

United States Court of Appeals for the Federal Circuit

99-1259

(Interference No. 102,728)

ARJUN SINGH,

Appellant,

v.

ANTHONY J. BRAKE,

Appellee.

Steven B. Kelber, Long Aldridge & Norman, LLP, of Washington, DC, argued for appellant. With him on the brief was Sharon E. Crane.

Debra A. Shetka, Morrison & Foerster, LLP, of Palo Alto, California, argued for appellee. With her on the brief were Thomas E. Ciotti, and Catherine M. Polizzi; and Rachel Krevans, of San Francisco, California. Of counsel on the brief were Robert P. Blackburn, and Joseph H. Guth, Chiron Corporation, of Emeryville, California.

Appealed from: Patent and Trademark Office
Board of Patent Appeals and Interferences

United States Court of Appeals for the Federal Circuit

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(Interference No. 102,728)

Arjun Singh,

Appellant,

v.

anthony J. brake,

Appellee.

DECIDED: August 4, 2000

Before LOURIE, SCHALL, and GAJARSA, Circuit Judges.

Opinion for the court filed by Circuit Judge LOURIE. Opinion concurring in the judgment filed by Circuit Judge GAJARSA.

Arjun Singh appeals from the judgment of the United States Patent and Trademark Office Board of Patent Appeals and Interferences awarding priority of invention to Anthony J. Brake. See Singh v. Brake, Paper No. 164 (BPAI May 11, 1998). Because certain of the Board's key findings underlying its conclusion that Singh failed to prove conception of the subject matter of the interference prior to the effective filing date of Brake were unsupported by substantial evidence, we vacate and remand. Because the Board did not address whether Brake's earliest application adequately described and enabled the disputed subject matter as required by 35 U.S.C. § 112, ¶ 1, we remand for determination of those issues as well.

BACKGROUND

Singh and Brake are parties to an interference consisting of a count corresponding to all thirty-seven claims of Brake's U.S. Patent 4,870,008 (hereinafter

"Brake 2"), entitled "Secretory Expression in Eukaryotes," and claims 8 and 19-21 of Singh's application Ser. No. 07/552,719, entitled "Use of Alpha Factor Sequences in Yeast Expression Systems." The count, which is identical to claim 1 of Brake 2, reads as follows:

1. A DNA construct comprising a sequence of the following formula:

$$5' \text{--} L \text{--} S \text{--} \text{Gene}^* \text{--} 3'$$

where:

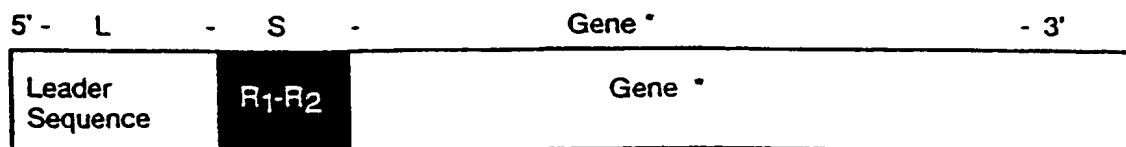
L encodes a *Saccharomyces* alpha-factor leader sequence recognized by a yeast host for secretion;

S encodes a spacer sequence providing processing signals resulting in the enzymatic processing by said yeast host of a precursor polypeptide encoded by L--S--Gene* into the polypeptide encoded by Gene*, S containing the sequence 5'--R₁--R₂--3' immediately adjacent to the sequence Gene*, R₁ being a codon for lysine or arginine, R₂ being [a] codon for arginine, with the proviso that S not contain the sequence 5'--R₃--R₄--X--3', where R₃ = R₁, R₄ = R₂, and X encodes a processing signal for dipeptidylaminopeptidase A; and

Gene* encodes a polypeptide foreign to *Saccharomyces*.

Paper No. 164 at 2-3.

