United States District Court,
S.D. New York.

NEW YORK UNIVERSITY,
Plaintiff.
v.
AUTODESK, INC,
Defendant.

No. 06 Civ. 5274(JSR)

April 10, 2007.

MEMORANDUM ORDER

JED S. RAKOFF, U.S.D.J.

In this action, plaintiff New York University, the assignee of U.S. Patents 6,115,053 (the "'053 patent") (Pl.Ex. 1) and 6,317,132 (the "'132 patent") (Pl.Ex. 3), FN1 asserts that certain products of defendant Autodesk, Inc. infringe one or more claims of each of these two patents. In a joint submission dated October 27, 2006, the parties presented their respective constructions of various disputed claim terms, and on December 18, 2006, the Court held a oneday "Markman" hearing to address these disputes. FN2 *See* Markman v. Westview Instruments, Inc., 517 U .S. 370 (1996). Full familiarity with the submissions and testimony is here assumed. By Order dated December 28, 2006, the Court advised counsel of the Court's intention to adopt defendant's proposed constructions either entirely or in virtually all material respects. This Memorandum Order formally adopts defendant's proposed constructions in their entirety and briefly elaborates the reasons for these determinations.

FN1. The '132 patent was included in U.S. Patent Application 08/284,799 (the "'799 application"), which issued as the '053 patent. As a result, the '053 and '132 patents share a similar specification.

FN2. As to the term "stochastically defined" ('053 patent, claims 1, 22), the parties agreed to construe this term to mean "at least in part randomly or pseudo-randomly driven."

In Phillips v. AWH Corp., 415 F.3d 1303 (Fed.Cir.2005) (en banc), the Federal Circuit set forth the pertinent legal principles governing claim construction. The court explained that "the words of a claim are generally given their ordinary and customary meaning" and that "the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." Id. at 1312-13 (internal quotation marks omitted). "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the

entire patent, including the specification." Id. at 1313. "[T]he best source for understanding a technical term is the specification from which it arose, informed, as needed, by the prosecution history." Id. at 1315. Although *Phillips* emphasizes "the importance of intrinsic evidence in claim construction," *Phillips* "also authorize[s] district courts to rely on extrinsic evidence, which consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Id*. at 1317 (internal quotation marks omitted).

1. "*Gesture Action*" *('053 patent, claims 1, 6, 20, 22)*

The patented inventions may be briefly described as methods for creating realistic computer animations of characters. The first term in dispute is "gesture action." Plaintiff's proposed construction is "a defined movement of joints over time which symbolizes or emphasizes an idea, sentiment or attitude." Defendant's proposed construction is "body part undulation executed under the control of a set of coupled frequency and range signals."

Plaintiff principally objects to the word "undulation" in defendant's construction on the ground that the '053 patent describes at least one gesture action, the "casual pose," that does not entail any undulation. *See* transcript, 12/18/06 ("Tr."), at 9; '053 patent, 6:54-7:14. Plaintiff argues that the casual pose is "driven primarily by noise," *see* '053 patent at 7:11-14; '132 patent at 7:14-17, so that an observer viewing a figure in the "casual pose" would perceive movement that was random, rather than undulatory, *see* Tr. at 50-51. However, plaintiff's expert, Dr. Norman I. Badler, admitted that it would be "very unlikely" for the casual pose not to entail at least some undulation, *see* Tr. at 104-05; moreover, as defendant's expert Dr. Kellogg S. Booth noted, "the noise function[ ] constitute[s] undulation," *see* Tr. at 119; *see also* Tr. at 122, 147. More broadly, the Court agrees with Dr. Booth's testimony that neither the fact that certain gesture actions such as the casual pose entail less undulation than others, nor the fact that any gesture action can be "stopped" before undulation takes place, changes the fact that the essential nature of gesture actions is to provide for undulation. *See* Tr. at 109-10, 117-19, 146-49.

Plaintiff also objects to the phrase "executed under the control of a set of coupled frequency and range signals" in defendant's construction. Defendant's use of this phrase is supported, however, by the specification of the '053 patent (and the corresponding specification of the '132 patent) that introduces the phrase "gesture action" in the following terms:

The programmer/user can specify a sequence and/or combination of different *gesture actions*. Each action is *implemented as a set of coupled frequency and range of pseudorandom time-varying signals* set to each limb. The transition from one action to the next is smooth and life-like.

