However, the slicing step I have found explicit in claim 11 and which 3D claims to have been rightly omitted from Claim 11 is crucial to the patentability of the claim under 35 U.S.C. s. 112.

He also said (R & R p. 21):

This interpretation provides consistency to the claim and fully comports with the invention that is disclosed in the '981 patent. As noted earlier, the flowcharts of Figures 1 and 2 [p. 2-3] illustrate "the basic concepts employed in practicing the method of stereolithography of the present invention." (Col.4, ll.12-14). Referring to Figure 1, the patent states that the "stereolithographic system of the present invention generates three-dimensional objects by creating a cross sectional pattern of the object to be formed at a selected surface of a fluid medium." (Col.5, ll.13-17).

The Special Master's interpretation of the limitation is correct.

B.

'537 Patent**-Claim 81 Limitation 10**

"means for sweeping the applicator across at least a portion of at least some of the previously formed object cross-sections"

1.

This is a means plus function limitation, described in 35 U.S.C. s. 112 para. 6 as follows:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

As explained in Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc., 248 F.3d 1303, 1311 (Fed.Cir.2001):

The first step in constructing such a limitation is a determination of the function of the means-plus-function limitation. The next step is to determine the corresponding structure described in the specification. "Structure disclosed in the specification is corresponding only if the specification or prosecuting history clearly links or associates that structure to the function related in the claim."

(citations omitted).

Further, as explained in Playtex Products, Inc. v. Proctor & Gamble Co., 400 F.3d 901, 909 (Fed.Cir.2005):

Identifying the corresponding structure for the limiting means of claim 9 requires the court to examine the drawings and the abstract in the '178 patent's written description. Either can provide support for the corresponding structure for the "limiting means." 35 U.S.C. s. 112. The specification includes the drawings ... ("under proper circumstances drawings alone may provide a 'written description' of an invention as required by s. 112"). The abstract can also serve to support the corresponding structure for s. 112....

(citations omitted).

2.

The parties agree that the function is

Sweeping the applicator across at least a portion of at least some of the previously formed object cross-sections

3D argues that there are two (2) structures described in the specification (1) "a frame and drive system (not shown)," col. 37, ll. 65-67, and (2) the structure described in U.S. Pat. No. 5,174,931 at col. 8, ll. 17-26 (emphasis added), as follows:

A doctor blade 26 is mounted on the top of the tank 10 and is adapted to move horizontally across the top of the tank. A blade support 27 is solidifiably mounted on rails 30 and 31 disposed along one side of the tank 10. A *threaded drive shaft 32* passes through a threaded passageway (not shown) in the blade support 27 and rotation thereof by *motor* 33 moves the blade support 27 and thus the blade 26 horizontally across the top of the tank 10

which is incorporated by reference in the '537 patent, col. 3, ll. 7-10 and ll. 44-50 as follows:

A description of several previous approaches is set forth in the following U.S. patents and patent applications, the disclosures of which are all incorporated by reference as if fully set forth herein:

* * *

3) U.S. Pat. No. 5,174,931 issued to Almquist, et al. and its continuation Set. No. 08/146,562 filed now abandoned Nov. 2, 1993 are directed to, among other things, using a member such as a doctor blade, to smooth or spread a coating of building material over a previously formed cross-section of the object.

The Special Master said only the "frame and motor driven threaded shaft system" (R & R p. 33) described in the "1 patent as the called for structure.

3D is wrong; a "frame and drive system" is not a structure. As explained by Envisiontec in its response to 3D's objections: FN15

FN15. Defendants' Response to 3D System, Inc.'s Resubmitted Objections to the Special Master's Report and Recommendation Filed May 15, 2007 (Dkt.87, p. 2) (internal footnote omitted).