As indicated by the count, the claimed DNA construct is comprised of three basic components: (1) DNA encoding an alpha-factor "leader sequence" (L) that directs a yeast cell to export the protein attached to it; (2) a spacer (S) containing a first codon R₁, that encodes lysine or arginine, followed by a second codon R₂, that encodes arginine; and (3) a gene (Gene*) that is foreign to yeast, that encodes a protein of interest. See '008 patent, col. 2, ll. 11-16, 38-43. The claimed DNA construct is illustrated in the figure below, with shorthand abbreviations of the three components depicted above the three-box diagram:



After the DNA construct has been introduced into the yeast cell, e.g., via a plasmid vector, the cell translates the construct, yielding nascent protein ("protein construct"). The sequence of the protein construct, like the DNA encoding it, is divided into three regions: the 83-amino acid sequence of the alpha-factor leader, the Lysine-Arginine or Arginine-Arginine two-amino acid spacer, and the amino acid sequence of the protein of interest ("gene product").

The leader sequence functions to target the protein construct for secretion from the yeast cell. During secretion, the yeast enzyme KEX-2 recognizes the Lysine-Arginine or

Arginine-Arginine spacer sequence in the protein construct and cleaves it at the junction between the spacer and the gene product. As a result, the desired gene product is released into the extracellular medium, free of the leader and spacer portions of the protein construct. See Paper No. 164 at 2. Because the yeast cell exports rather than retains the desired protein, protein purification is considerably simplified. See id.

In the course of Singh's attempts to design the claimed DNA construct in August 1982, he prepared plasmid p57, a circular DNA molecule containing the alpha-factor leader sequence and a spacer sequence directly adjacent to it. See Singh Decl. ¶ 21. During that same month, Singh incorporated the gene for human protein interferon D ("IFN-D") into p57, thereby yielding plasmid p58. See id. In p58, the gene was also positioned adjacent to the spacer sequence, such that the leader, spacer, and gene sequences were all oriented in a fashion identical to the claimed construct. From September 6 to 11, 1982, Singh's assistant, Dr. June Lugovoy, isolated the DNA segment from p58 containing the alpha-factor leader, spacer, and IFN-D sequence, and inserted that segment (hereinafter "the p60 DNA construct") into yeast plasmid YEp9PT ("p60"). See id. ¶ 26. Plasmid p60 was then introduced into yeast cells to determine whether the p60 DNA construct would generate IFN-D. See id. ¶ 27.

On October 1, 1982, protein sequencing chemist Bill Kohr informed Singh that the IFN-D expressed by yeast cells transformed with p60 contained eight additional amino acids not normally present in natural IFN-D. See id. ¶ 33. On approximately that same date, Singh alleges that he conceived the claimed DNA construct, *i.e.*, he devised a plan to redesign the p60 DNA construct in order to obtain the desired gene product, IFN-D, free of those additional amino acids. See id. ¶ 34. Specifically, Singh claims that he realized that he would need to remove eight unwanted codons (twenty-four nucleotides) from the p60 DNA construct, and that he planned to accomplish this deletion by use of a technique known as "loop deletion mutagenesis."

On November 24, 1982, Singh wrote a laboratory notebook entry setting forth the undesired eight codons in the p60 DNA construct, as well as the twelve nucleotides on either side of that eight codon segment (the "flanking sequences"). See J.A. at 1380; Singh Decl. ¶ 45. On that date, Singh also ordered a linear, 24-nucleotide sequence (a "24-mer") that comprised the nucleotides of the flanking sequences. This order was canceled on the same day, and a notation in Singh's laboratory notebook stated that Singh would perform the deletion experiment in a different way "without changing codons." Id. On December 1, 1982, Singh ordered another 24-mer for the deletion experiment. This 24-mer was precisely complementary to the flanking sequences set forth in the November 24 entry. See J.A. at 1398; Singh Decl. ¶ 47. DNA chemist Peter Ng testified that he synthesized the 24-mer for Singh on December 20, 1982. See Ng Decl. ¶ 11; Ng Dep. at 36. Singh affixed the order into his notebook on December 21, 1982, with a notation "oligonucleotide for making in-frame deletion of α pro-IFN-D junction." J.A. at 1398. Singh alleges that these facts corroborate his testimony that he conceived the claimed DNA construct before January 12, 1983, the filing date of Brake's application Ser. No. 06/457,325 (hereinafter "Brake 1").

