

United States District Court,  
E.D. Texas, Texarkana Division.

**The MASSACHUSETTS INSTITUTE OF TECHNOLOGY, et al,**  
Plaintiffs.

v.

**ABACUS SOFTWARE, INC., et al,**  
Defendants.

Civil Action No. 5:01-CV-344

**Sept. 15, 2003.**

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## **ORDER ON U.S. MAGISTRATE JUDGE'S REPORT AND RECOMMENDATION REGARDING CLAIM CONSTRUCTION**

DAVID FOLSOM, **District Judge.**

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## I.

### Background

The Massachusetts Institute of Technology, *et al.* (collectively, "MIT" or "Plaintiffs") have charged Abacus Software, Inc., *et al.* (collectively, "Defendants") with infringement of claim 1 of U.S. Patent No. 4,500,919 ("the '919 patent"), generally drawn to a color reproduction system.

The parties disagree about the meaning of a number of words and phrases in claim 1 of the '919 patent. Resolution of the disputed meaning of those terms and phrases was referred to U.S. Magistrate Judge Caroline Craven. Order of January 3, 2002 pocket No. 3]; 28 U.S.C. s. 636(b)(1)(B). In accordance with that Order and s. 636(b)(1)(B), U.S. Magistrate Judge Craven conducted a Markman FN1 hearing on March 5, 2003, and submitted a Report and Recommendation on Claim Construction ("Report and Recommendation") [Docket No. 1252] dated July 3, 2003.

FN1. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996).

The parties have now filed various objections to that Report and Recommendation under s. 636(b)(1). After *de novo* review of that Report and Recommendation and the parties' objections thereto, the Court adopts that Report and Recommendation as a whole with the following modifications and clarifications.

## II.

### The '919 Patent

The Report and Recommendation extensively discusses the '919 patent and, in relevant part, its prosecution history. None of the parties have filed objections to that portion of the Report and Recommendation; thus, that portion of the Report and Recommendation is adopted as a whole by the Court. Rather than reproduce that discussion here, familiarity with the Report and Recommendation will be presumed.

However, claim 1, the sole claim in dispute, is reproduced below for reference:

1. A system for reproducing a color original in a medium using a selected multiplicity of reproduction colorants, the system comprising in serial order:

a. a scanner for producing from said color original a set of three tristimulus appearance signals dependent on the colors in said original;

b. display means connected to the scanner for receiving the appearance signals and aesthetic correction circuitry for interactively introducing aesthetically desired alterations into said appearance signals to produce modified appearance signals; and

c. colorant selection mechanism for receiving said modified appearance signals and for selecting corresponding reproduction signals representing values of said reproduction colorants to produce in said medium a colorimetrically-matched reproduction.

### **III.**

#### **The Parties' Objections**

Plaintiffs have filed objections to the Report and Recommendation's resolution of the disputed meaning of (1) "serial order," (2) "aesthetic correction circuitry," (3) "colorant selection mechanism" and (4) "colorimetrically-matched reproduction." Plaintiffs' Objections to Report and Recommendation on Claim Construction ("Plaintiffs' Objections") [Docket No. 1267].

Defendant Dell Computer Corporation has filed objections to resolution of the disputed meanings of "scanner" and "connected to," has requested clarification of "aesthetic correction circuitry," and has both requested clarification and objected to the Report and Recommendation's resolution of the disputed meaning of "colorant selection mechanism." Defendant Dell Computer Corporation's Objections To and Request For Clarification of Report and Recommendation on Claim Construction ("Dell's Objections") Pocket No. 1268].

Defendant Microsoft Corporation has objected to the Report and Recommendation's resolution of (1) "scanner," (2) "connected," (3) "aesthetic correction circuitry" and (4) "colorant selection mechanism." Defendant Microsoft Corporation's Objections To the Report and Recommendation on Claim Construction ("Microsoft's Objections") [Docket No. 1266].

The other defendants have, for the most part, filed objections that adopt or incorporate Dell's Objections or Microsoft's Objections or both, sometimes with additional specific objections. For example, defendant Concord Camera Corporation, although incorporating Dell's Objections, has advanced its own specific objections, which are addressed as appropriate throughout this Order. Defendant Concord Camera Corporation's Objections To the Report and Recommendation on Claim Construction ("Concord's Objections") [Docket No. 1262].

Accordingly, although references herein will be principally to the objections lodged by Dell, Microsoft, and the plaintiffs, it should be understood that those references include the other defendants' objections to the extent that those defendants have adopted Dell's and/or Microsoft's Objections.

As a whole, the parties' objections have been thoroughly and carefully reviewed *de novo*. In some instances, those objections have resulted in what the Court regards as clarifications to the comprehensive Report and

Recommendation. All other objections not specifically noted herein are overruled.

#### IV.

#### Disputed Terms

**A. "a scanner for producing from said color original a set of three tristimulus appearance signals dependent on the colors in said original"**

**1. "a scanner for producing \* \* \* "**

Dell and Microsoft urge that the Report and Recommendation should clarify that one of ordinary skill in the art in 1982 would have understood that a "scanner" involved relative movement between the object being scanned and the device performing the scan. Dell's Objections at 4-11; Microsoft's Objections at 2-3. Microsoft, in particular, suggests that the Report and Recommendation should be modified to add "(5) in all known scanners relative movement between the device and the object is required," to the construction on page 50, and that failure to do so potentially broadens the scope of "scanner" beyond its "plain and ordinary meaning" as understood by one of ordinary skill in the art in 1982. Microsoft's Objections at 2-3. The Court agrees, but believes "scanning element" may be more accurate than "device."

