United States Court of Appeals for the Federal Circuit

NATURE SIMULATION SYSTEMS INC.,
Plaintiff-Appellant

v.

AUTODESK, INC.,
Defendant-Appellee

2020-2257

Appeal from the United States District Court for the Northern District of California in No. 3:19-cv-03192-SK, Magistrate Judge Sallie Kim.

Decided: January 27, 2022

MATTHEW MICHAEL WAWRZYN, Wawrzyn LLC, Chicago, IL, argued for plaintiff-appellant.

BRIAN ROBERT MATSUI, Morrison & Foerster LLP, Washington, DC, argued for defendant-appellee. Also represented by SETH W. LLOYD; RUDOLPH KIM, ROMAN A. SWOOPES, Palo Alto, CA.

Before NEWMAN, LOURIE, and DYK, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* NEWMAN.

Dissenting opinion filed by *Circuit Judge* DYK.

NEWMAN, *Circuit Judge*.

Nature Simulation Systems, Inc. ("NSS") is the owner of United States Patents No. 10,120,961 ("the '961 patent") and No. 10,109,105 ("the '105 patent"), both entitled "Method for Immediate Boolean Operations Using Geometric Facets." The patents relate to methods of packaging computer-aided data for three-dimensional objects.[1]

NSS brought suit for infringement against Autodesk, Inc. in the United States District Court for the Northern District of California. At issue are claims 1 and 8 of the '961 patent and claim 1 of the '105 patent. The district court held a claim construction (*Markman*) hearing, and ruled the claims invalid on the ground of claim indefiniteness, 35 U.S.C. § 112(b).[2] That decision is the subject of this appeal.

We conclude that the district court erred on the legal standard for claim indefiniteness, and that on the correct standard the claims are not indefinite. The decision of invalidity on this ground is reversed.

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[1] The '961 patent is a continuation-in-part of the '105 patent, and the specifications and claims do not materially differ with respect to the issues of this appeal; thus the parties and this court generally cite to the '961 patent.

[2] *Nature Simulation Systems Inc. v. Autodesk, Inc.*, No. 19-CV-03192-SK, ECF. No. 61, (N.D. Cal. July 31, 2020) ("Dist. Ct. Op."); Final Judgment, 2020 WL 5525170 (N.D. Cal. Aug. 11, 2020).

BACKGROUND

Standards of review

Claim construction is a question of law, and receives de novo review on appeal. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390–91 (1996); *Teva Pharms. USA Inc. v. Sandoz, Inc.*, 574 U.S. 318, 325 (2015). Claim indefiniteness is a legal conclusion, in implementation of 35 U.S.C. § 112. *See Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1378 (Fed. Cir. 1999) ("'A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims.' Indefiniteness, therefore, like claim construction, is a question of law that we review *de novo*.") (quoting *Personalized Media Communications, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 705 (Fed. Cir. 1998)).

Claim indefiniteness is decided from the viewpoint of persons skilled in the field of the invention. *Personalized Media*, 161 F.3d at 705. The district court and the parties agreed that for the technology here at issue, such persons would have "at least a master's degree in computer science or a related field, or a bachelor's degree in computer science or a related field plus two years of relevant experience, with experience in computer graphics, computer-aided design, solid modeling, or geometric modeling." Dist. Ct. Op. at 7.

United States patents are accompanied by a presumption of validity, 35 U.S.C. § 282, and invalidity must be established by clear and convincing evidence. *Sonix Tech. Co. Ltd. v. Pubs. Int'l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017).

The patented inventions

The '961 and '105 patents are for a computer-implemented method for building three-dimensional objects employing a computation method called "Boolean operation." The patents introduce the invention as follows:

> This invention provides an immediate Boolean operation method for building three (3) dimensional geometric models from primary geometric objects to Computer Aided Design, Computer Graphics, Solid Modeling systems, and Surface Modeling systems, which are widely used in product design, manufacturing, and simulation. Mechanic industry, culture and sports, everywhere there are geometric shapes, may have CAD/CG applications.