Based on their mutual claims to the DNA construct, an interference was declared

between Singh and Brake. The parties filed an array of motions, only two of which are relevant here: Singh's motion to be accorded the benefit of the June 20, 1983 filing date of application Ser. No. 06/506,098, and Brake's motion to be accorded the benefit of the January 12, 1983 filing date of the Brake 1 application. The Administrative Patent Judge ("APJ") granted both motions, rendering Brake the senior party to the interference. See Paper No. 67 at 3-4.

Singh appealed to the Board, requesting reconsideration of the APJ's interlocutory decision that Brake should be accorded the benefit of the Brake 1 application. In its final decision, the Board concluded that the APJ did not abuse his discretion in granting Brake's motion, but did not address Singh's contention that the Brake 1 application did not comply with the written description and enablement requirements of 35 U.S.C. § 112, ¶ 1 and hence that the APJ erred in granting Brake's motion. See Paper No. 164 at 10-11. The Board then turned to Singh's alternative argument that even if the Brake 2 patent is accorded the benefit of the Brake 1 filing date, Singh still prevails because he conceived the claimed subject matter prior to January 12, 1983. After considering all of the evidence in support of Singh's alleged conception, the Board held that Singh failed to prove "that he had formulated a clear and complete picture in his mind of the invention within the scope of Count 1" prior to the Brake 1 filing date. Id. at 29. Accordingly, the Board awarded priority of the subject matter of the count to Brake, concluding that he was entitled to all thirty-seven claims of the Brake 2 patent. See id. at 30.

Singh appealed the Board's decision to this court. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

A. Conception

Singh argues that the Board erred in concluding that he failed to prove conception of the subject matter of the count prior to January 12, 1983, asserting that he provided sufficient corroboration of his testimony of conception under the "rule of reason." Specifically, Singh argues that the combination of the November 24 and December 21, 1982 notebook entries, the December 1, 1982 oligonucleotide order, and the testimony of DNA chemist Ng sufficiently corroborate his conception. Moreover, Singh contends that the fact that there was no use for the 24-mer ordered on December 1 other than to accomplish the desired loop deletion further corroborates his testimony.

Brake responds that the Board considered the totality of the evidence and correctly held that Singh did not prove that he had a definite, permanent idea of the claimed subject matter prior to the Brake 1 filing date. Specifically, Brake argues that Singh's evidence fails to corroborate his declaration under the "rule of reason" because none of Singh's evidence links the December 1 oligonucleotide order to a loop-deletion mutagenesis plan prior to January 12, 1983. Rather, Brake contends that Singh's evidence merely shows that Singh's approach for obtaining the claimed construct was in continual flux prior to January 12. Brake also asserts that Singh failed to prove that the December 1 oligonucleotide had no use other than to accomplish the loop deletion.

Conception is "the formation in the mind of the inventor[] of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice." Kridl v. McCormick, 105 F.3d 1446, 1449, 41 USPQ2d 1686, 1689 (Fed. Cir. 1997) (internal quotation marks omitted). A conception must encompass all limitations of the claimed invention, see id., and "is complete only when the idea is so clearly defined in the inventor's mind that only ordinary skill would be necessary to reduce the invention to practice, without extensive research or experimentation," Burroughs Wellcome Co. v. Barr Lab., Inc., 40 F.3d 1223, 1228, 32 USPQ2d 1915, 1919 (Fed. Cir. 1994).