As discussed in the Report and Recommendation, on the present record, one of ordinary skill in the art in 1982 would have had a general understanding of the structure associated with the term "scanner." As the Report and Recommendation concludes, at that time there were two known general scanner types, namely, drum and flatbed. The parties have neither objected to that conclusion, nor submitted any evidence to the contrary. It is undisputed that drum scanners and flatbed scanners implicitly and inherently involve relative motion between the object being scanned and the device performing the scan. None of the parties have pointed to any evidence that one of ordinary skill in the art in 1982 would have understood "scanner" to connote a device in which such relative motion was *not* inherent or required.

Plaintiffs (1) respond that the defendants have failed to timely raise this issue, (2) urge that the defendants' contentions are unsupported, and (3) note that neither flying spot scanners nor television cameras require relative movement. Plaintiffs' Response to Defendants' Objections to Report and Recommendation on Claim Construction ("Plaintiffs' Response") [Docket No. 1309] at 3-5. With respect to the "timeliness" issue, the construction adopted in the Report and Recommendation resulted from an independent evaluation of the intrinsic evidence aided by available dictionary and other resources. The defendants raised the issue of "relative movement" in their objections to clarify that construction. Accordingly, the Court believes that issue to have been timely raised. As for "support," it seems clear from the discussion of known scanner technology in the Report and Recommendation that one of ordinary skill in the art in 1982, based on the present record, would have understood that such relative movement was implicit or required. With respect to "flying-spot" scanners, and, in particular, U.S. Patent No. 2,790,844, which plaintiffs point to, there is relative movement between the light beam performing the scanning and the original, as plaintiffs acknowledge. Plaintiffs' Response at 4-5. *See also* '844 patent, col. 4, lines 33-38 ("Original copy 1, which is assumed to be opaque, is scanned by means of C.-R. tube 30 and lens 36 which images onto picture 1, the luminous spot scanning the screen of tube 30. Three photo-multiplier tubes 35b, 35g, 35r, are arranged so

that they pick up light reflected from the illuminated spot of picture 1."). With respect to television cameras, the Report and Recommendation noted that the patentee, Schreiber, used the term "scanner" in claim 1, not "optical input device" or some other generic term or phrase. Further, the Report and Recommendation noted that the specification objectively reflects a distinction between the terms "photographing" and "scanning." Thus, although some forms of "photographing" may involve a form of "scanning," for example, referring to transparencies that are "scanned by a television camera," it seems clear that the patentee was not using "scanning" (or "scanner") broadly to encompass any type of device that involved some form of scanning. Report and Recommendation at 40. The Court agrees.

Accordingly, the Report and Recommendation is modified, on page 50, line 10, to add "(5) in all known scanners relative movement between the scanning element and the scanned object is required."

The Report and Recommendation also concluded that "(3) 'scanners' in general had an optical system, a light sensor, an interface and driver software." Report and Recommendation at 50. Dell objects to the terms "an interface and driver software." Dell says that there is no evidence of record that "driver software" and an "interface" would have been known to those of ordinary skill of the art in 1982, and that it is likely that the term "driver software" did not exist in 1982. Dell further notes that the other references cited in the Report and Recommendation do not use the terms "driver software" and "interface." Dell's Objections at 11. Plaintiffs have not specifically responded to that objection.

Dell's objection is well-taken. Although it seems clear from the Report and Recommendation and the references cited therein that a "scanner" currently would be understood to include an "interface" and "driver software," it is not clear from the record whether one of ordinary skill of the art in 1982 would have understood that "scanners" had such components. Accordingly, the references to "interface" and "driver software" should be deleted.

## **2. Picture-element-by-picture-element**

The Report and Recommendation concluded that "there is simply no basis for imposing a specific mode of acquisition limitation on the term 'scanner,' *i.e.*, picture-element-by-picture-element." Report and Recommendation at 39. Defendants Dell and Concord Camera assert that the definition of "scanner" should expressly include such a limitation. Dell's Objections at 2-3; Concord's Objections at 5-7. Concord, for example, urges that "the only properly relevant dictionary definition available in this case refers to a 'scanner' as 'examining an area or region 'point by point,' " and "this definition is uncontroverted by the parties." Concord's Objections at 5.

Plaintiffs respond that Dell "fails to provide any authority requiring the Court to give Defendants' expert's opinion any weight at all, let alone authority supporting its contention that is [ *sic* ] legal error to reject an expert opinion that is unsupported by any objective evidence," and that Concord does no better. Plaintiffs' Response at 1-2.

The Court has reviewed *de novo* that aspect of the Report and Recommendation, and concludes that it is correct. The Report and Recommendation thoroughly analyzed and discussed the parties' arguments and proffered evidence, including expert testimony, and determined that defendants had not established that "scanner," as would be understood by a person of skill in the art in 1982, required a picture-element-by-picture-element mode of acquisition. The Court agrees. Accordingly, the Court overrules the defendants' objections, and adopts the Report and Recommendation's conclusions in that regard.

