NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

LEXINGTON LUMINANCE LLC,
Plaintiff-Appellant

v.

AMAZON.COM INC.,
AMAZON DIGITAL SERVICES, INC.,
Defendants-Appellees

2014-1384

Appeal from the United States District Court for the District of Massachusetts in No. 1:12-cv-12216-DJC, Judge Denise J. Casper.

Decided: February 9, 2015

ROBERT D. KATZ, Katz PLLC, Dallas, Texas, argued for plaintiff-appellant. Also represented by DAVID S. GODKIN, Birnbaum & Godkin, LLP, Boston, MA.

MICHAEL J. MCKEON, Fish & Richardson P.C., Washington, DC, argued for defendants-appellees. Also represented by ROBERT P. COURTNEY, Minneapolis, MN; KURT LOUIS GLITZENSTEIN, Boston, MA; INDRANIL MUKERJI,

Washington, DC; JEFFREY H. DEAN, Amazon.com Inc., Seattle, WA.

Before LOURIE, CHEN, and HUGHES, *Circuit Judges.*

LOURIE, *Circuit Judge.*

Lexington Luminance LLC ("Lexington") appeals from the decision of the United States District Court for the District of Massachusetts construing claim 1 of U.S. Patent 6,936,851 B2 (the "'851 patent") and granting judgment on the pleadings that the claim was indefinite. *See Lexington Luminance LLC v. Amazon.com Inc.*, 6 F. Supp. 3d 179 (D. Mass. 2014) ("*Opinion*"). Because we conclude that the district court erred in construing the claim and in holding the claim indefinite, we *vacate* the judgment of invalidity and *remand*.

BACKGROUND

Lexington owns the '851 patent relating to "the fabrication of semiconductor devices such as light-emitting devices in misfit systems." '851 patent col. 1 ll. 8–10. The '851 patent's specification explains that, in certain light-emitting devices, multiple layers of crystalline semiconductor material are grown on a crystalline substrate that has different crystal lattice constants. *Id.* col. 1 l. 17–col. 2 l. 9. The crystal lattices of the substrate and the adjacent semiconductor layer do not align perfectly, leading to lattice defects that can propagate in a direction perpendicular to the surface of the substrate through the semiconductor layers into the light-emitting active layer. *Id.*

Addressing this problem, the '851 patent teaches using a substrate that has a "textured surface district" in order to direct lattice defects to the sides and to reduce the defect density in the active layer. *Id.* col. 2 ll. 12–26. The textured district is fabricated "using conventional lithographic methods, followed by thermal anneal to

smooth out sharp corners and etching defects." *Id.* col. 2 ll. 27–34. The patent describes the textured district as comprising "a plurality of etched features such as trenches and mesa having a smooth rotation of micro-facets," *id.* col. 3 ll. 33–46, and also describes the surface features as "stripe or mesa," *id.* col. 2 ll. 30–32, col. 3 ll. 47–50. The patent provides several cross-sectional views of the etched features in its figures, including Figures 1C, 2A, and 2B.

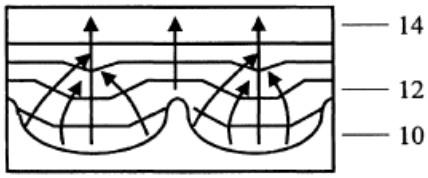

Fig. 1C

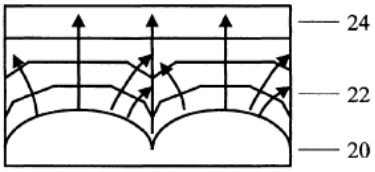

Fig. 2A

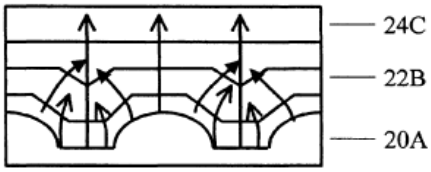

Fig. 2B

Id. figs. 1C, 2A, 2B.