It is well-established that when a party seeks to prove conception via the oral testimony of a putative inventor, that party must proffer evidence corroborating that testimony. See Mahurkar v. C.R. Bard, Inc., 79 F.3d 1572, 1577, 38 USPQ2d 1288, 1291 (Fed. Cir. 1996); Price v. Symsek, 988 F.2d 1187, 1194, 26 USQP2d 1031, 1036 (Fed. Cir. 1993). This rule addresses the concern that a party claiming inventorship might be tempted to describe his actions in an unjustifiably self-serving manner in order to obtain a patent or to maintain an existing patent. See Kridl, 105 F.3d at 1450, 41 USPQ2d at 1689 ("The tribunal must also bear in mind the purpose of corroboration, which is to prevent fraud, by providing independent confirmation of the inventor's testimony."); Price, 988 F.2d at 1194-95, 26 USQP2d at 1036-37; cf. Eibel Process Co. v. Minnesota & Ont. Paper Co., 261 U.S. 45, 60 (1923). There is no particular formula that an inventor must follow in providing corroboration of his testimony of conception. See Kridl, 105 F.3d at 1450, 41 USPQ2d at 1689. Rather, whether a putative inventor's testimony has been sufficiently corroborated is determined by a "rule of reason" analysis, in which "[a]n evaluation of all pertinent evidence must be made so that a sound determination of the credibility of the inventor's story may be reached." Price, 988 F.2d at 1195, 26 USQP2d at 1037.

Conception is a question of law based on underlying facts. See Eaton v. Evans, 204 F.3d 1094, 1097, 53 USPQ2d 1696, 1698 (Fed. Cir. 2000). We review the Board's legal conclusion without formal deference, see 5 U.S.C. § 706 (1994), and its subsidiary factual findings for substantial evidence, see In re Gartside, 203 F.3d 1305, 1315, 53 USPQ2d 1769, 1775 (Fed. Cir. 2000).

After review of the record evidence in light of the proper legal standards, we conclude that substantial evidence does not support the Board's key finding that no evidence links the nucleotide Singh ordered on December 1, 1982 with a plan to design the claimed construct prior to January 12, 1983. Brake does not dispute that Singh recognized the problem of additional amino acids in the human IFN-D generated by the p60 DNA construct as of October 1, 1982. See Appellee's Br. at 41. As discussed previously, the p60 construct is similar to the claimed DNA construct, except that the p60 DNA construct contained eight unwanted codons. Accordingly, our inquiry focuses on Singh's asserted corroborating evidence as it relates to resolving the problem of removing the unwanted DNA from the p60 DNA construct. See Burroughs, 40 F.3d at 1229-30, 32 USPQ2d at 1921 ("The idea must be definite and permanent in the sense that it involves a specific approach to the particular problem at hand.").

As an initial matter, we conclude that the Board correctly held as a matter of law that Singh failed to prove that he conceived the claimed construct prior to December 1,

1982. In Singh's November 24, 1982 notebook entry, Singh articulated the problem to be solved with considerable specificity, noting: (1) the eight extraneous amino acids present in the IFN-D generated by the p60 DNA construct, (2) the twenty-four unwanted nucleotides that code for those amino acids, with a notation "sequence to be removed," and (3) the twelve nucleotides that are immediately upstream and the twelve nucleotides immediately downstream of that segment, i.e., the flanking segments. See J.A. at 1380. We agree with Brake, however, that substantial evidence supports the Board's finding that this entry alone was insufficient to corroborate Singh's testimony, because while clearly articulating the problem, the entry did not provide the solution. See Paper No. 164 at 22-24. The Board's key findings in this regard, both of which are supported by substantial evidence in the notebook entry itself, are: that a linear 24-mer other than the one necessary to accomplish the deletion was first ordered, and that the order was in any event canceled the same day, with a notation "will do in a different way and w/o changing codons." Id. at 23-24.