### 3. CMC filters

The Report and Recommendation concluded that the term "scanner" was not limited to scanners with CMC filters. Dell, in its objections, again asserts that the '919 patent does not disclose a scanner without CMC filters that is capable of creating colorimetrically-matched reproductions, and again points to the prosecution history of the '919 patent discussed in the Report and Recommendation at pages 46-49. Dell says that the Report and Recommendation erroneously concluded that there was no prosecution history estoppel in finding that "Schreiber did not distinguish Pugsley from the invention of the '919 patent *principally* on the basis that Pugsley's scanners lacked CMC filters." [Emphasis by Dell.] Dell's Objections at 12-13. Dell, however, takes that statement out of context.

The Report and Recommendation discussed the prosecution history in detail, and concluded that Schreiber noted several distinctions *vis-a-vis* Pugsley, including, *inter alia*, (1) production of "a set of signals which are the tristimulus values of the original with respect to the primary lights (phosphors of the T.V.)," (2) modification of appearance signals by an operator in an interactive fashion, (3) operating on appearance signals in combination with a look-up table for finding ink values, (4) using the TV as an integral part of the aesthetic correction circuitry, and (5) the lack of CMC filters in Pugsley's scanner. Report and Recommendation at 49. The Report and Recommendation concluded that "Schreiber did not distinguish Pugsley from the invention of the '919 patent principally on the basis that Pugsley's scanners lacked CMC filters, or otherwise indicate that the term 'scanner' should be limited to one having CMC filters." *Id.* Dell failed to mention in its objections the underlined portion in the preceding quote. Read in context, it is clear that the Report and Recommendation rejected the defendants' contention that the term "scanner" must have "color mixture curves" (CMC) filters to produce the tristimulus appearance signals, and concluded that "the prosecution history simply does not support reading 'scanner' in claim 1 as being limited to scanners with CMC filters." Report and Recommendation at 49. Accordingly, Dell's objection is overruled.

### 4. "color original"

Microsoft and Concord Camera re-urge that one of ordinary skill in the art in 1982 would have understood "color original" to mean a flat, two-dimensional color transparency, color print or other hard copy. Microsoft's Objections at 3; Concord's Objections at 10-12. The Report and Recommendation concluded that "[t]he term 'color original' means 'the specification of a colored stimulus requiring at least three component values from which a copy, reproduction, or translation is made.' That term is not *per se* limited to two-dimensional materials." Report and Recommendation at 50. Neither party has shown that conclusion is in error.

The Report and Recommendation discussed the "color original" term in detail. Report and Recommendation at 41-46. The Report and Recommendation concluded that although it was not hard to believe that the patentee, Schreiber, had in mind two-dimensional materials when he drafted and prosecuted the application maturing into the '919 patent, it was also true that Schreiber did not expressly define "color original" as a two-dimensional object, and did not disclaim, either in the specification or the prosecution history, three-dimensional objects as "color originals." The Report and Recommendation noted that, as a practical matter, "color original" could physically be a three-dimensional object, at least in the case of flatbed scanners. Microsoft urges that while it may be true that a three-dimensional object, such as a book, may be scanned on a flatbed scanner, such objects must be "placed on," or at least extremely close to the scanner. Microsoft notes that some three-dimensional objects, for example a mountain range, are not the type of images that could be acquired by a "scanner" as understood by one of ordinary skill in the art in 1982. Microsoft urges

that the discussion of "color original" in the Report and Recommendation, and particularly the distinction between photography and scanning, implicitly recognizes that one of the main differences between a camera and a scanner is that a camera can capture pictures of far away objects while a scanner cannot. Microsoft's Objections at 3. Accordingly, Microsoft urges that the Report and Recommendation be clarified.

Plaintiffs, on the other hand, urge that "[c]ontrary to Microsoft's suggestion that the Report's distinction between photography and scanning requires that a scanner not have the functionality of a camera, \* \* \* the report explicitly states that some forms of photography may involve scanning." Plaintiffs' Response at 7 (citing the Report and Recommendation at 40).

The Report and Recommendation noted that the specification of the '919 patent objectively reflected a distinction between the terms "photographing" and "scanning." Report and Recommendation at 40. The Report and Recommendation also noted that whether "photographing" and "scanning" are equivalent or not as input devices is not presently at issue. Rather, the issue was the meaning of the "scanner" limitation. The Report and Recommendation noted that although some forms of "photographing" may involve a form of "scanning," it was clear that the '919 patentee did not use "scanning" or "scanner" to broadly encompass any type of device that involves some form of scanning.

The Court concludes that the Report and Recommendation was correct in recommending that the term "color original" should not be *per se* limited to two-dimensional materials. As noted above, the Report and Recommendation also correctly concluded that one of ordinary skill in the art in 1982 would have understood that there were two known general scanner types, namely drum scanners and flatbed scanners. As discussed in the Report and Recommendation, the structure of drum scanners would preclude three-dimensional objects. The structure of flatbed scanners would not necessarily preclude three-dimensional objects; however, Microsoft is correct that in terms of a "scanner," to one in 1982, such a "scanner" would require that the "color original" be placed on or in close proximity to the scanner. On the present record, plaintiffs have pointed to nothing that would indicate that one of ordinary skill in the art in 1982 would have understood that the term "scanner" referred to or connoted a device that was capable of capturing an image that was not placed on or in close proximity to the scanner.