Claim 1 is at issue and reads as follows:

1. A semiconductor light-emitting device comprising:

   a substrate;

   a textured district defined on the surface, of said substrate comprising a plurality of etched *trenches having a sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination*;

   a first layer disposed on said textured district; comprising a plurality of inclined lower portions so as to guide *the extended lattice defects* away from propagating into the active layer,

> said first layer and said substrate form a lattice-mismatched misfit system, *said substrate is selected from the group comprising* group III-V, group IV, group II-VI elements and alloys, ZnO, spinel and sapphire; and
>
> a light-emitting structure containing an active layer disposed on said first layer.

Id. col. 8 ll. 36–52 (emphases added).

In 2012, Lexington sued Amazon.com Inc. and Amazon Digital Services, Inc. (collectively, "Amazon"), alleging that Amazon's Kindle e-readers infringed claim 1 of the '851 patent. *Opinion*, 6 F. Supp. 3d at 184–85. Amazon moved for judgment on the pleadings, urging that the claim was indefinite. The parties concurrently filed claim construction briefs. After a hearing, the district court issued an order in which it construed the claim and granted Amazon's motion. *Id.* at 185–90, 195.

The district court construed "trenches having a sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination" as follows: (1) the word "trenches" means "depressions bounded on the sides and bottom and open at the top"; (2) the word "having" means "consisting of"; (3) "micro-facets" means "very small planar crystal surfaces"; (4) "sloped etching profile with a smooth rotation of micro-facets" means "when viewed in cross-section, the side and bottom walls of the etched trenches are made up of micro-facets with a gradual, incremental rotation in slope from micro-facet to micro-facet such that there are no sharp corners"; and (5) "sloped etching profile . . . without a prescribed angle of inclination" means "when viewed in cross-section, the side and bottom walls of the etched trenches have no constant angle of inclination, and so they have no linear portions." *Id.* at 185–90.

In construing the claim, the district court rejected Lexington's proposed construction of "trenches" based on the '851 patent's disclosure that the substrate surface features can be mesas. The court noted that "[a]n aerial view of 'mesa' . . . does not appear in the specification," and adopted an ordinary meaning construction based on the definitions of "trench" in general-purpose dictionaries. *Id.* at 186. The district court also rejected Lexington's proposed constructions of "having" and "sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination," which would encompass the embodiments disclosed in Figures 2B and 4B, in which the surface features are spaced by areas of a flat bottom. *Id.* at 187–90. The court reasoned that "a flat bottom is inconsistent with the purpose of the invention," which is "to guide the lattice defects away from the active layer," because "a proportionately higher amount of . . . defects would propagate directly up at a 90 degree angle" to the active layer. *Id.* at 187, 189. The court also reasoned that the claim language required the trenches to have no sharp corners or linear portions and it thus mandated the exclusion of the embodiments disclosed in Figures 2B and 4B. *Id.* at 189.

The district court next considered Amazon's motion for judgment on the pleadings in which Amazon alleged that claim 1 was indefinite on two grounds. Amazon first argued that the expression "so as to guide *the* extended lattice defects away from propagating into the active layer" rendered the claim indefinite because the claim failed to specify *which* extended lattice defects were guided away. *Id.* at 191. The court, however, reasoned that "it is clear that the goal of the invention is to 'reduce' the number of lattice defects" and held that the claim was not indefinite for not specifying "exactly how many defects [were] reduced." *Id.* at 191–92. The court then construed the term to mean "such that free propagation of extended lattice defects into the active layer is significantly reduced

relative to a device made by the same process without the textured districts." *Id.* at 192.

Amazon also argued that the claim was indefinite in its use of the phrase "said substrate is *selected from the group comprising* group III-V, group IV, group II-VI elements and alloys, ZnO, spinel and sapphire." The district court granted Amazon's motion on that ground. *Id.* at 192–95. Specifically, the court concluded that the phrase at issue constituted a *Markush* group. *Id.* at 193. The court then reasoned that a *Markush* group using the term "comprising" instead of "consisting of" was not closed, *id.*, and thus the substrate may be one of the enumerated elements or alloys, but may also be an indeterminate number of other elements or alloys, *id.* at 194. The court thus concluded that the claim was indefinite because it "fail[ed] to narrow down the composition of the claimed substrate to any degree of substantial certainty." *Id.* (citing M.P.E.P. § 2173.05(h) (*Markush* groups)).