However, the Board's crucial finding that no evidence links the 24-mer that Singh ordered on December 1, 1982 with a plan to design the claimed construct by the loop deletion method prior to January 12, 1983 is unsupported by the evidence of record, and is in fact squarely contradicted by the evidence contained in Singh's December 21, 1982 notebook entry. As we noted previously, that entry contains two crucial pieces of evidence: first, a "Synthetic DNA Request" form, dated December 1, 1982, in which Singh requested a 24-mer to carry out the loop deletion experiment, and second, a notation adjacent to the order explaining Singh's intended use for the 24-mer.

As for the 24-mer, the Board makes no mention of the facts that the 24-mer is of precisely the same length and of the precise complementarity needed to accomplish the loop deletion, and thereby obtain the claimed construct; indeed, that oligonucleotide is one of 2.8×10^{14} possible 24-mers that Singh could have ordered. Because the structural/chemical characteristics of the 24-mer were key to accomplishing a successful loop deletion experiment, the order of that nucleotide, by itself, is evidence linking the 24-mer to Singh's plan to obtain the claimed construct. Moreover, the Board completely overlooked Singh's notation adjacent to the DNA request form that clearly specified that the 24-mer was to be used for accomplishing the necessary loop deletion. The notation explicitly stated that the 24-mer was ordered "for making in-frame deletion of α pro-IFN-D junction." J.A. at 1398. Thus, both the properties of the 24-mer itself, and the notation specifying that it would be used to accomplish the loop deletion, undermine the Board's finding that no evidence links the 24-mer ordered on December 1 with Singh's plan to obtain the claimed construct by the loop deletion method prior to January 12, 1983.

Moreover, the Board erred in rejecting Singh's argument that the 24-mer had corroborating value because it had no other "substantial use" than to accomplish the loop deletion. While the Board characterized that argument as "not the proper legal standard," Paper No. 164 at 25, that characterization conflicts with the holding of one of our predecessor courts, albeit in the context of reduction to practice, that when a putative inventor has obtained specific reagents with no "substantial use" other than to make the claimed chemical compound, that evidence is of significant corroborative

value. See Berges v. Gottstein, 618 F.2d 771, 774-75, 205 USPQ 691, 694 (CCPA 1980). This rule applies with equal force in the context of conception, especially when the required reagents involve DNA molecules whose precise sequence is critical and unique to the asserted conception.

In spite of those shortcomings in the Board's analysis, an argument could be made that the content of the notebook entries is entitled to no corroborative weight in any event because the entries were witnessed several years after they were made, thereby rendering those shortcomings harmless. While the witnessing of the laboratory notebooks fell far short of ideal, we do not agree that the belated witnessing undermines all corroborative value that these entries may possess. Under a "rule of reason" analysis, the fact that a notebook entry has not been promptly witnessed does not necessarily disqualify it in serving as corroboration of conception. See Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1378, 231 USPQ 81, 89 (Fed. Cir. 1986) (holding that notebook entries not witnessed until several months to a year after entry did not render them "incredible or necessarily of little corroborative value" under the circumstances and in view of other corroborating evidence). Indeed, Hybritech indicates that in some cases, conception may be proved solely on the basis of laboratory notebook entries witnessed subsequent to their entry. See id. ("The laboratory notebooks, alone, are enough to show clear error in the findings that underlie the holding that the invention was not conceived before May 1980.") (emphasis added).