## **5. Conclusion**

Accordingly, the Court adopts the construction of the Report and Recommendation at page 50, modified to read as follows:

In view of the foregoing, therefore, it seems reasonable to conclude that one of ordinary skill in the art in 1982, when the application maturing into the '919 patent-in-suit was filed, would have understood that (1) a "scanner" in its broadest sense referred to a device that functioned to convert a picture or image into corresponding electrical signals; (2) "scanners" were a type of input device that worked on the principle of reflectance or transmission of light in which the amount of light reflected by or transmitted through an image and picked up by a sensor is converted to corresponding electrical signals; (3) "scanners" in general had an optical system and a light sensor; (4) there were two known general scanner types, namely drum scanners and flatbed scanners; and (5) in all then-known scanners, relative movement between the scanning element and the object was required. Claim 1 requires that such a "scanner" have the function of "for producing from said color original a set of three tristimulus appearance signals dependent on the colors in said original." The term "color original" means "the specification of a colored stimulus requiring at least three component values from which a copy, reproduction, or translation is made." That term is not *per se*

limited to two-dimensional materials; however, one of ordinary skill in the art in 1982 would have understood that the term "scanner" referred to those devices in which the "color original" was placed on or in close proximity to the scanner. The term "scanner" is not limited to scanners with CMC filters.

**B. "system comprising in serial order"**

The Court has considered *de novo* plaintiffs' objections, Plaintiffs' Objections at 1-3, and Microsoft's responses thereto. Defendant Microsoft Corporation's Response to Plaintiffs' Objections to the Report and Recommendation on Claim Construction ("Microsoft's Response") pocket No. 1310] at 1-2.

The Court finds no error in the Report and Recommendation's resolution of the disputed meaning of "system comprising in serial order." Report and Recommendation at 50-59. Accordingly, the Court wholly adopts this portion of the Report and Recommendation.

**C. "tristimulus appearance values dependent on the colors in said original"**

The parties have not filed any objections to this portion of the Report and Recommendation. Report and Recommendation at 59-64. After *de novo* review, the Court concludes that the Report and Recommendation is correct, and wholly adopts this portion of the Report and Recommendation.

**D. "display means \* \* \* for receiving the appearance signals"**

The parties have not filed any objections to this portion of the Report and Recommendation. Report and Recommendation at 64-70. The Court finds, after *de novo* review, that the Report and Recommendation is correct. Accordingly, the Court wholly adopts this portion of the Report and Recommendation.

**E. "connected"**

The Report and Recommendation concluded that in the limitation "display means connected to \* \* \*" the word "connected" meant that there was a communication between the components to accomplish the stated function, which, in the case of the "display means" and "scanner," was "for receiving the appearance signals." The Report and Recommendation concluded that the word "connected" was not limited to any particular type of connection. Report and Recommendation at 73. Dell and Microsoft contend that referring to "a communication between components" does not resolve the parties' dispute, and urge that "connected to" requires a physical attachment. Dell's Objections at 13-14; Microsoft's Objections at 3-4. Dell also posits how resolution of the disputed meaning of "connected to" impacts the ultimate issue of infringement.

Plaintiffs correctly note that resolution of disputed terms and phrases during a *Markman* proceeding must be done with a blind eye to the impact, if any, on the question of infringement. Plaintiffs' Response at 8. Plaintiffs also urge that Dell's proposed "clarification" would only muddy the construction of the term, and would turn attention to what type of physical connection was required, what intervening components there could be, and so forth. *Id.*

The Report and Recommendation concluded that, in general, in the electrical and electronics arts, "connect" meant "[t]o provide an electrical path between two points." Report and Recommendation at 72 (citing the Illustrated Dictionary of Electronics 135 (6th edition 1994)). The Report and Recommendation further concluded that is the sense in which the word was used in the specification. The Report and Recommendation also concluded that "connect" or "connected" did not require a direct connection, that is,



one without any intermediate components. The Report and Recommendation proposed that "connected" should be construed to mean that there is a communication between the components to accomplish the stated function.

The problem with that construction, Microsoft urges, is illustrated by an example in which a person records a compact disc (CD) on a computer and then plays the CD on a CD player in a car. Microsoft says that it might be said that the computer has "communicated" with the car CD player, but no one would believe the computer and CD player are "connected." Microsoft's Objections at 4. With respect to that example, the Court agrees.

The claim limitation at issue calls for "display means connected to *the scanner for receiving the appearance signals \* \* \**." As discussed in the Report and Recommendation at 71-73, the term "connected" in the specification and prosecution history clearly refers to establishing an electrical path between the display means and the scanner. The defendants' proposed construction would limit "connected" to a physical wired configuration. Thus, wireless connections would be precluded. The '919 patent does not specifically disclose a wireless connection; however, the specification and prosecution history likewise do not preclude or disclaim a wireless connection.

The parties have, unfortunately, provided little evidence of how one of ordinary skill in the art in 1982 would have viewed the phrase "connected to." On its face, though, the term "connected to" is not limited to a wired or physical connection. Again, the Report and Recommendation concluded that "connect," in the electrical arts meant "[t]o provide an electrical path between two points." The common dictionary definition of "connected" is simply "joined or linked together," Merriam-Webster's Collegiate Dictionary (10th ed 1999) at 244, which does not *per se* require a wired connection.

Thus, on the present record, the Defendants' contention that "connected to" would necessarily have meant a physical connection to one of ordinary skill of the art in 1982 must be rejected. On the other hand, none of the parties has presented any evidence that one of ordinary skill in the art in 1982 would have understood that "connected to" would encompass a situation such as the one that Microsoft posits, *i.e.*, recording data on a medium, for example a CD, and then using that medium in a different environment, for example a CD player. Data, of course, may be transferred from one system or component to another system or component by a variety of ways. One way is a physical wired connection. Another is a wireless connection. Yet another way of transferring data is to transfer those data on a medium of some sort. On the present record, a wired or wireless connection might be considered within the ambit of "connected," but transferring data on media would not fall within what would commonly or ordinarily be considered as "connecting" two systems or components.