In March 2014, the district court entered final judgment of invalidity, and Lexington timely appealed to this court. We have jurisdiction under 28 U.S.C. § 1295(a)(1).[1]

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[1] In 2013, while the action was pending at the district court, a third party requested *ex parte* reexamination of the '851 patent, which the United States Patent and Trademark Office ("PTO") granted. During reexamination, Lexington amended the two limitations of claim 1 that Amazon asserted to be indefinite, even though the PTO did not reject the claim as indefinite. In December 2014, the PTO issued a reexamination certificate, affirming the patentability of the amended claim 1. U.S. Patent 6,936,851 C1. Amazon argues that this appeal then became moot. We disagree. While it is true that the originally issued claim 1, which the district court invalidated, may no longer exist, the PTO has affirmed the

DISCUSSION

I. Indefiniteness

We apply regional circuit law, here the law of the First Circuit, when reviewing a district court's grant of a motion for judgment on the pleadings. *Merck & Co. v. Hi-Tech Pharmacal Co.*, 482 F.3d 1317, 1320 (Fed. Cir. 2007). The First Circuit reviews a district court's grant of judgment on the pleadings *de novo*. *Pérez-Acevedo v. Rivero-Cubano*, 520 F.3d 26, 29 (1st Cir. 2008). "A motion for judgment on the pleadings is treated much like a Rule 12(b)(6) motion to dismiss." *Id.* To survive a motion for judgment on the pleadings, the pleadings must contain factual allegations that raise a right to relief above the speculative level. *Id.*

Indefiniteness is a question of law that we review *de novo*. *Interval Licensing LLC, v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014).[2] A patent must "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant

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patentability of the amended claim 1. If, and as indicated herein, the district court erroneously invalidated the original claim, then on remand Lexington may be entitled to past damages for infringement of the original claim, absent a finding of intervening rights or a judgment of noninfringement or invalidity on other grounds. Accordingly, an actual controversy based on the originally issued claim still exists, and the parties maintain a legally cognizable interest in the outcome of this appeal. *See Already, LLC v. Nike, Inc.*, 568 U.S. __, 133 S. Ct. 721, 726–27 (2013). We therefore conclude that the appeal is not moot.

[2] We also note that the district court's indefiniteness determination here was based on the pleadings and the attached '851 patent.

regards as his invention." 35 U.S.C. § 112, ¶ 2 (2006).[3] A patent claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, "fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. __, 134 S. Ct. 2120, 2124 (2014). Patents are presumed to be valid and the burden of establishing invalidity rests on the challenger. 35 U.S.C. § 282; *Nautilus*, 134 S. Ct. at 2130 n.10.

We first consider the district court's conclusion that the claim was indefinite in its use of the phrase "said substrate is *selected from the group comprising* group III-V, group IV, group II-VI elements and alloys, ZnO, spinel and sapphire." Lexington argues that the court erred in construing the phrase as a *Markush* group that is not limited to the enumerated members. According to Lexington, the phrase means that the substrate must contain one or more of the enumerated members. Lexington argues that this construction is consistent with the specification and narrower than the construction adopted by the court, and thus does not unfairly expand the claim scope. Lexington also argues that the court erred in not evaluating definiteness from the perspective of those skilled in the art.