3D incorrectly suggests that the '537 Patent's single reference to a "frame and drive system" constitutes a disclosure of corresponding *structure*. The Federal Circuit has held that "in order for a means-plus-function claim to be valid under s. 112, the corresponding structure of the limitation 'must be disclosed in the written description in such a manner that one skilled in the art will know and understand ***what*** *structure* corresponds to the means limitation.' " Biomedino, LLC v. Waters Technologies Corporation, 2007 U.S.App. LEXIS 14303 at *9, 2007 WL 2726053 (Fed Cir2007) (emphasis added). The '537 Patent provides no structural description of the "means for sweeping the applicator," but instead, further describes the means functionally (*i.e*. frame and *drive*). The only disclosed corresponding structure is the threaded drive shaft shown in the incorporated "1 patent.
The structure called for by element 10 is a "motor-driven threaded drive shaft" as described in the "1 patent.

IV. ENVISIONTEC'S OBJECTIONS

A.

'981 Patent**-Claim 11 Limitation 7**

"exposing"

The word "exposing" is part of Limitation 7 of the '981 Patent **which reads *exposing* said photopolymer to said light**

and appears in various of the limitations of the '981 patent (2, 7, 12); the "4 patent (1, 5, 10); the '537 patent (3, 12) and the '143 patent (2, 8). The interpretation of the word which follows carries over to the other limitations referenced above.

The Special Master did not discuss the word in his R & R or in his claim chart. In his Supplemental Report (p. 17) the Special Master interpreted the word as follows:

The word "exposing" means subjecting to

The reason for this interpretation by the Special Master is not clear.

Envisiontec devotes four (4) pages of argument to support its interpretation FN16 (Revised Objections pp. 2-6) that:

FN16. Defendants' Revised Objections To The Special Master's Report And Recommendation Regarding Claim Construction (Dkt.85) (Revised Objections).

"exposing" means "drawing upon

while 3D devotes thirteen (13) pages FN17 (3D's Response pp. 2-15) defending the Special Master's interpretation. Obviously, each party is anticipating the infringement phrase of the case. For now, it is sufficient to accept the Special Master's interpretation as noted above.

FN17. 3D System, Inc.'s Brief Response To Defendants' Revised Objections To The Special Master's Report And Recommendation (Dkt.86) (3D's Response).

B.

'981 Patent**-Claim 11 Limitation 8**

"layer"

The word "layer" is part of Limitation 8 of the '981 patent **which reads forming successive layers of photopolymer**

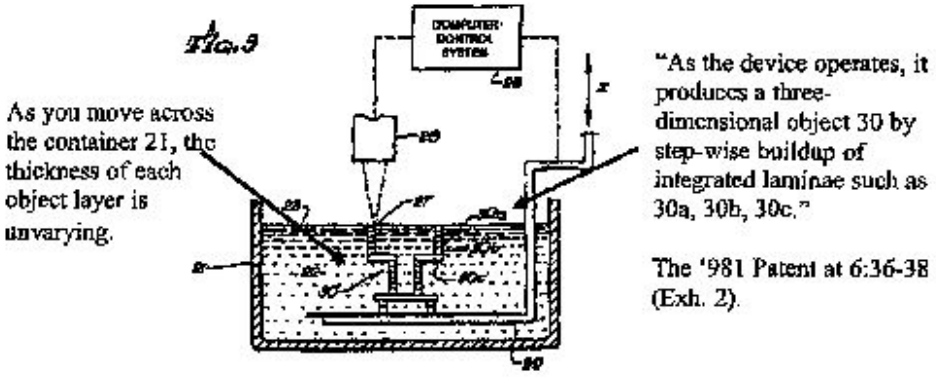
and appears in various of the elements of the '981 patent (6, 8, 9, 10, 11, 13); the "4 patent (2, 4, 6, 8, 11);

the '537 patent (7, 12); and the ' 943 patent (6, 8). The interpretation of the word which follows carries over to the other limitations where it is found.

Initially, the Special Master found it unnecessary to interpret the phrase, stating (R & R p. 23):

There is no reason to limit the layers to those having a horizontal orientation nor reason to limit them to those having a constant thickness. The proposed limitations cannot be supported by reference to the '981 patent specification and are not consistent with the breadth of the invention disclosed in the '981 patent specification.