Microsoft and Dell, though, are correct that perhaps the word "communication" used in the construction proposed in the Report and Recommendation is too broad. Accordingly, the construction proposed in the Report and Recommendation is modified to read as follows:

In the limitation "display means connected to \* \* \*," the word "connected" means that there is an electrical path between the components to accomplish the stated function, namely, in the case of the "display means" and the "scanner," "for receiving the appearance signals." The word "connected" is not: limited to any particular type of connection, other than that an electrical path is established.

## **F. "aesthetic correction circuitry"**

The Report and Recommendation extensively discusses the limitation "aesthetic correction circuitry for interactively introducing aesthetically desired alterations into said appearance signals to produce modified appearance signals." Report and Recommendation at 74-86. The Report and Recommendation concluded that limitation should be construed as a means-plus-function limitation under s. 112(6). The recited function, according to the Report and Recommendation, is "interactively introducing aesthetically desired alterations into said appearance signals to produce modified appearance signals." The "corresponding structures" disclosed in the specification for performing that function are RGB Color Balance Module (32), Gradation Module (33), LC1C2 Color Balance Module (35), Selective Correction Module (37), and Special Correction Module (38). The Report and Recommendation noted that the tone scale memories ("TSM's") of the "aesthetic correction circuitry" may be implemented in software. Report and Recommendation at 85-86.

Plaintiffs object that the Report and Recommendation incorrectly concludes that this limitation is governed by s. 112(6). Plaintiffs' Objections at 3-6. The Court disagrees. The Court, on *de novo* review, concludes that the Report and Recommendation correctly concluded that the "aesthetic correction circuitry" limitation should be construed as a means-plus-function limitation under s. 112(6).

Dell and Microsoft have requested clarification. Specifically, Dell and Microsoft request that the Court confirm that this element of the claim requires the presence of *all* of the structures identified as "corresponding structures" disclosed in the specification for performing the recited function. Dell's Objections at 14; Microsoft's Objections at 4. Plaintiffs, on the other hand, urge that the '919 patent teaches that many types of corrections may be made, and that the operator makes changes "as desired." Plaintiffs' Response at 9 (citing '919 patent, column 3, lines 59-62). Plaintiffs argue that not every type of alteration must be made to perform the recited function, and thus one or more of the identified "corresponding structures" could be used to perform a correction falling within the scope of the recited function. According to plaintiffs, defendants' "clarification" would require that every possible alteration be performed on each image.

There is no dispute that the recited function in the claim is "interactively introducing aesthetically desired alterations into said appearance signals to produce modified appearance signals." That stated function includes several different types of corrections, *e.g.*, color balance, gradation and so forth. Various modules, as disclosed in the specification, are used to perform various corrections.

As discussed in the Report and Recommendation, the '919 patent discloses that the color translation module ("CTM"), shown in Fig. 3, "receives RGB digital TV signals" "from the TV memory." Those signals then pass through a number of modules, eventually emerging in LC1C2 form. '919 patent, col. 7, lines 54-57.

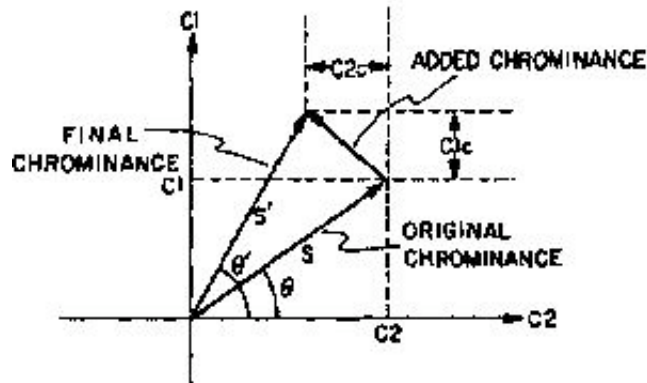


As is evident from Fig. 3, the RGB Color Balance Module ("CBM") is the first module, and it produces, from the original copy, the same signals that would have been produced "had the illumination been different when the original was first exposed" in order to correct "small errors in color balance or exposure." The RGB CBM passes the RGB signals through TSM's, which use a "film transfer characteristic" to make the output proportional to the logarithm of the exposure of each layer in the film emulsion. The RGB CBM, the '919 patent explains, increases or decreases the signal values by adjustable increments to simulate, more or

less, the exposure in each color band. Following that, the "corrected exposures" are sent through additional TSM's, which also incorporate "the film transfer characteristic," thus resulting in "adjusted signals, R'G'B'." '919 patent, col. 7, line 64-col. 8, line 12.

As further discussed in the Report and Recommendation, the next module is the "gradation module, 33," which is used to adjust the contrast and brightness of the image. The contrast and brightness is adjusted by using six controls on the gradation module, "the settings of which determine the contents of three identical TSM's through which the R'G'B' signals are passed." "Black" and "white" controls are used to "select the end points of the scale," a "brightness" control "gives a concave up or down shape to the transfer curve," a "contrast" control causes the transfer curve to be "s"-shaped in either direction, and "highlight" and "shadow contrast" controls "affect those regions of the curve more than the balance." '919 patent, col. 8, lines 13-27.