We also disagree with Brake's contention that Hahn v. Wong nullifies the corroborative value of the laboratory notebook entries. See Hahn v. Wong, 892 F.2d 1028, 1032, 13 USPQ2d 1313, 1317 (Fed. Cir. 1989) (stating that an inventor "must provide independent corroborating evidence in addition to his own statements and documents"). That case dealt with the standard of proof required to corroborate a reduction to practice, a more stringent standard than that required to corroborate a conception. See Mikus v. Wachtel, 542 F.2d 1157, 1161, 191 USPQ 571, 575 (CCPA 1976) (holding that an invention record, based on an unwitnessed laboratory notebook and results performed by technicians unaware of what they were testing, may provide sufficient evidence of conception but not reduction to practice under the rule of reason). Indeed, a notebook page may well show that the inventor conceived what he wrote on the page, whereas it may not show that the experiments were actually performed, as required for a reduction to practice. Compare Hybritech, 802 F.2d at 1378, 231 USPQ at 89 (indicating that an inventor's belatedly witnessed laboratory notebooks may alone be adequate to corroborate his testimony of conception) with Gortatowsky v. Anwar, 442 F.2d 970, 972, 170 USPQ 41, 43 (CCPA 1971) (holding that an inventor's laboratory notebook that was neither read nor witnessed and kept with suspect chronology could not provide the requisite corroboration for a reduction to practice).

In view of key facts contained in the December 21 notebook entry, we conclude that substantial evidence does not support the Board's express finding that no evidence links the nucleotide Singh ordered on December 1 with a plan to design the claimed construct by the loop deletion method prior to January 12, 1983. We further conclude that the Board erred in rejecting Singh's argument that the 24-mer ordered on December 1 had corroborating value because it had no other "substantial use" than to

obtain the claimed construct. We therefore vacate the Board's conception holding and remand for it to consider the evidence in the December 21 entry, to reconsider Singh's "substantial use" argument, and to reevaluate the totality of the corroborative evidence on remand. We have carefully considered Brake's other conception-related arguments but find them unpersuasive.

B. Written Description and Enablement

Singh also argues that the Board erred in concluding that Brake is entitled to the benefit of the filing date of Brake 1, asserting that the Brake 1 application fails to provide an adequate written description or enabling disclosure of the subject matter of the count. With regard to the written description requirement, Singh contends that Brake did not have possession of that subject matter, because Brake 1 describes a large genus of compounds and perhaps other species and subgenera, but not the particular subgenus ($n = 0$) within that genus. Singh asserts that no "blazemarks" in Brake 1 lead a person of skill in the art to the $n = 0$ subgenus described in the count. See In re Ruschig, 379 F.2d 990, 994-95, 154 USPQ 118, 122 (CCPA 1967). As for enablement, Singh argues that Brake 1 does not enable the invention of the count, because it only leads a person of skill in the art to choose constructs wherein $n > 0$, and that, moreover, Brake provided no documentary evidence that techniques for making the $n = 0$ construct were available at the time of filing Brake 1. Lastly, Singh contends that the Board committed reversible error by applying the abuse of discretion standard rather than the de novo standard when reviewing the APJ's grant of Singh's motion for benefit.

Brake responds that the Board correctly held that he is entitled to the benefit of the filing date of Brake 1. On the issue of written description, Brake argues that Brake 1 explicitly describes the $n = 0$ construct, and that Singh's arguments were not raised below and are therefore waived. Even if we were to reach Singh's arguments, Brake asserts that there are two relevant permutations ($n = 0$ and $n = 1$ to 4), not 10,000, and that the requisite blazemarks are in fact present. Regarding enablement, Brake contends that Brake 1 does enable the $n = 0$ construct, and that Brake's enablement of " $n = 1$ to 4" does not indicate lack of enablement of $n = 0$. Brake also asserts that Singh's other enablement argument was not raised below and is in any event erroneous. Lastly, Brake argues that the appropriate standard of review was applied at the time of the Board's decision, and that even if the Board did apply the wrong standard, that error was harmless.

The Board explicitly did not reach any of the parties' section 112, paragraph 1 arguments, see note 7, supra, and we consider that such issues should be first decided by the Board. Accordingly, we remand to the Board for a determination of those issues that were properly raised during the earlier proceedings. Because no reliance interests by either party are impacted by the PTO's new procedural rule with respect to the Board's review of an APJ's interlocutory orders, we instruct the Board to apply the new standard, embodied in the current version of 37 C.F.R. § 1.655(a), on remand. Cf. Landgraf v. USI Film Prods., 511 U.S. 244, 280 (1994) (stating that a new statute has retroactive effect if "it would impair the rights a party possessed when he acted, increase a party's liability for past conduct, or impose new duties with respect to transactions already completed") (cited in Lowry v. Secretary of Health and Human

Servs., 189 F.3d 1378, 1381 (Fed. Cir. 1999)).