Envisiontec (Revised Objections pp. 6-9) asserts that the word should be interpreted to refer to a "section of constant thickness" because that is its ordinary definitions. By contrast, 3D has shown that the '981 Patent's specification and drawings provide for the ability to form non-uniform layers (such as via rotation of the platform) and that the dictionaries that interpreted to refer to a "section of constant thickness" because that is its ordinary meaning and is consistently used in the '981 patent to refer to a single thickness section of solidified or of a solidified object or uncured liquid," and goes on to cite various figures and statements in the '981 patent in support, as well as referencing Fig. 3 (commentary added):



3D persuasively argues (3D's Response pp. 15-21) that Envisiontec is attempting to read in limitations of a preferred embodiment, "a cardinal sin" of claim construction, SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337,1340 (Fed.Cir.2001).

As stated by 3D (3D's Response p. 21):

... Defendants have not provided clear evidence of words or expressions of manifest exclusion or restriction representing a disavowal of claim scope in the '981 Patent or in its prosecution history so as to limit the broad, unambiguous word "layer" to a layer have a "constant definitions. By contrast, 3D has shown that the '981 Patent's specification and drawings provide for the ability to form non-uniform layers (such as via rotation of the platform) and that the dictionaries that defendants use in fact support the special master's conclusion of not limiting "layer" to "a layer of constant thickness."

No interpretation is necessary of "layer."

C.

'981 Patent**-Claim 11 Limitation 10**

"forming and adhering successive cross-sectional layers of structure"

The Special Master in his report said (R & R p. 24):

The word "adhere" is a commonly understood word. No interpretation of the word is therefore required.

In so stating, the Special Master rejected Envisiontec's inclusion of the word "adhesive" as unduly narrow[ing] the term "adhering," and 3D's position that the word meant "integrating." The Special Master expanded on his recommendation in his Supplemental Report (p. 17) stating

The word "adhering" is a commonly understood word that means to join, stick together or integrate.

The parties vigorously disagree over the Special Master's interpretation; both support their respective arguments by citing language in the specification. Envisiontec devotes three (3) pages (Revised Objections pp. 9-11), while 3D devotes five (5) pages (3D's Response pp. 21-26) in its response. 3D has the better of its argument in concluding (3D's Response pp. 25-26):

Considering the fact that the invention was broadly described in terms of combining, integrating, and adhering (and the patentee having chosen the term "adhering" for the claims), and recognizing that the discussion concerning the curable liquid having to be adhesive was presented only in the context of a preferred embodiment described in the specification, it is clear that, as a matter of law, the broad term "adhering" is not limited to an adhesive technique. The Special Master was correct when he noted that "Envisiontec's inclusion of the word 'adhesive' unduly narrows the term 'adhering.' " (R & R 23.)

Moreover, defendants' attempt to limit the commonly understood, broad term "adhering" to "adhesively attaching" is circuitous in its own right. The fact of the matter is that Webster's defines "adhesive" as "1: tending to remain in association or memory 2: *tending to adhere or cause adherence* and 3: prepared for *adhering*." *Webster's Ninth New Collegiate Dictionary* 1984 (emphasis added). In other words, the term "adhesive," which defendants seek to use to define the word "adhering," is itself defined in reference to the term "adhering."

The Special Master's interpretation is correct.

D.

'537 Patent**-Claim 81 Limitation 9**

"vacuum pump"

The Special Master interpreted "vacuum pump" as follows:

a device that creates a difference in pressure

citing the specification of the '537 patent (Col. 38, ll. 20-45 and Fig. 9i):

In this first preferred embodiment, the resin volume in applicator 310 is maintained by vacuum pump 321, pressure regulator 323, and vacuum feed line 325. The application of vacuum through line 325 into the upper portion of cavity 327 of applicator 310 causes a pressure differential to occur between the inside of cavity 327 and the region outside applicator 310. Applicator 310 is sealed with the exception of one or more

openings near its top and with the further exception of opening 315 at its bottom. The openings near exception of opening 315 at its bottom. The openings near the top of applicator 310 provide for connection to vacuum feed line 325, while the opening at the bottom forms a slit for applicator 310 to receive and dispense building material 16.