A "RGB to LC1C2 Matrix" (34) then converts the R'G'B' signals to "LC1C2 form" and passes the converted signals to the third module, the "LC1C2 Color Balance Module, 35," as discussed in the Report and Recommendation. That module balances the "highlights, midtones, and shadows," *e.g.*, "correct[s] for blue shadows \* \* \* which sometimes occur in outdoor scenes in clear weather when the shadows are illuminated primarily by blue skylight." '919 patent, col. 8, lines 36-47. The LC1C2 Color Balance Module allows the addition of a chrominance vector to the chrominance of each image sample. That vector is, apparently, adjustable in both amplitude and angle, as shown in Fig. 3a.



The Report and Recommendation further notes that, according to the '919 patent, the chrominance vector "can be separately adjusted in the highlights, midtones, and shadows of the signal, and combined with a vector which is independent of luminance," by manipulating eight controls "to adjust the angle and amplitude of the four components of the added chrominance," as shown in Fig. 3b, below. '919 patent, col. 9, lines 40-45.

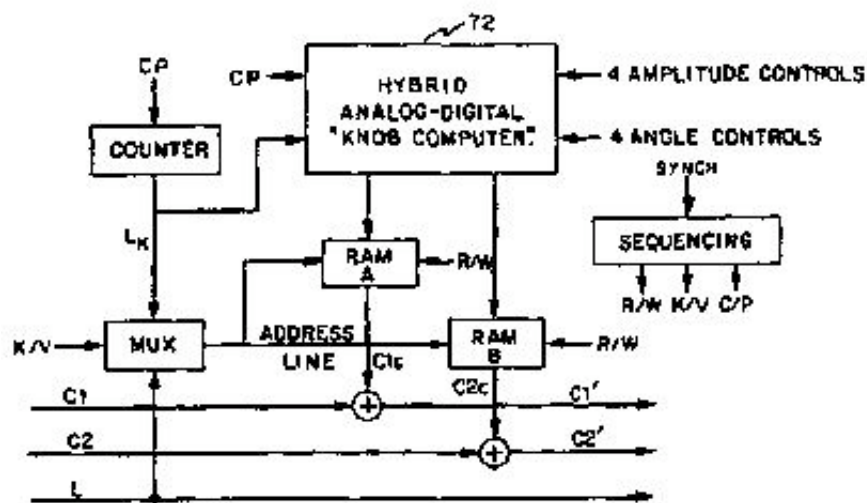


FIG. 3b

As discussed in the Report and Recommendation, the next module is the "Selective Correction" module (37), which, according to the specification, is "divided into a video path and a control computer" that "computes the contents of three memories." That module "divides the hue circle into seven smoothly overlapping regions, red, orange, yellow, green, cyan, blue, and magenta." The hue, saturation, and luminance of each region can be independently adjusted to allow an operator to "achieve nearly any desired overall color change in an image." For example, "the reds can be made darker, less saturated, and less orange, while the blue-greens can be made lighter, more saturated, and greener." '919 patent, col. 8, lines 48-64.

The next module disclosed in the '919 patent is the "Special Correction" module (38), which "operates in much the same way as Selective Correction, 37, to change the luminance, hue, and saturation, but only within a 'chromatic neighborhood' of adjustable width and location in both hue and saturation." With the Special Correction module, an operator can "pick out one object in the image and change it without affecting the balance of the image." That, the '919 patent explains, eliminates the need to "draw very precise outlines around objects in order to achieve local color correction." *Id.* at col. 8, line 65-col. 9, line 6.

The Report and Recommendation correctly concludes that, as recited in claim 1, the function of the "aesthetic correction circuitry" is "interactively introducing aesthetically desired alterations into said appearance signals to produce modified appearance signals." Report and Recommendation at 82. The Report and Recommendation notes that the term "interactively" connotes an operator interacting with the system to "introduc[e] aesthetically desired alterations into said appearance signals," *id.*, citing MIT's *Markman* Brief, Decl. of Russell B. Hill, Exh. L: L ONGMAN at 727-28 ("characterized by interaction, specif [ sic.] by the exchange of information between a computer and a user while a program is being run"). The Gradation Module (33), LC1C2 Color Balance Module (35), and Selective Correction Module (37) are all expressly provided with controls that allow an operator to "interact" with the system. An operator may also, as the specification explains at col. 8, lines 6-12 and 65-67, "interact" with the RGB Color Balance Module (32) and Special Correction Module (38). Thus, the Report and Recommendation concludes that the "corresponding structures" RGB Color Balance Module (32), Gradation Module (33), LC1C2 Color Balance Module (35), Selective Correction Module (37), and Special Correction Module (38) perform the function of "interactively introducing aesthetically desired alterations into said appearance signals to produce modified appearance signals." Report and Recommendation at 85-86.

In drafting the claims, the patentee, Schreiber, had several options. Instead of using the phrase "aesthetic correction circuitry" for performing the stated function of "interactively introducing \* \* \*," the patentee could have structurally or functionally defined just one of the several modules (the transition phrase is "comprising" and thus would permit, but would not require, other modules), and added other modules, structurally or functionally, in dependent claims. That is, in claim 1, Schreiber could have defined RGB color balance module (32) (as an example) structurally. Alternatively, Schreiber could have defined RGB color balance module (32) functionally, such as "a module for [function of the RGB color balance module]." The same is true for the other components.

