United States Court of Appeals for the Federal Circuit

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IN RE: GOOGLE LLC,
Appellant

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2022-1012

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Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. 14/628,093.

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Decided: January 9, 2023

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DEBMALLO SHAYON GHOSH, Williams & Connolly LLP, Washington, DC, argued for appellant Google LLC. Also represented by ANDREW V. TRASK.

ROBERT MCBRIDE, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, argued for appellee Katherine K. Vidal. Also represented by DANIEL KAZHDAN, THOMAS W. KRAUSE, AMY J. NELSON, FARHEENA YASMEEN RASHEED.

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Before MOORE, *Chief Judge*, LOURIE and PROST, *Circuit Judges*.

MOORE, *Chief Judge*.

Google appeals a decision of the Patent Trial and Appeal Board affirming an examiner's final rejection of claims 1, 3–10, 12–19, and 21–27 of U.S. Patent Application No.

14/628,093 pursuant to 35 U.S.C. § 103. For the reasons given below, we vacate the Board's decision and remand for further proceedings.

BACKGROUND

A. THE '093 APPLICATION

The '093 application discloses methods for filtering the results of an internet search query such that only results appropriate for the user (e.g., age appropriate) are displayed. *See, e.g.*, J.A. 27 ¶ 2; J.A. 31–32 ¶ 29. According to the disclosed method, each result of a search query is assigned a "content rating class" indicating the suitability of the associated content (e.g., "suitable for all ages"). J.A. 38 ¶ 53; J.A. 46–48 ¶¶ 75–79. The search query's "content rating score," also referred to as a safety score, is then determined based on the collection of content rating classes assigned to its individual results. J.A. 38 ¶ 53; J.A. 46–48 ¶¶ 75–79. The content rating score is then compared to a predetermined threshold value to determine whether and which results will be presented. For example, if the proportion of search results assigned a "suitable for all ages" content rating class is below a predetermined threshold of, say, 50%, the search query may be completely or partially blocked and no or only some results will be displayed. *See* J.A. 38 ¶ 54; J.A. 43–45 ¶¶ 67–68, 71; J.A. 78 at Fig. 3.

The predetermined threshold value thus plays a critical role in determining which results of a search query will be presented to the user. The '093 application discloses multiple ways in which this threshold can be predetermined. As relevant on appeal, "the predetermined threshold can be determined based on parameters associated with the search query itself, such as the length of the search query (e.g., a number of words and/or characters of the search query) and/or the length and/or complexity of individual words in the search query." J.A. 39 ¶ 55. In this embodiment, longer or more complex queries are associated with older users and the corresponding threshold is

set accordingly. *Id.* Thus, if a search query exceeds a certain number of words, suggesting it was entered by an older child or an adult, "the proportion of search results [i.e., the threshold] associated with classes of content ratings indicating the content is suitable for children can be relatively lower than for a shorter search query." *Id.*

Independent claim 1, as amended in December 2018, is representative:

1. A method for presenting search results, comprising:

    receiving text corresponding to a search query entered on a user device;

    determining whether a content rating score associated with the search query is below a predetermined threshold value, *wherein the predetermined threshold value is determined based on a number of words included in the search query* and wherein the score is calculated by:

        identifying a first plurality of search results retrieved using the search query, wherein each search result in the first plurality of search results is associated with one of a plurality of content ratings classes;

        determining, for each search result in the first plurality of search results, a weight, wherein the weight is determined based on a popularity of the search result; and

        calculating the content rating score that is a proportion of search results associated with at least one of

> the content ratings classes among
> the first plurality of search results,
> wherein the proportion of search
> results associated with at least one
> of the content ratings classes is cal-
> culated using the weight associated
> with each search result;

in response to determining that the content
rating score is below the predetermined
threshold value, identifying a second plu-
rality of search results to be presented
based on the search query; and

causing the second plurality of search re-
sults to be presented on the user device.

J.A. 17 at claim 1 (emphasis added).

B. The Prior Art

Two prior art references are at issue on appeal: U.S. Patent Application Publication No. 2012/0150850 A1 (Parthasarathy) and U.S. Patent No. 5,870,740 (Rose). Parthasarathy discloses methods of filtering search results by comparing a "search-query-intent score" to a predetermined safety threshold. J.A. 540–41 ¶¶ 17–21. To determine the search-query-intent score, each search result is first assigned a relevance rank or score, indicating the result's relevance to the query, and an "adult-content score," indicating the amount of adult content within the result as assessed via keywords, metadata, advertising, etc. *Id.* ¶¶ 17–19, 22. In one embodiment, the search-query-intent score is then determined by taking the weighted sum of adult-content scores corresponding to the most relevant search results, wherein the weights correspond to each result's relevance rank or score. *See* J.A. 544 ¶¶ 42–44; J.A. 534 at Figs. 4A–4B.

The search-query-intent score, in combination with a user-selected safety setting, is then used to "influence the

search results presented to a user in response to a search query." J.A. 541 ¶ 21. The safety setting is first associated with a numerical threshold against which the adult-content score is compared. *See* J.A. 544 ¶¶ 42–44; J.A. 434 at Figs. 4A–4B. Depending on whether the search-query-intent score exceeds the user's chosen safety threshold, all, some, or none of the results will be displayed. J.A. 544 ¶¶ 42–44. Although Parthasarathy discloses a predetermined threshold, it is undisputed that it does not disclose a predetermined threshold "based on a number of words" in a search query, as required by claim 1.