Since applicator 310 is located at or near the desired working surface 26 and since building material 16 will contact the bottom of applicator 310 by spontaneous events or by design, a meniscus 331 will form as shown in Fig 9a bridging any gap between working surface 26 and the bottom of applicator 310. Since meniscus 331 seals the applicator 310 bottom, as the pressure differential forms due to application of a vacuum at the top of the applicator 310, building material will be drawn up into applicator 310 until the pressure differential outside and inside applicator 310 is zero. Pressure regulator 323 preferably allows a controlled pressure differential to be formed to control the amount of material 16 drawn into applicator 310.

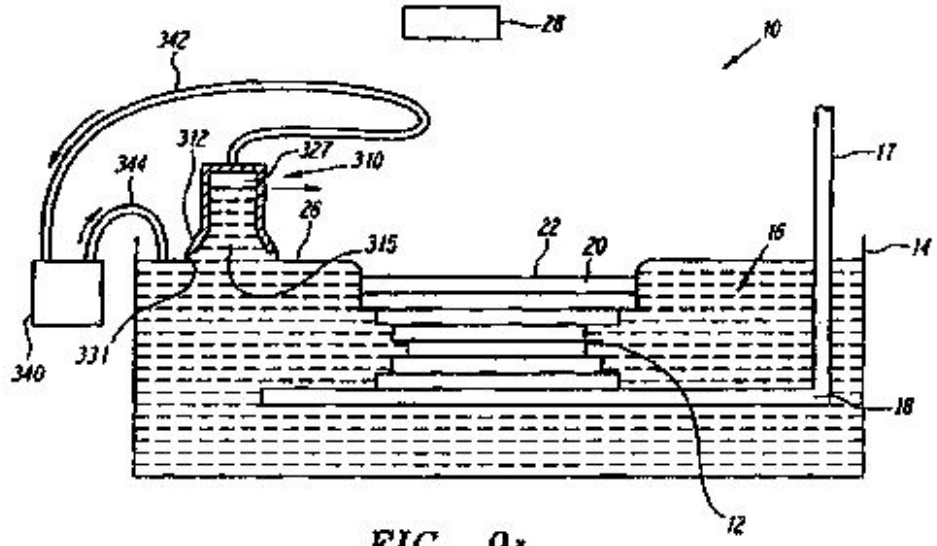


FIG. 9I

Envisiontec interprets "vacuum pump" to mean

a device that exhausts gas from an enclosed space by creating a difference in pressure

and argues that the Special Master ignored the agreement of the parties to this interpretation. 3D disagrees, arguing that the phrase is defined in the specification, as set forth above. 3D also says that where the specification "acts as a dictionary," its definition is to be followed, citing Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). 3D is correct when it says (3D's Response pp. 49-50):

... the specification of the '537 Patent makes it clear that the vacuum pump need not exhaust all of the gas from the inside of the applicator 310. Thus, from the point of view of clarity, accuracy, and to avoid confusion, the Special Master's construction should be maintained.

The Special Master's interpretation is correct.

E.

'143 Patent**-Claim 35 Element 4**

"support representation"

The Special Master did not separately interpret the phrase "support representation." Rather, he interpreted the phrase

at least one computer programmed to form a support representation

and gave it two (2) slightly different interpretations. First he said (R & R p. 34)

It means what it says. Namely a computer programmed or having instructions to produce data relating to a support for the three-dimensional object

In his initial claim chart FN18 the Special Master added

FN18. *See* n. 11, *supra*.

This claimed element is expressed clearly

In his Supplemental Report, the Special Master combined what he said in his R & R and in his initial claim chart.