Schreiber did not, however, do so. Rather, Schreiber chose to use the phrase "aesthetic correction circuitry," which, in terms of s. 112(6) and the stated function, refers collectively to the color balance module (32), gradation module (33), LC1C2 color balance module (35), selective correction module (37), and special correction module (38), which none of the parties dispute are the "corresponding structures" disclosed in the specification for performing the claimed function. The parties furthermore agree that the TSM's are part of the "aesthetic correction circuitry." Although it is true, as plaintiffs point out, that an operator may choose which correction or corrections should be made, it seems clear from the specification that "aesthetic correction circuitry" refers collectively to the several modules disclosed in the specification that collectively perform the recited function.

Thus, this is not a case in which the patentee disclosed alternative structures for performing a particular function, but rather disclosed a collection of "corresponding structures" that collectively perform the recited function. In essence, plaintiffs urge a type of genus-species interpretation for means-plus-function limitations under s. 112(6). That is, according to plaintiffs' contention, if a claim recites a function that includes species, *i. e.*, a collection of functions, each of which are performed by particular components, then the claim should be read (for infringement purposes) as encompassing all of those functions collectively (in which case the "corresponding structure" would also be the collective components for performing that collective function) or as covering the several individual functions separately (in which case the "corresponding structure" would only constitute that structure for performing the function actually performed by the accused infringing device). Plaintiffs cite no authority for so construing s. 112(6), and the Court is aware of none.

As noted above, the patentee, Schreiber, had several options available to him in choosing how claim 1 would be drafted. Schreiber chose words that encompass the modules and their individual functions, collectively. Schreiber must be held to that choice.

Accordingly, the third sentence in the construction proposed in the Report and Recommendation at 85-86 is amended to read as follows:

The "corresponding structures" disclosed in the specification for performing that function, are *collectively* RGB Color Balance Module (32), Gradation Module (33), LC1C2 Color Balance Module (35), Selective Correction Module (37), and Special Correction Module (38).

Finally, the Court notes that none of the parties have objected to the remaining aspects of this portion of the Report and Recommendation. Accordingly, upon *de novo* and independent review, the Court agrees with and wholly adopts those aspects of the Report and Recommendation. In full, the construction adopted herein by the Court is as follows:

The "aesthetic correction circuitry" limitation should be construed as a means-plus-function limitation under s. 112(6). The recited function is "interactively introducing aesthetically desired alterations into said appearance signals to produce modified appearance signals." The "corresponding structures" disclosed in the specification for performing that function are *collectively* RGB Color Balance Module (32), Gradation Module (33), LC1C2 Color Balance Module (35), Selective Correction Module (37), and Special Correction Module (38). The tone scale memories (TSM's) of the "aesthetic correction circuitry" may be implemented in software.

#### **G. "modified appearance signals"**

This disputed term was addressed in the Report and Recommendation in detail at pages 86-91. None of the parties have filed objections to this portion of the Report and Recommendation. On independent, *de novo* review the Court agrees with this portion of the Report and Recommendation, and wholly adopts the same.

#### **H. "colorant selection mechanism \* \* \* for receiving \* \* \* and for selecting"**

The disputed phrase is discussed in the Report and Recommendation at 91-99. The Report and Recommendation concluded that the "colorant selection mechanism" limitation should be construed as a means-plus-function limitation under s. 112(6). The Report and Recommendation concluded that the recited functions are "receiving said modified appearance signals" and "selecting corresponding reproduction signals representing values of said reproduction colorants." The Report and Recommendation identified the "corresponding structures" disclosed in the specification as being "clearly linked" to those functions as, for the three color case, "B-Matrix 70" and "Lookup Table 80." The "corresponding structures" disclosed in the specification for the four-color case were identified by the Report and Recommendation as "Kalgorithm Module 65," "Under-color Removal Module 67," "B-Matrix 70" and "Lookup Table 80." *Id.* at 99.

Plaintiffs, in their objections, urge that this limitation should not be construed as a means-plus-function limitation under s. 112(6). Plaintiffs' Objections at 7-8. The Court disagrees. On *de novo* and independent review, the Court agrees with the rationale of the Report and Recommendation. Accordingly, the Court adopts this portion of the Report and Recommendation.

Dell and Microsoft, however, contend that the Report and Recommendation errs in failing to identify "Tone Scale Memory 63" as "corresponding structure." Dell's Objections at 15-16; Microsoft's Objections at 5-6. Plaintiffs appear to agree: "[i]f the Court construes 'colorant selection mechanism' as a means-plus-function limitation, Plaintiffs agree with Dell that tone scale memories may be part of the corresponding structure to the extent that tone scale memories are as defined in the MIT Patent at column 2 line 63 through 68. In other words, tone scale memories are look-up tables that can be used in a colorant selection mechanism." Plaintiffs' Response at 11. The Court agrees.

Accordingly, the construction of this limitation in the Report and Recommendation at 99 is amended as follows:

The "colorant selection mechanism" limitation should be construed as a means-plus-function limitation under s. 112(6). The recited functions are "receiving said modified appearance signals" and "selecting corresponding reproduction signals representing values of said reproduction colorants." The "corresponding structures" disclosed in the specification for the three-color case are "Tone Scale Memory 63," "B-Matrix 70" and "Look-up Table 80 ." The "corresponding structures" disclosed in the specification for the four-

color case are "Tone Scale Memory 63," "Kalgotithm Module 65," "Under-Color Removal Module 67," "B-Matrix 70," and "Look-up Table 80."