'053 patent at 2:47-52 (emphasis added); *see also* '132 patent at 2:51-56. Defendant's construction largely tracks this language. Although plaintiff's expert, Dr. Badler, testified that the phrase "[e]ach action" in the above-quoted passage does not necessarily refer to a "gesture action," *see* Tr. at 36, and that the word "of," following the word "range," is an error and should be the word "or," *see* Tr. at 37, 40, the Court does not credit this testimony, finding it much more likely that the language means what it says.

Further, defendant's entire construction is supported by the deposition testimony of Dr. Kenneth Perlin, the inventor of the '053 and '132 patents, who testified that the '799 application (which underlies both patents) does not anywhere describe how to create a "gesture action" that is not a "body part undulation executed under the control of a set of coupled frequency and range signals." Declaration of Dr. Kellogg S. Booth

dated November 12, 2006 ("Booth Decl."), Ex. 6 ("Perlin Dep.") at 101. Plaintiff argues that Dr. Perlin recanted this testimony by testifying later in his deposition that he thought he "*could* create a ... gesture which is effectively a pose" with "[n]o time varying behavior," and that "this [would] describe how to create a gesture action that is not a set of coupled frequency and range values." Declaration of Paul D. Ackerman dated November 30, 2006 ("Ackerman Decl."), Ex. A at 281 (emphasis added). But this later testimony does not amount to a recantation because it says only what Dr. Perlin could create or describe now, and not what he did create or describe in the patents.

Accordingly, the Court adopts defendant's proposed construction of "gesture action."

2. "*Composite Gesture Action*" *('053 patent, claims 1, 6)*

The second term in dispute is "composite gesture action." Plaintiff's proposed construction is "a gesture action (as defined above) in which movement results from a contribution of two or more gesture actions." Defendant's proposed construction is "a gesture action (as defined above) that involves movement of several joints."

Defendant's construction is supported by the fact that the phrase "composite gesture action" appears only in claims 1 and 6 of the '053 patent, not in the specification, and the phrase found its way into those claims through an amendment that plaintiff itself introduced during the procurement process to distinguish prior art. *See* Tr. at 14-17, 123-24. At that time, plaintiff suggested that a "composite gesture action" is an action that "govern[s] a plurality of movements at a corresponding plurality of joints," Pl.Ex. 2 ("'053 Prosecution History") at NYU004019-20, and defendant's construction largely tracks this language. In introducing the amendment, plaintiff made no claim that "composite gesture action" meant "two or more gesture actions," and relied on the assertion of control over several joints to distinguish prior art. *See* Tr. 14-17, 123-24.

Plaintiff responds that regardless of the prosecution history, defendant's construction renders the clause "composite gesture action" meaningless because, as plaintiff's expert testified, a mere "gesture action," alone, may entail the movement of several joints, and the word "composite" must therefore be read to indicate "two or more gesture actions" in order to avoid redundancy. *See* Tr. at 13; *see also* Tr. at 18, 64. But the prosecution history supports defendant's construction and does not accord with plaintiff's definition. The fact that defendant's construction arguably results in a partial (but far from total) redundancy-and plaintiff's expert did not testify unequivocally on this point, *see* Tr. at 70-71-is an almost unavoidable function of the less than perfect precision of common English usage and therefore, of itself, an insufficient reason to reject it when the plain meaning is otherwise clear. *See* Tr. at 19. Moreover, plaintiff offers no other rationale for rejecting defendant's construction, *see* Tr. at 18 (The Court: "Why shouldn't the plaintiff be bound by the definition it gave?" Dr. Badler: "I'm not sure I have a response to that.").

Accordingly, the Court hereby adopts defendant's proposed construction of "composite gesture action."

3. "*Limits*"

The next set of terms in dispute are "maximum and minimum limits of rotation" ('053 patent, claim 2), "maximum angle of rotation excursion, a minimum angle of rotation excursion" ('053 patent, claim 6), "limits of rotation excursion" ('053 patent, claim 20), "upper limit vector and a lower limit vector" ('132 patent, claim 1), and "upper limit of rotational range and lower limit of rotational range" ('132 patent, claim 1).