Envisiontec makes a rather elaborate argument for its interpretation (Revised Objections pp. 33-36):

Data relating to adjacent or successive cross-sections of the support.

3D is correct when it says (3D's Response p. 58):

Consistent with defendants' approach before the Special Master, defendants' present objection once again attempts to insert narrowing limitations directed to the specific nature of the support into the broad claim language. The broad claim element is simply "a computer programmed to form a support representation." It is totally silent as to the nature of the support representation being formed by that computer. While in the preferred embodiment disclosed in the '143 Patent, the support representation is in the form of adjacent or successive cross-sections, it is legally improper to read limitations from the patent specification into the claims; and this is so, even if a patent describes only a single embodiment. The Special Master was clearly cognizant of this well-established case law, going so far as to have a separate section of his R & R entitled "Limitations from the Specification Should Not Be Read Into the Claims." (R & R 17).

The Special Master's interpretation is correct.

F.

'143 Patent**-Claim 35 Element 5**

"a removable support"

The Special Master in his R & R (p. 35) said a removable support is

a structure that is not part of the finished object and which provides reinforcement for the object or portions

of the object and can be separated from the object.

This interpretation carried through in the Special Master's Supplemental Report.

Envisiontec spends five (5) pages (Revised Objections pp. 28-32) arguing that a structural limitation limiting the shape to a "structure that has a long, slender rectangular cross-section" must be included in the interpretation. The argument lacks merit. As 3D says (3D's Response pp. 56-57):

... Element 5 only calls for "a removable support"; it says nothing about the particular shape of that support. What defendants fail to appreciate is that, in fact, the shape of the removable support is specified two limitations further in the claim. Specifically, Element 7 refers to the shape of the "removable support" in great detail: "said support in cross-sectional width being thin, and comprising a solid which extends along a path connecting said first and second surfaces, the path having a vertical path component which is greater than any horizontal path component." (Am. Joint. Sub. Corr. Claim Charts, '143 Patent Element 7, Dkt. 83).

The Special Master's interpretation is correct.

G.

'431 Patent-Claim 35 Element 8

"means for receiving said support representation, and for forming said three-dimensional object out of said medium substantially layer by layer, and also for forming said support out of said material substantially layer by layer, in accordance with said object and support representations."

1.

This is a means plus function element under 35 U.S.C. s. 112, para. 6, the law regarding which is set forth above.

The Special Master in his Report and Recommendation (R & R p. 38) identified the function of element 8 as follows:

-> receiving the support representation;

-> forming the three-dimensional object out of the medium; and

-> forming the support out of the material substantially layer by layer in accordance with the object and support representations.

The Special Master did not identify the specific language of the specification describing the corresponding structure. Rather he said:

The means element of claim 35 describes the formation of both the object and support by the disclosed stereolithographic process. Thus, the means of claim 35 should be construed to mean

a computer programmed to receive data files representing

(a) cross sections of the object and (b) cross sections of the support, a fluid medium capable of solidification

in response to synergistic stimulation, and a source of synergistic stimulation to which the material is exposed to form successive solidified layers, each at the surface of the last formed building material layer and each representing an adjacent cross section of the object and support, respectively.

The parties in their Amended Joint Submission (Dkt.83) identified specific language of the specification describing the structure, as well as a description of the structure. They disagreed, however, on the specific language and the description. The parties in their objections to the Special Master's Recommendation (Dkt. 85, 86 and 87) did not take issue or discuss the Special Master's recommendations.

The Special Master in his Corrected Special Master's Supplemental Report (Dkt.91) identified the specific language in the specification of the corresponding structure (Supplemental Report p. 4). He did not agree with either party's description or specific language.

Frustrated by the disagreement over the identification of the structure, the Court e-mailed the parties on December 18, 2007:

In the joint response I am told to deal with '143(8) separately. I am not sure what that means. The parties and the Special Master apparently agree on the function as stated by the Special Master at p. 38 of his report. There seems to be disagreement as to means. I suggest the parties jointly submit a copy of '143 highlighted to show the Special Master's and each parties' position on the means as displayed in the specification.