'961 patent, col.1, ll.7–14. The patents are for data structures and algorithms for the claimed method, which is described as a modification of a known Boolean operation published in 1981 for analyzing and representing three-dimensional geometric shapes ("the Watson method"). The district court states: "NSS concedes that the general idea of performing Boolean operations in this area was well known before the patents in dispute, as the asserted patents cite to prior art disclosing this concept." Dist. Ct. Op. at 2. The court summarized the prior art:

> There are two methods from prior art that are cited in the asserted patents. The Delaunay method is a known method of triangulation (known as the "Delaunay triangulation"), and the Watson method is a known algorithm for computing a Delaunay triangulation that is described in a paper written in 1981 by D.F. Watson.

Id. (citing '961 patent col.6 ll.64–66; '105 patent col.6 ll.42–44). The patents state that the "modified Watson method" described therein provides simplicity and flexibility compared with prior methods, and is easier to program and implement. '961 patent, col.1, ll.17–62. Both sides presented technology tutorials to the district court; the NSS tutorial was presented by inventor Shangwen Cao, and the Autodesk tutorial was presented by expert Dr. Daniel Aliaga.

At the *Markman* hearing, Autodesk requested construction of eight terms in the claims, and supported this

request with the Declaration of Dr. Aliaga. NSS argued that the challenged terms do not require construction, are clearly set forth in the specification, and should receive their ordinary meaning in this field of technology.

The district court based its decision on two of the challenged terms, shown in boldface in clauses [2] and [3] of Claim 1:

> 1. A method that performs immediate Boolean operations using geometric facets of geometric objects implemented in a computer system and operating with a computer, the method comprising:
>
> > [1] mapping rendering facets to extended triangles that contain neighbors;
> >
> > [2] building intersection lines starting with and ending with searching for the first pair of triangles that hold a start point of an intersection line by detecting whether two minimum bounding boxes overlap and performing edge-triangle intersection calculations for locating an intersection point, then **searching neighboring triangles of the last triangle pair that holds the last intersection point** to extend the intersection line until the first intersection point is identical to the last intersection point of the intersection line ensuring that the intersection line gets closed or until all triangles are traversed;
> >
> > [3] splitting each triangle through which an intersection line passes using **modified Watson method,** wherein the modified Watson method includes removing duplicate intersection points, identifying positions of end intersection points, and splitting portion of each triangle including

> an upper portion, a lower portion, and a middle portion;
>
> [4] checking each triangle whether it is obscure or visible for Boolean operations or for surface trimming;
>
> [5] regrouping facets in separate steps that includes copying triangles, deleting triangles, reversing the normal of each triangle of a geometric object, and merging reserved triangles to form one or more new extended triangle sets; and
>
> [6] mapping extended triangles to rendering facets.

'961 patent, col.9, ll.17–48 (bracketed numbers and boldface added).

After the *Markman* hearing the district court ruled that these two claim terms are indefinite, rendering the claims invalid. The district court did not define the two terms; instead, the court held that a claim term is indefinite, as a matter of law, if there are any "unanswered questions" about the term. The court referred to the conflict between the opinion of Autodesk's expert, and the patent examiner's resolution of indefiniteness, and stated:

> [T]he question is thus: if the PTO issues a patent after amendment to clarify an indefinite term, but an expert later opines that a POSITA would not understand the term, how does the Court determine whether the term is indefinite? The only way to do so here is to look at each argument to see if Autodesk raises any unanswered questions. Here, Autodesk does.

Dist. Ct. Op. at 8. The district court recited several "unanswered questions," and further stated that even if the questions are answered in the specification, the definiteness

requirement is not met if the questions are not answered in the claims. Thus the court held the claims invalid under 35 U.S.C. § 112.

NSS states that the court applied incorrect legal standards, and that on the correct law the claims are not indefinite.

DISCUSSION

Patent claims must provide reasonable certainty in defining what is patented, in conformity with the requirements of 35 U.S.C. § 112. We start with the statute:

35 U.S.C. § 112

Section 112 states the required content of the patent document. Section 112(a) provides that the specification must describe the invention in full, clear, concise, and exact terms, as to enable its practice by any person skilled in the field of the invention, and must include the best mode known to the inventor:

> **§ 112. Specification**
>
> **(a) In General.--** The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

Section 112(b) requires that the specification conclude with claims that state the subject matter that is patented:

> **(b) Conclusion.--** The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which

> the inventor or a joint inventor regards as the invention.