The parties have agreed that a single construction of "limit[s]" covers all of these phrases. *See* Tr. at 71, 184. Plaintiff's proposed construction is "end point values delineating the range of angular motion for a particular joint." Defendant's proposed construction is "end point values delineating the range of angular motion for a particular joint for a particular gesture action (as defined above)."

Defendant's addition of the phrase "for a particular gesture action"-which is the only language the parties disagree on-is supported by the abstract of the '053 patent, which states:

A number of gesture actions are displayed and defined as a series of frames generated by specifying rotational ranges and speeds of rotation on a number of rotational axes of each joint *for each gesture action*.

'053 patent abstract (emphasis added); *see* Tr. at 125. Further, defendant's construction is supported by the prosecution history of the '053 patent, which shows that plaintiff stated, in order to overcome a rejection based on prior art, that "the present invention requires specification of 'upper limit' and 'lower limit' vectors, which vectors delineate the range of motion for a particular joint *for a particular gesture action*." '053 prosecution history at NYU003964 (emphasis added); *see* Tr. at 126.

Plaintiff offers two arguments in response. First, plaintiff argues that the language defendant wishes to incorporate-"for a particular gesture action"-would make claim 5 of the '132 patent redundant, *see* Tr. at 127, where that claim states that "the upper limit vector, the lower limit vector and the time vector for each of the joints are specified in accordance with the selected gesture action," '132 patent at 10:16-18. But claim 5 lacks redundancy with claim 1 for other reasons, *see* Tr. at 127, and the specific prosecution history does not accord with plaintiff's definition.

Second, plaintiff argues that its statement in the prosecution history addressed only certain claims at issue there, so that "[t]o the extent there would be a prosecution history argument, the parties would have to step back from their initial position that a common definition applies to all the disputed terms and then parse out to which extent this limitation would be appropriate." *See* Tr. at 25-26. However, the Court finds it appropriate to rely on the prosecution history in the construction of each disputed claim term here, given that plaintiff has maintained throughout this litigation that "a single definition ... covers all" of the disputed claim terms, and given that plaintiff's expert based his entire report on that premise. *See* Tr. at 71.

Accordingly, the Court hereby adopts defendant's proposed construction of "limits."

4. "*Assigning Attractant and Repellant Vectors*" *('053 patent, claim 3)*

The next phrase in dispute is "assigning attractant and repellant vectors." Plaintiff's construction is "providing information for influencing the movement of one object towards or away from another object." Defendant's proposed construction is "associating objects with attractor and repulsive values that can be mathematically combined."

Defendant's construction is supported by the specification of the '053 patent (and the corresponding specification of the '132 patent), which provides that "[o]bject avoidance is accomplished by equipping each object with a small repulsive force vector and monitoring the vector sum." '053 patent at 8:17-19; *see also* '132 patent at 8:20-22. Defendant's construction replaces the word "equipping," which appears in the above-quoted language, with the word "associating," but the Court credits Dr. Booth's testimony that "[a]ssociating ... is more consistent" than "equipping" "with the usual terminology that you would find in computer

science, where you associate properties with objects." *See* Tr. at 129. In any event, Dr. Booth noted that defendant "would be satisfied by either" "associating" or "equipping," *see* Tr. at 129-130, and both "associating" and "equipping" are preferable to the word "providing" in plaintiff's construction because, as Dr. Booth testified, the word "providing" "blurs the distinction between the object that is being influenced and the object which is doing the influencing," *see* Tr. at 130.

Further, the Court is persuaded by Dr. Booth's testimony as to why the phrase "that can be mathematically combined" should be included in the construction. Dr. Booth explained that people in computer graphics "use vector mathematics to describe the locations of objects in three-dimensional space" and occasionally "slip into the fantasy ... that [the objects'] locations actually are vectors instead of points." *See* Tr. at 158. However, "you cannot mathematically combine two points," so that "even someone who is well practiced in the art at the time of the patent might appreciate the reminder that these are real mathematical vectors, not the sort of pretend ones that we all the time use in computer graphics and in animation." *See* Tr. at 158. In any event, plaintiff's own expert essentially conceded that the vectors "the patent is talking about are vectors that can be mathematically combined." *See* Tr. at 78.

Accordingly, the Court hereby adopts defendant's construction of "assigning attractant and repellant vectors."