Amazon responds that the claim uses the *Markush* group claiming technique, but recites a group not limited

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[3] Paragraph 2 of 35 U.S.C. § 112 has been replaced with newly designated § 112(b) when the Leahy-Smith America Invents Act ("AIA") took effect, and the AIA makes the change applicable "to any patent application that is filed on or after" September 16, 2012. Pub. L. No. 112-29, § 4(c), (e), 125 Stat. 284, 296–97 (2011). Because the application resulting in the '851 patent was filed before that date, we refer here to the pre-AIA version of § 112.

to the enumerated members because it uses "comprising" to modify the preceding word "group," rather than "consisting of," the usual terminology in *Markush* practice. Amazon argues that the claim lacks boundaries because the substrate can be one of those enumerated members or any other material. Amazon responds that Lexington failed to proffer evidence of the understanding of those skilled in the art and, moreover, the record is bereft of any indication that a skilled artisan would disagree with the court's conclusion.

We conclude that the district court erred in holding the claim indefinite in reciting an open *Markush* group. The issue before us on review from the district court is whether the claim is indefinite, not whether it recites an "improper" *Markush* group. A *Markush* group is commonly used in certain areas of patent practice to indicate with definiteness that a claim limitation is "selected from the group consisting of . . . ," meaning only those recited members of the group. *Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1372 (Fed. Cir. 2005); *Abbott Labs. v. Baxter Pharm. Prods., Inc.*, 334 F.3d 1274, 1280 (Fed. Cir. 2003). It is the job of the Patent and Trademark Office to ensure, on examination, that a claim is definite and that, when a *Markush* expression is used, it is used properly. But that is not our task in reviewing a claim that has been held to be indefinite. Our task involves determining the definiteness of a claim, *i.e.*, whether the district court erred in finding the claim to be indefinite, not evaluating the propriety of *Markush* language.

Definiteness involves more than an examination of the technical correctness of the use of a *Markush* expression that may have slipped past the examining process. It involves evaluation of the claim in light of the written description. Here, the written description provides a clear description of the substrates that are part of the claim. '851 patent col. 3 ll. 52–54 ("Exemplary substrates include GaAs, InP, spinel, sapphire, GaN, GaN-on-sapphire,

GaAs, Si, Si-on-insulator, SiC, SiC-on-Si."). The intrinsic record is reasonably definite in indicating what the claim covers because the specification lays out a considerable list of exemplary substrates that correspond to the materials specified in the claim and combinations thereof, *see id.* (listing GaN-on-sapphire and SiC-on-Si as exemplary substrates). We therefore conclude that the reasonably ascertainable meaning of the contested claim language is that the substrate must contain one or more of the enumerated members of the claimed group.

While other "improper" *Markush* usage in other patents may not pass the definiteness test, depending upon what else is in the record, the written description here provides support for the claim to satisfy the test for definiteness that the Supreme Court laid out in *Nautilus*, that is, that the claim, in light of the specification, informs one skilled in the art, with reasonable certainty, of the scope of the invention. *Nautilus*, 134 S. Ct. at 2124. We therefore hold that the district court erred in finding the claim to be indefinite because of the imperfect usage of *Markush* terminology.

We also note that the substrate that is described in the contested language is not the essence of the invention that is being claimed. The claim is particularly directed to a textured district having trenches with a sloped etching profile. A person skilled in the art would therefore reasonably ascertain the scope of the invention in view of the intrinsic record.

As an additional argument for affirming the invalidity judgment, Amazon contends that the district court erred in not invalidating the claim for indefiniteness based on the expression "so as to guide *the* extended lattice defects away from propagating into the active layer." The essence of Amazon's contention is that the word "the" has no antecedent. We have considered Amazon's arguments on that point but find them unpersuasive. As the district

court correctly noted, the specification explains that "the goal of the invention is to 'reduce' the number of lattice defects." *Opinion*, 6 F. Supp. 3d at 191–92. The contested claim language specifies the intended function or purpose of the claimed structure. It thus applies wherever the function or purpose requires. We therefore agree with the district court that the claim is not indefinite for not specifying "exactly how many defects [were] reduced." *Id.* Accordingly, we affirm the district court's decision not to invalidate the claim on that basis.

Moreover, we vacate the district court's construction of the limitation "so as to guide the extended lattice defects away from propagating into the active layer." Both parties focused their arguments to the district court on whether this limitation was definite. After determining that the limitation was definite, and without performing its own analysis of the proper construction of the limitation, the district court simply adopted the construction of another district court.[4] On remand, the district court may construe this limitation or, as both parties initially proposed, determine that no construction is necessary.