The claims define the patent right, and perform the "notice" function of legal documents; thus precision and clarity are necessary. *See Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336 (Fed. Cir. 2010):

> [The claims'] principal function, therefore, is to provide notice of the boundaries of the right to exclude and to define limits; it is not to describe the invention, although their original language contributes to the description and in certain cases satisfies it. Claims define and circumscribe, the written description discloses and teaches.

Id. at 1347. *See Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 909 (2014) ("a patent must be precise enough to afford clear notice of what is claimed, thereby 'appris[ing] the public of what is still open to them.'" (quoting *Markman*, 517 U.S. at 373)).

The claims are viewed and understood in the context of the specification and the prosecution history, as the Court summarized in *Nautilus*:

> Cognizant of the competing concerns, we read § 112, ¶ 2 to require that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.

572 U.S. at 910. When the meaning or scope of a patent claim is disputed by litigants, the judicial role is to construe the claim as a matter of law, on review of appropriate sources of relevant information. As summarized in *Phillips v. AWH Corp.*, the court looks first to the intrinsic record of the patent document, including "the words of the claims

themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)).

Here, however, the district court did not construe the claims, did not apply the protocols of intrinsic and extrinsic evidence, and did not resolve the meaning and scope of the challenged claims. The district court applied an incorrect standard of "unanswered questions" and a flawed analysis of validity.

The district court's standard of "unanswered questions"

The district court held the claims indefinite based on the "unanswered questions" that were suggested by Autodesk's expert. For the term "searching neighboring triangles of the last triangle pair that holds the last intersection point," the court recited three unanswered questions:

> Aliaga points to several unanswered questions about this language: (1) whether the phrase requires searching repeatedly or iteratively or merely once; (2) what the "last triangle pair" or "last intersection point" is; (3) how can one "extend an intersection line" when in some cases it is not possible, as Aliaga demonstrates.

Dist. Ct. Op. at 17–18 (citing Aliaga Decl. ¶ 26).

For the term "modified Watson method," the district court recited four unanswered questions provided by Autodesk's expert:

> The claim language leaves unanswered the following questions: (1) What is a neighboring point of intersection (referred to as PET in the patents)?; (2) What is the meaning of an 'identical' point of

> intersection?; (3) What is the meaning of removing a point of intersection?; (4) From what is the point of intersection being removed? NSS does not respond to these specific questions, which highlight the ambiguity of the claim language.

Dist. Ct. Op. at 9.

In response to NSS's argument that these questions are answered in the specification, the court held that definiteness requires that the questions are answered in "the claim language, standing alone," as stated in the Aliaga Declaration:

> ¶ 27. [T]he claim language, standing alone, does not specify which of those neighboring, intersecting triangles should be used to identify additional intersection points. Nor does the claim specify (where there are multiple potential intersection points for a given pair of neighboring triangles) which of the multiple potential intersection points should be used to extend the intersection line. Thus, the claim language is indefinite.

Aliaga Decl. ¶ 27. "Claim language, standing alone" is not the correct standard of law, and is contrary to uniform precedent. Patent claims are viewed and understood in light of the specification, the prosecution history, and other relevant evidence, as "would have allowed a skilled artisan to know the scope of the claimed invention with reasonable certainty." *Sonix Tech.*, 844 F.3d at 1376.

The district court did not apply this standard protocol for analyzing claim definiteness, and did not construe the claims. Instead, the court held that the questions raised by Autodesk must be answered, and that the answers must be in the claims. NSS states that on the correct claim construction, the claims are not indefinite.

The specification

The specification describes the invention in text, drawings, and flowcharts. NSS states on this appeal that even if the theory of "unanswered questions" were accepted, any relevant questions are answered in the specification. For example, with respect to the intersection points that were a focus of the criticism recited by the district court, NSS cites the description in the specification captioned "The First Intersection Point" and "Extending an Intersection Line." '961 patent, col.5, l.41–col.6, l.24. NSS also points to the Figure 4 flowchart for building intersection lines, to Figures 6A and 6B for showing intersection points, and Figures 9A–9D for examples of intersection lines.

The specification describes, and the claim recites, that the intersection line is built from the intersection points around the objects being compared, "searching neighboring triangles of the last triangle pair that holds the last intersection point to extend the intersection line until the first intersection point is identical to the last intersection point of the intersection line ensuring that the last line gets closed or until all triangles are traversed." '961 patent, col.9, ll.23–33.