**I. "corresponding reproduction signals representing values of said reproduction color-ants to produce"**

The disputed phrase is discussed in the Report and Recommendation at 99-102. None of the parties have filed any objections to this portion of the Report and Recommendation. On independent, *de novo* review, the Court wholly adopts this portion of the Report and Recommendation.

**J. "colorimetrically-matched reproduction"**

The Report and Recommendation recommends the following construction:

"Colorimetrically-matched reproduction" means a reproduction that has the same tristimulus values as the displayed image, whether determined by colorimeter or other instrument, or by visual comparison under standard viewing conditions.

Report and Recommendation at 111.

Plaintiffs, in their objections, urge that a colorimetric match incorporates a tolerance, and request that construction of the term "colorimetrically-matched reproduction" be clarified to include a statement that two tristimulus values are a match if their values are within five "delta-e units." Plaintiffs' Objections at 8-9. Microsoft responds that "'delta-e units' are nowhere described, discussed, suggested or alluded to anywhere within the intrinsic record evidence," and that including such a limitation in the Court's construction would not only introduce a concept that is unmentioned in the patent, but would then "*quantify* that concept to some specific unit value." [Microsoft's emphasis.] Microsoft's Response at 4.

The Report and Recommendation did, however, observe that "the experts for both parties stated that a colorimetric match allowed for a certain tolerance." Report and Recommendation at 106. The Report and Recommendation also noted that "the tristimulus values of the display and the reproduction should match with an error tolerance of 'an acceptably small value.'" *Id.* at 109

In the recommended construction of "colorimetrically-matched reproduction," it seems clear that when the Report and Recommendation referred to "same tristimulus values," the Report and Recommendation intended to include a tolerance that all parties seem to agree is present. It is true, as defendants assert, that the '919 patent says nothing about "delta-e units," but the '919 patent, as well as all patents, are viewed through the eyes of one of ordinary skill in the art. The defendants do not dispute plaintiffs' statement that "Defendants' own expert testified that a colorimetric-match is a match to within three to five delta-e units." Plaintiffs' Objections at 9. On the present record, therefore, there appears to be little or no dispute that one of ordinary skill in the art would not view "colorimetrically-matched reproduction" as requiring an exact tristimulus match, but would understand that such a "match" involves a tolerance. The defendants do not dispute that such a tolerance would fall within the range of three to five delta-e units.

Accordingly, the recommended construction of "colorimetrically-matched reproduction" in the Report and Recommendation at 111 is amended as follows:

"Colorimetrically-matched reproduction" means a reproduction that has the same tristimulus values as the

displayed image, whether determined by colorimeter or other instrument, or by visual comparison under standard viewing conditions. Two tristimulus values are deemed a "match" if their values are within five delta-e units.

## V.

### Other Objections

Concord urges in its objections that the "scanner limitation" should be construed as a means-plus-function limitation under s. 112(6) because "it is possible that the person of ordinary skill and art at the time of the '919 patent had no common understanding of the structure of a 'scanner.'" Concord's Objections at 8. It does not appear that any of the other defendants share that view or have advanced that argument. As noted above, the Report and Recommendation discussed the "scanner" limitation at length. Report and Recommendation at 20-50. The Report and Recommendation noted that the majority of the "scanner limitation" is devoted to reciting the function of the "scanner," rather than the structure of the scanner. *Id.* at 25. Nevertheless, the Report and Recommendation concluded that one of ordinary skill in the art in 1982 would have understood that the term "scanner" connoted certain structural characteristics. On independent and *de novo* review, the Court agrees with the rationale and conclusions set out in the Report and Recommendation, subject to the modifications discussed above. In short, the Court believes that the "scanner" limitation would have connoted sufficient structure to one of ordinary skill in the art in 1982 to avoid construction as a means-plus-function limitation under s. 112(6).

Concord also objects to the construction of the "scanner" limitation in the Report and Recommendation "to the extent that it does not affirmatively recite photography as being excluded from the coverage of claim 1 as an unclaimed embodiment, dedicated to the public," citing *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1106 (Fed.Cir.1999). Concord's Objections at 14.

As discussed above, the Report and Recommendation concluded, *inter alia*, that "there were two known general scanner types [in 1982], namely, drum scanners and flatbed scanners." Report and Recommendation at 50. None of the parties has objected that conclusion, nor have any of the parties introduced evidence indicating that conclusion is in error. Additionally, as discussed above, the Court, after *de novo* review, has agreed with the defendants that the construction should be clarified by adding "(5) in all known scanners relative movement between the scanning element and the scanned object is required." The Court has also agreed with the defendants that the construction should be modified to clarify that the "color original" is placed on or in close proximity to the scanner.

Accordingly, Concord's "dedicated to the public" or abandonment argument is not pertinent or appropriate here where the issue is claim construction. Rather, Concord may wish to raise that argument, if it chooses to do so, if the issue becomes one of infringement under the doctrine of equivalents. *See Johnson & Johnston Associates, Inc. v. R.E. Services, Inc.*, 285 F.3d 1046, 1554 (Fed.Cir.2002) (*en banc*).

## VI.

### Conclusion

The Court adopts the Report and Recommendation of July 3, 2003, in whole, with the foregoing modifications and clarifications.



SO ORDERED.

E.D.Tex.,2003.

Massachusetts Institute of Technology v. Abacus Software, Inc.

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