For the foregoing reasons, we conclude that claim 1 of the '851 patent is not invalid for indefiniteness and vacate the judgment of invalidity.

II. Claim Construction

The district court construed "trenches having a sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination" as five separate limitations: (1) trenches, (2) having, (3) micro-facets,

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[4] The district court was not required to adopt the construction of another district court under principles of collateral estoppel because there the parties settled the dispute before a final judgment was entered.

(4) sloped etching profile with a smooth rotation of microfacets, and (5) sloped etching profile . . . without a prescribed angle of inclination. On appeal, Lexington challenges all five constructions. Amazon asks us to decline review because those constructions are unrelated to the invalidity judgment. In the alterative, Amazon argues that those constructions should generally be affirmed.

Under our precedent, we have the discretion to review a non-dispositive claim construction in the interest of judicial economy, if the construction may become important on remand. *Interval Licensing*, 766 F.3d at 1376 (citing *Deere & Co. v. Bush Hog, LLC*, 603 F.3d 1349, 1357 (Fed. Cir. 2012); *Advanced Software Design Corp. v. Fiserv, Inc.*, 641 F.3d 1368, 1378 (Fed. Cir. 2011)). Because we now vacate the invalidity judgment and remand for further proceedings at the district court, we address the claim construction issues raised by the parties.[5]

In this case, we review the district court's claim constructions *de novo*, because the intrinsic record fully determines the proper constructions and the district court's constructions were not based on expert testimony. *See Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. __,

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[5] The joint appendix and arguments before us do not include the prosecution history of the reexamination proceeding. We leave it to the district court to determine whether the meanings of the disputed claim limitations have been altered by the reexamination history. Moreover, on remand, the district court may supplement its claim constructions consistent with the controlling appellate mandates as the case moves forward. *See Jack Guttman, Inc. v. Kopykake Enters., Inc.*, 302 F.3d 1352, 1361 (Fed. Cir. 2002) ("District courts may engage in a rolling claim construction, in which the court revisits and alters its interpretation of the claim terms as its understanding of the technology evolves.").

135 S. Ct. 831, 840–42 (2015). A patent is a fully integrated written instrument and the claims must be read in view of the specification, of which they are a part. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc). A court should also consult the patent's prosecution history, which can provide further evidence of how the inventor understood the claimed invention. *Id.* at 1317. Extrinsic evidence, including dictionaries, can at times shed useful light on the relevant art; but extrinsic evidence is less significant than the intrinsic record in determining the meaning of claim language. *Id.*

The district court construed "trenches" as "depressions bounded on the sides and bottom and open at the top." *Opinion*, 6 F. Supp. 3d at 187. Lexington argues that the district court erred by construing "trenches" based on general-purpose dictionaries and that the court's construction is inconsistent with "mesas" described in the specification. According to Lexington, "trenches" has a special meaning in the semiconductor art as three-dimensional areas that are removed from the surface of the substrate. Amazon responds that the construction is largely consistent with the plain and ordinary meaning of "trench." Amazon nonetheless asks us to modify the construction by requiring the claimed trenches to be "generally elongated."

We agree with Lexington that the district court erred by adopting a construction based on general-purpose dictionaries that is inconsistent with the intrinsic record. *Phillips*, 415 F.3d at 1316 ("A construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction."). "Trenches" as described in the '851 patent are not necessarily "bounded on the sides and bottom and open at the top." According to the '851 patent, trenches are formed by etching away certain material from the surface of the substrate, leaving behind three-dimensional surface features, which the patent describes

in the alternative as "stripe" *or* "mesa." *See, e.g.*, '851 patent col. 2 ll. 30–32, col. 3 ll. 47–50. Moreover, the patent describes "trenches" *and* "mesa" in the conjunctive, *id.* at col. 3 ll. 35–37, 62–65, col. 4 ll. 5–13, col. 5 ll. 41–44, suggesting that "trenches" and "mesa" are complementary to each other as, respectively, areas removed and areas retained after a given etching process. When the surface features are island-shaped mesas, rather than elongated stripes, the corresponding trenches are not necessarily "bounded" on the sides and bottom.