The parties' joint response in the form of an e-mail and marked up copy of the '143 patent did not satisfy the Court since the marked up copy displayed disagreement as to the corresponding structure and in a way that made it difficult for the Court to resolve the differences. The Court again e-mailed the parties on January 14, 2008 as follows:

I am not satisfied that either of you have properly identified the structure corresponding to the function called for by Element 8 of Claim 35 of the '143 Patent.

The function is as follows:

receive the support representation

form the three-dimensional object out of the medium

form the support out of the medium substantially layer by layer in accordance with the object and support representation

The structure must be described in the written description, *i.e.*, the specification. This excludes the drawings and the appendices and that part of the written description of the manner in which the structure operates. FN19

FN19. This was an incorrect statement of the law. *See, Playtex Products, Inc., supra*.

Black's *Law Dictionary* defines *structure* as:
Any construction, production or piece of work artificially built up or composed of parts purposely joined together.

This means only physical components described in the written description are to be identified.

Each of you should give me a copy of the '143 Patent with your view of the written description appropriately highlighted.

Attached is your paraphrase of the written description which you believe describes the structure.

Envisontec's response stated that they were unable to identify structure corresponding to the first and third functions identified by the Special Master and was uncertain precisely what the corresponding structure was as to the second function.

3D identified corresponding structure for each of the three (3) functions. However, 3D did not identify a single structure for each function, but rather identified language in the specification as well as in the abstract and the drawings which identified more than simply physical components and included language which appears to describe the manner in which the several components operate.

2.

It is important to identify corresponding structure in a manner that will make sense to the finder of fact, particularly if it is a jury. The Court has carefully studied the parties' positions on corresponding structure and is satisfied the specific language which identifies corresponding structure for each of the functions is as follows:

-> receiving the support representation

- the computer described at col. 8, ll. 39-59

this includes the CAD generator; the interface;

the network communications such as an ETHERNET and the interface computer

-> joining the three-dimensional object out of the medium

- the fluid medium described at col. 4, ll. 56-62 and col. 10, ll. 21-22

- the source of synergistic stimulation described at col. 4, ll. 48-55

this includes the fluid medium which is capable of solidification as a response to prescribed stimulation and a suitable vessel

and

a beam of UV light or an electric beam or a spray and mask or impinging radiation other than light
-> joining the support out of the material layer by layer in accordance with the object and support representation

- the fluid medium described at col. 4, ll. 56-62 and col. 10, ll. 21-22

- the source of synergistic stimulation described at col. 4, ll. 48-55

3.

The corresponding structure identified in this order may well be incomplete. There may be additional corresponding structure described in the specification. If element 8 becomes a point of contention as the case progresses and an issue of equivalency arises, the Court will reconsider what it has said here.

VI. CONCLUSION

The Court is constrained to comment on this claim construction exercise. First, there is an excessiveness in the number of words/phrases said to be ambiguous by Envisiontec. Second, the Special Master's R & R was difficult to follow at times because he failed to number the limitations, and on occasion his interpretation displayed a too brief discussion of his reasons. The Special Master also combined limitations which he considered while differing in phraseology were intended to have the same meaning. Finally, the parties' objections and arguments in support failed to deal with each claim and its limitation's ambiguity in a serial fashion.

In all, it has not been an easy task for the Court to understand the positions of the parties and above it understand the complexities of the technology involved. While the Court is flattered by the degree of sophistication assumed by the Special Master and the parties in this *Markman* process, it would have been better had they assumed ignorance, and accordingly taken more time and effort to both simplify and detail their respective positions.

It should be noted that *Markman* interpretations at the beginning stage of a case are always tentative. As the case progresses and issues sharpen for trial, it is always possible that an interpretation may change. For now, the interpretations reflected in the attached Exhibit E govern the future progress of the case.

SO ORDERED.

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3D Systems, Inc. v. Envisiontec, Inc.