Figure 13 is a flowchart of "Delaunay mesh modified Watson method that created the sequence" shown in Figure 12. Figures 12A–12H show the decomposition of a square into triangles, the placement of intersection points within those triangles, and the use of triangles containing intersection points to build polygons from which new triangles are generated, along with comparisons with the prior art Watson method. Figure 13 shows that where any triangle contains a valid intersection point, the claimed method "moves the triangle to the deleted Triangle Set, uses deleted Triangle Set to build a polygon," and "uses the polygon to generate triangles."

The specification describes the Watson and Delaunay prior art, in text and drawings to show how they are used

and modified in the subject invention. Dr. Aliaga acknowledged this prior art in his expert declaration, stating: "To be clear, I am familiar with the Delaunay method, which is a known method of triangulation that is mentioned in the patents. . . . And I am also aware of the 'Watson' algorithm for computing a Delaunay triangulation that is described in a 1981 paper by D.F. Watson cited in the patents." Aliaga Decl. ¶ 15.

The claims are properly viewed in light of this knowledge, for this prior art constitutes "extrinsic evidence concerning relevant scientific principles [and] the meaning of technical terms." *Phillips*, 415 F.3d at 1313 (quoting *Innova/Pure Water*, 381 F.3d at 1116). The Court guided in *Nautilus*:

> One must bear in mind, moreover, that patents are "not addressed to lawyers, or even to the public generally," but rather to those skilled in the relevant art. *Carnegie Steel Co. v. Cambria Iron Co.,* 185 U.S. 403, 437 (1902) (also stating that "any description which is sufficient to apprise [steel manufacturers] in the language of the art of the definite feature of the invention, and to serve as a warning to others of what the patent claims as a monopoly, is sufficiently definite to sustain the patent").

572 U.S. at 909. The function of the claims is not to duplicate the specification.

The district court declined to consider information in the specification that was not included in the claims. For example, in rejecting NSS's argument that the modified Watson method is described in the specification, the district court stated:

> NSS points to column 7 of the specification and relies on step 5(a) of column 7 to show the modification of the Watson method. ('961 patent at 7:17–

> 23). This language adds an additional condition: "or last segment passes through the triangle." Again, this language is not contained in the claim language and does not explain the challenged claim language.

Dist. Ct. Op. at 10.

The district court misperceived the function of patent claims; *see In re Vamco Machine & Tool, Inc.*, 752 F.2d 1564 (Fed. Cir. 1985):

> The function of claims is (a) to point out what the invention *is* in such a way as to distinguish it from what was previously known, i.e., from the prior art; and (b) to define the *scope of protection* afforded by the patent. In both of those aspects, claims are not technical descriptions of the disclosed inventions but are legal documents like the descriptions of lands by metes and bounds in a deed which *define the area* conveyed but *do not describe the land*.

Id. at 1577 n.5 (emphases original). As noted in *SRI International v. Matsushita Electric Corp. of Am.*, 775 F.2d 1107, 1121 n.14 (Fed. Cir. 1985): "Specifications teach. Claims claim."

The prosecution history

The prosecution history here is significant, for the patent examiner had initially rejected the claims on the ground of indefiniteness, and the examiner required additional definition in the claim clauses here at issue. For example, the examiner had initially rejected the claims for indefiniteness of the clause "extending intersection lines until they get closed by searching neighboring triangles;" the examiner wrote: "What is causing the closure of the intersection lines? The nexus between 'extending the intersection lines' and 'searching neighboring triangle pairs' is also not clearly set forth." Appl. No. 15/840,052, Official Action (Non-Final Rejection) of Feb. 6, 2018, at 3. The

applicant, in consultation with the examiner, amended this term in claim clause [2], as shown in the prosecution record:

> [2] building intersection lines starting with and ending with searching for the first pair of triangles that hold a start point of an intersection line by detecting whether two minimum bounding boxes overlap and performing edge-triangle intersection calculations for locating an intersection point, ~~extending the intersection lines until they get closed by searching neighboring triangles or all triangles are traversed;~~ then searching neighboring triangles of the last triangle pair that holds the last intersection point to extend the intersection line until the first intersection point is identical to the last intersection point of the intersection line ensuring that the intersection line gets closed or until all triangles are traversed;

Appl. No. 15/840,052, Amend. of Apr. 4, 2018, at 9 (markings in original). With this amendment the examiner withdrew the indefiniteness rejection relating to the intersection lines.