CONCLUSION

Certain of the Board's key findings underlying its conclusion that Singh failed to prove conception of the subject matter of the count prior to the effective filing date of Brake 2 are unsupported by substantial evidence. Moreover, the Board did not address issues relating to whether the Brake 1 application provides an adequate written description and an enabling disclosure of the subject matter of the count. We therefore

VACATE and REMAND.

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GAJARSA, Circuit Judge, concurring.

I write separately in this case to emphasize that our decision today necessarily follows from our recent opinion in In re Gartside, 203 F.3d 1305, 53 USPQ2d 1769 (Fed. Cir. 2000). In Gartside this court held that, while we review questions of law de novo, the substantial evidence standard is appropriate for review of the PTO's factual findings. See id. at 1315, 53 USPQ2d at 1775. Gartside further explained that the pertinent inquiry under the substantial evidence standard is whether a reasonable factfinder could have arrived at the agency's decision, and that the inquiry requires "taking into account evidence that both justifies and detracts from the agency's decision." Id. at 1313, 53 USPQ2d at 1773 (quoting Universal Camera Corp. v. National Labor Relations Bd., 340 US 474, 487-88 (1951)). The Supreme Court has also explained that the "possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence." Consolo v. Federal Maritime Comm'n, 383 U.S. 607, 620 (1966).

Under the Court's decision in Dickinson v. Zurko, 527 U.S. 150, 50 USPQ2d 1930 (1999), we must give proper deference to the PTO's factual determinations. Because of the deference that must be afforded, we cannot, and should not, ever substitute our own factual determinations for those made by the PTO. At the same time, when, as is the case here, the appellate tribunal finds that the PTO did not have substantial evidence to support its determinations, the proper course is to remand to

have the PTO reweigh the sufficiency of the evidence in order to reach factual determinations that its expertise deems appropriate.

I offer one additional point. In its review of the Board's factual determination on corroboration, the majority opinion ignores evidence supporting Brake's position that was cited by the Board, while placing great emphasis on Singh's proffered evidence. This failure to distinguish the Board's supporting evidence runs dangerously close to turning the substantial evidence standard on its head. Perhaps this approach results from the less than clear recitation of the supporting evidence in the Board's decision. On remand, the Board should keep in mind our admonition in Gechter v. Davidson, 116 F.3d 1454, 1457, 43 USPQ2d 1040, 1043 (Fed. Cir. 1997) that "[n]ecessary findings must be expressed with sufficient particularity to enable our court, without resort to speculation, to understand the reasoning of the Board." Cf. 5 U.S.C. § 557(c) (1994) (requiring that "[a]ll decisions" in formal adjudications, whether preliminary or final, "include . . . findings and conclusions, and the reasons or basis therefor, on all the material issues of fact, law, or discretion presented on the record." (emphasis added)). A detailed account of the underlying evidence supporting a finding of fact, or the underlying facts supporting a conclusion of law, does more than exert discipline on the Board and expose its reasoning to the light of public scrutiny. It provides this court with a meaningful opportunity to determine whether the Board has strayed from the boundaries of its statutory authority. In this way, both the Board and this court benefit.

In this case, the Board on remand may ultimately reach the same factual determination on the issue of corroboration of Singh's testimony. Indeed, our decision today in no way forecloses this outcome. If so, a clear recitation of the evidence supporting this determination will only assist this court on appeal in its task of reviewing such a determination under the substantial evidence standard.

With this in mind, I concur in the judgment of the court.