5. "*Programmed with Information to Simulate the Natural Motion of Gestures*" ('*053 patent, claim 20*)

The fifth phrase in dispute is "programmed with information to simulate the natural motion of gestures." Plaintiff's proposed construction is "to include information in a motion which makes the motion appear more realistic." Defendant's proposed construction is "encoded with procedures that define normal body movements."

Plaintiff's principal objection is to the word "procedures" in defendant's construction because, as plaintiff's expert Dr. Badler testified, the word " 'procedures' is narrow," and "doesn't particularly explain how to simulate the natural motion of gestures." *See* Tr. at 82; *see also* Tr. at 87. But defendant's use of the word "procedures" is supported by the '053 specification, which states that "[t]he present invention uses the *procedural* texture synthesis approach to control limb motion," '053 patent at 2:39-40 (emphasis added), as well as by Dr. Perlin's deposition testimony, where Dr. Perlin stated that "[t]here are *procedures* involved which define component movements, and there are other *procedures* which combine those component movements to make what I call composite movements," "[a]nd together the whole conglomeration expresses human body movement," Perlin Dep. at 271-73 (emphasis added). Further, the Court credits Dr. Booth's testimony that someone skilled in the art of computer animation at the time of the patent would have understood the claim at issue to entail "procedural animation" and would have understood defendant's construction to be a "normal use" of the term "procedures." *See* Tr. at 136-37. FN3

FN3. With respect to the word "normal" in defendant's construction, the word "realistic" in plaintiff's construction, and the word "natural" in the '053 patent itself, the Court finds (and the parties essentially agreed) that there is no material difference between these terms. *See* Tr. at 92, 187.

Accordingly, the Court hereby adopts defendant's construction of "programmed with information to simulate the natural motion of gestures."

6. "*Time Vector ...*" *('132 patent, claim 1)*

The final phrase requiring construction is "time vector for each of the joints, the time vector containing three variables which are functions of time whose values correspond to a linear interpolant between the upper limit and the lower limit of the rotational range, on, respectively, each of the rotational axes."

Plaintiff's proposed construction is "an expression of the rotation of a joint in each of three axes of rotation, e.g., x, y and z, versus time, in which the values change continuously over time from one value to another value and whose range is limited within the specified maximum and minimum limit values." Defendant's proposed construction is "at any given time, t, this equation is used to specify (by values that can be mathematically combined) the angular position of a joint about each axis of rotation between the upper and lower end point values: j(k-j)*j(t), where j represents the lower limit value of a rotation about a given axis, k represents the upper limit value of a rotation about the axis, and j(t) is a function whose value varies with time between zero and one."

The principal difference between the two constructions is that defendant's proposes that the time vector be governed by a specific equation. *See* Tr. at 163-64. Defendant's construction is supported by the specification of the '132 patent, which states:

The time varying values of the time vector act as linear interpolants between the upper and lower limits. Such interpolation is effected at any given time, t, by the equation:

j(k-j)*j(t),

where j represents the lower limit value of a rotation about a given axis, k represents the upper limit value of a rotation about the axis, and j(t) is a function whose value varies with time between zero and one.

'132 patent at 5:42-52. Further, defendant's construction is supported by Dr. Perlin's deposition testimony that "[e]ach joint is governed by an equation of this form." Perlin Dep. at 104.

Plaintiff objects that (a) "[t]here are other equivalent forms" of the equation, and (b) "[t]he function j(t) need not ever take on values of 0 or 1" and "could even be a constant function, say of 1/2." *See* Tr. at 23. But with respect to plaintiff's first objection, plaintiff admits that either the formula given by defendant or its algebraic equivalent must be used. *See* Tr. at 100, 164-65. With respect to plaintiff's second objection, plaintiff's expert admitted that if "between 0 and 1" means "staying within the boundaries between 0 and 1," then there is no problem with the formula, *see* Tr. at 96, and this is the very meaning pressed by defendant's expert, *see* Tr. at 139 ("My interpretation on reading the patent and the prosecution history is that to vary between 0 and 1 means that you may not have a value larger than 1 nor may you have a value less than 0, but you may have any values in between.").

Accordingly, the Court hereby adopts defendant's construction of "time vector for each of the joints, the time vector containing three variables which are functions of time whose values correspond to a linear interpolant between the upper limit and the lower limit of the rotational range, on, respectively, each of the rotational axes."

For the foregoing reasons, the Court adopts in their entirety defendant's proposed constructions of the disputed claim terms.

SO ORDERED.

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