The applicant and the examiner also interacted to amend the term "modified Watson method." An Examiner's Amendment of August 28, 2018 amended claim clause [3] as follows:

> [3] splitting each triangle through which an intersection line passes using modified Watson method, wherein the modified Watson method includes removing duplicate intersection points, identifying positions of end intersection points, and splitting portion of each triangle including an upper portion, a lower portion, and a middle portion;

Appl. No. 15/840,052, Examiner's Amend. in Notice of Allowance, Sept. 18, 2018, at 4–5 (markings in original).

With the agreed amendments, the examiner withdrew the rejections for indefiniteness and allowed the claims. *Id.*

However, the district court rejected the examiner's conclusion as to indefiniteness, the court reciting the initial rejection and the amendment, and stating that this action did not answer "the questions posed by Aliaga":

> The prosecution history does not show how or why the amendment answered the unanswered questions. The prosecution history does not provide a clear reason for the amendment that clarifies the underling ambiguity. The PTO initially rejected Claim 1 as indefinite: "The nexus between 'extending the intersection lines' and 'searching neighboring triangles' is also not clearly set forth. The examiner is not able to ascertain the scope of the claimed invention," (Dkt. 37-1 (Ex. A at page 4).) In response, NSS added the following language: "building intersection lines starting with and ending with . . . calculations for locating an intersection point, then searching neighboring triangles of the last triangle pair that holds the last intersection point to extend the intersection line until the first intersection point is identical to the last intersection point of the intersection line ensuring that the intersection line gets closed or until all triangles are traversed." (*Id.*) This added language does not answer the questions posed by Aliaga.

Dist. Ct. Op. at 19 (ellipses and parentheticals in original).

The district court gave no weight to the prosecution history showing the resolution of indefiniteness by adding the designated technologic limitations to the claims. The court did not discuss the Examiner's Amendment, and held that since Dr. Aliaga's questions were not answered, the claims are invalid.

Actions by PTO examiners are entitled to appropriate deference as official agency actions, for the examiners are deemed to be experienced in the relevant technology as well as the statutory requirements for patentability:

> We presume that an examiner would not introduce an indefinite term into a claim when he/she chooses to amend the claim for the very purpose of putting the application in a condition for allowance.

Tinnus Enters., LLC v. Telebrands Corp., 733 F. App'x 1011, 1020 (Fed. Cir. 2018). *See also PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1304 (Fed. Cir. 2008) (stating that PTO examiners are "assumed to have some expertise in interpreting the references and to be familiar from their work with the level of skill in the art and whose duty it is to issue only valid patents." (quoting *Am. Hoist & Derrick Co. v. Sonra & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984) (overruled on other grounds))).

The Court recognized, in discussing claim definiteness, that:

> The standard we adopt accords with opinions of this Court stating that "the certainty which the law requires in patents is not greater than is reasonable, having regard to their subject-matter." *Minerals Separation, Ltd. v. Hyde*, 242 U.S. 261, 270 (1916).

Nautilus, 572 U.S. at 910.

The subject matter herein is an improvement on the known Watson and Delaunay methods, and partakes of known usages for established technologies. Precedent teaches that when "the general approach was sufficiently well established in the art and referenced in the patent" this "render[ed] the claims not indefinite." *Presidio Components, Inc. v. Am. Tech. Ceramics Corp.*, 875 F.3d 1369, 1377 (Fed. Cir. 2017). The situation here is analogous, for the 1981 Watson method and the Delaunay method were

known in the art. It is not disputed that the specification describes and enables practice of the claimed method, including the best mode. The claims, as amended during prosecution, were held by the examiner to distinguish the claimed method from the prior art and to define the scope of the patented subject matter. The district court made no contrary findings. Indefiniteness under 35 U.S.C. § 112 was not established as a matter of law.

CONCLUSION

The district court's decision is reversed. We remand for further proceedings.

REVERSED AND REMANDED

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DYK, *Circuit Judge*, dissenting.

Contrary to the majority, I think that the asserted claims are invalid because they are indefinite. The fact that a patent examiner introduced the indefinite language does not absolve the claims from the requirements of 35 U.S.C. § 112. I respectfully dissent.