We therefore hold that the district court erred in construing "trenches." We adopt Lexington's proposed construction that "trenches" means "areas in the surface of the substrate from which some amount of material is removed in order to create a pattern on the surface of the substrate." They are not necessarily elongated.

The district court construed "having" as "consisting of." *Opinion*, 6 F. Supp. 3d at 188. Under that construction, the claimed trenches consist entirely and exclusively of a "sloped etching profile" and cannot have a flat bottom. Lexington argues that the district court's construction incorrectly excludes the embodiments disclosed in Figures 2B and 4B, which have areas with a flat bottom in addition to a "sloped etching profile." Amazon responds that the flat bottom shown in Figures 2B and 4B cannot be reconciled with the claim language "etched trenches having a sloped etching profile *with a smooth rotation of micro-facets without a prescribed angle of inclination*," and thus that the claim language requires the exclusion of those disclosed embodiments.

We agree with Lexington that the district court erred in construing the claim to exclude the embodiments disclosed in Figures 2B and 4B because the claim language does not require the exclusion of those embodiments and there is no basis in the specification or prosecution history of the '851 patent for doing so. It is

true that the claim includes the phrase "with a smooth rotation of micro-facets without a prescribed angle of inclination," but that phrase modifies the "sloped etching profile" rather than "trenches." Accordingly, the claimed trenches can have, in addition to sloped areas, areas of a flat bottom as well as corners where the flat bottom and the inclined slope intersect with each other, as shown in Figures 2B and 4B.

As we have stated, constructions that exclude disclosed embodiments without a clear justification are disfavored. *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1324 (Fed. Cir. 2011). Here, the district court erroneously concluded that the embodiment disclosed in Figure 2B conflicts with the purpose of the invention, *Opinion*, 6 F. Supp. 3d at 187, when in fact the specification describes Figure 2B as accomplishing "results [that] are similar" to Figure 2A and that "[t]he defect level is much reduced." '851 patent col. 5 ll. 16–20.

The district court construed "micro-facets" as "very small planar crystal surfaces," *Opinion*, 6 F. Supp. 3d at 188; "sloped etching profile with a smooth rotation of micro-facets" as "when viewed in cross-section, the side and bottom walls of the etched trenches are made up of micro-facets with a gradual, incremental rotation in slope from micro-facet to micro-facet such that there are no sharp corners," *id.* at 189; and "sloped etching profile . . . without a prescribed angle of inclination" as "when viewed in cross-section, the side and bottom walls of the etched trenches have no constant angle of inclination, and so they have no linear portions," *id.* at 190. Lexington challenges each of those constructions on appeal.

On this record, we find no error in the district court's construction of "micro-facet." However, the district court's constructions of "sloped etching profile with a smooth rotation of micro-facets" and "sloped etching profile . . . without a prescribed angle of inclination" require the side

and bottom walls of the etched *trenches* (not just the sloped portions of the trenches) to have no sharp corners or linear portions, which in effect excludes the embodiments disclosed in Figures 2B and 4B. As indicated, such constructions are inconsistent with the intrinsic record. We therefore vacate the district court's constructions of "sloped etching profile with a smooth rotation of micro-facets" and "sloped etching profile . . . without a prescribed angle of inclination" and remand for the district court to construe those limitations in a manner that does not exclude Figures 2B and 4B, consistent with this opinion.

CONCLUSION

Because the district court erred in granting judgment on the pleadings that claim 1 of the '851 patent was indefinite and in construing certain claim limitations in the phrase "trenches having a sloped etching profile with a smooth rotation of micro-facets without a prescribed angle of inclination," we vacate the judgment of invalidity and remand the case to the district court for further proceedings consistent with this opinion.

VACATED AND REMANDED

COSTS

Costs to Lexington.