The majority faults the district court for applying an incorrect "unanswered questions" standard, Maj. Op. 9, but this is not the district court's decision. In a detailed and thorough analysis, the district court read the patent's claims in light of the specification to determine if it would inform those skilled in the art about the scope of the invention with reasonable certainty, which is exactly what is required under *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572

U.S. 898, 910 (2014). Regardless, the question of definiteness is a legal question which we review de novo, and the majority's legal conclusion is, in my view, manifestly incorrect.

The field of art here, computer-aided design, is unusually complex, involving methods of using computer systems to build geometric objects. The patents purport to improve on two established methods of computer-aided design: constructive solid geometry, which combines simple objects using Boolean operations (e.g., intersection, combination, exclusion) to build complex objects, and boundary representation, which represents three-dimensional objects by defining their surfaces as meshes of two-dimensional objects.

Claim 1 of U.S. Patent No. 10,120,961 ("the '961 patent") claims:

> 1. A method that performs immediate Boolean operations using geometric facets of geometric objects implemented in a computer system and operating with a computer, the method comprising:
>
> mapping rendering facets to extended triangles that contain neighbors;
>
> building intersection lines starting with and ending with searching for the first pair of triangles that hold a start point of an intersection line by detecting whether two minimum bounding boxes overlap and performing edge-triangle intersection calculations for locating an intersection point, then searching neighboring triangles of the last triangle pair that holds the last intersection point to extend the intersection line until the first intersection point is identical to the last intersection point of the intersection line ensuring that the intersection line

> gets closed or until all triangles are traversed;
>
> splitting each triangle through which an intersection line passes using modified Watson method, wherein the modified Watson method includes removing duplicate intersection points, identifying positions of end intersection points, and splitting portion of each triangle including an upper portion, a lower portion, and a middle portion . . . .

'961 patent, col. 9, ll. 17–40; *see also* U.S. Patent No. 10,109,105, col. 8, l. 47–col. 9, l. 3. (emphasis added). The indefiniteness issue concerns the underscored language.

There is no dispute that the term "modified Watson method" does not have, and did not have at the time the patents were issued, an ordinary and customary meaning to a person of ordinary skill in the art. The majority finds that Figures 12 and 13 of each patent define the "modified Watson method." Maj. Op. 11–12 ("The specification describes the Watson and Delaunay prior art, in text and drawings to show how they are used and modified in the subject invention."). Figures 12A through 12H of the patents at issue "show a Delaunay mesh sequence in which each intersection point is inserted into the mesh step by step," while Figure 13 "is the flowchart of Delaunay mesh modified Watson method that created the sequence of [Figures] 12A through 12H." '961 patent, col. 3, ll. 36–41.

The problem with the majority's definition is that it ignores the claim language. As the district court found, J.A. 9–10, and Nature concedes, Nature Reply Br. 6, claim 1 adds limitations not found in Figures 12A–H or 13: "removing duplicate intersection points, identifying positions of end intersection points, and splitting portion of each triangle including an upper portion, a lower portion, and a middle portion." Thus, the majority's definition of "modified

Watson method" in claim 1 is inconsistent with the claim itself: the majority looks to figures 12 and 13 to find the "modified Watson method" but those figures do not include the additional limitations which are expressly required by the claim language. Even more significant, nothing in the patent specification defines what these additional limitations mean. The only expert evidence on these limitations in the record is by Autodesk's expert, who testified without contradiction that these limitations are "not describe[d]" in the patent, "ambiguous" and "unclear," and "inconsistent with" Figure 13 and the accompanying text. J.A. 54–56.

The majority simply does not address this problem, instead relying on the fact that these limitations were suggested by the patent examiner. The majority holds that "[a]ctions by PTO examiners are entitled to appropriate deference" because examiners are "deemed to be experienced in the relevant technology as well as the statutory requirements for patentability." Maj. Op. 16. But the test for definiteness is whether the claims "inform those skilled in the art about the scope of the invention with reasonable certainty," *Nautilus*, 572 U.S. at 910, not whether the claim language was added by a patent examiner or was not indefinite to the examiner. There is no reasonable basis in the claims or specification for the majority's decision. I respectfully dissent.