Rose addresses the so-called "short query problem" present in prior art relevance-ranking algorithms of the time. In the case of queries containing only a few terms, prior art algorithms would often incorrectly assign higher relevance scores to documents including only a subset of search terms than to those including the entire query. J.A. 502 at 3:4–21; J.A. 504 at 7:11–19. Rose discloses a modified relevance-ranking algorithm intended to address this problem by adjusting prior art relevance scores based on the degree of overlap between the query terms and documents terms (i.e., the number of query terms that also appear in the document), as well as the number of words in the query itself. J.A. 502 at 4:29–36; J.A. 503 at 6:4–38. In this way, the relevance score of a document with high overlap is increased more for short queries than long queries, mitigating the error exhibited by prior art algorithms. J.A. 503 at 6:36–56. Further, because the algorithm factors in not only the number of words in the query (which remains the same for each document), but also the degree of overlap between the document and query, the relevance adjustment will be document-dependent. J.A. 502 at 4:31–36.

C. Procedural History

Following a non-final obviousness rejection based on Parthasarathy, Google amended claim 1 to add the limitation presently at issue, namely that the predetermined

threshold value is "determined based on a number of words included in the search query." J.A. 355 (Dec. 6, 2018 Reply to Non-Final Office Action). In response, the examiner issued a final rejection, relying on Rose in combination with Parthasarathy. *See* J.A. 379–85 (Mar. 14, 2019 Final Office Action). The examiner acknowledged Parthasarathy does not disclose a threshold based on a number of words but found Rose does, citing Rose's modified relevance-ranking algorithm. J.A. 384. He further reasoned it would have been obvious to combine Rose and Parthasarathy to achieve the claimed threshold because "analyzing a query for determining the query length and using the query length as a threshold is very well known in the art and doing so would further provide for assigning weight to a long or a short query for retrieving documents." *Id.*

In reply, Google argued Rose only discloses a query-length-dependent relevance *score* and that "a score is clearly different than a threshold value." J.A. 405–06 (May 13, 2019 Reply to Final Office Action) (emphasis omitted). Accordingly, Google asserted, the combination of Parthasarathy and Rose at most described increasing a score based on the number of words in a query, not determining whether a score was below a threshold that itself depended on query length. *Id.* The examiner disagreed, *see* J.A. 426–28, and Google appealed to the Board. J.A. 432–42.

The Board issued a final decision affirming the examiner's rejection of claims 1, 3–10, 12–19, and 21–27. *Ex Parte Eileen Margaret Peters Long et al.*, No. 2020-001978, 2021 WL 3466217, at *1 (P.T.A.B. Aug. 3, 2021) (*Decision*). The Board adopted the examiner's findings, *Decision* at *2, and purported to "agree with the Examiner" that modifying Parthasarathy's threshold "to take into account query length as taught by Rose" would have been obvious at the time of filing. *Id.* at *4. Google appeals. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

STANDARD OF REVIEW

Obviousness is a question of law based on underlying factual findings. *In re Giannelli*, 739 F.3d 1375, 1378 (Fed. Cir. 2014) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). We review the Board's legal conclusions de novo and any underlying findings of fact for substantial evidence. *In re Van Os*, 844 F.3d 1359, 1360 (Fed. Cir. 2017). "Substantial evidence requires the reviewing court to ask whether a reasonable person might find that the evidentiary record supports the agency's conclusion." *In re Sullivan*, 498 F.3d 1345, 1350 (Fed. Cir. 2007) (internal quotation marks omitted).

DISCUSSION

On appeal, the PTO argues the Board's decision should be affirmed because there are only two ways to predictably modify Parthasarathy's threshold to incorporate query length as taught by Rose, and both would have been obvious to try. Specifically, it asserts a skilled artisan would have recognized that Rose's adjusted relevance score could be used to modify either Parthasarathy's search-query-intent score or its threshold and that either modification would predictably result in a threshold based on the number of words in a query. According to the PTO, because Parthasarathy teaches a simple comparison of its score and threshold, "the result of the comparison would be exactly the same" regardless of whether the score is raised or the threshold is decreased. And, in this way, Rose's query-length-dependent algorithm could be used to modify Parthasarathy's threshold to achieve the threshold described by claim 1.

Meritorious or not, the PTO's arguments cannot sustain the Board's decision below because they do not reflect the reasoning or findings the Board actually invoked. *Michigan v. E.P.A.*, 576 U.S. 743, 758 (2015) ("[It is a] foundational principle of administrative law that a court may uphold agency action only on the grounds that the agency

invoked when it took the action." (citing *SEC v. Chenery Corp.*, 318 U.S. 80, 87 (1943))); *see also Power Integrations, Inc. v. Lee*, 797 F.3d 1318, 1326 (Fed. Cir. 2015) ("[O]ur review of a patentability determination is confined to the grounds upon which the Board actually relied." (internal quotation marks omitted)). Contrary to the PTO's characterization of the Board's decision, it did not rest on a finding that there were only two ways to modify Parthasarathy using Rose or suggest that these modifications would have been obvious to try. Indeed, although the Board concluded that modifying Parthasarathy's threshold to take into account query length would have been obvious, *Decision* at *4, entirely absent from its decision is any discussion of *how* such a modification would be accomplished. Certainly, the Board did not discuss or suggest the specific modifications the PTO advances on appeal. In the absence of any specific findings by the Board on these matters, we may not adopt the PTO's fact-based arguments in the first instance on appeal.

The PTO attempts to ground its arguments in isolated examiner statements incorporated by the Board that Parthasarathy's thresholds are configurable design choices and thus amenable to modification. *See* J.A. 347. But squint as we may, we do not see the justifications invoked by the PTO on appeal reflected in the record below. Read in its entirety, the record suggests the examiner and Board did not rely on Rose to *modify* Parthasarathy's threshold at all, but instead understood Rose's score to disclose a query-length-dependent value that could be directly *substituted* for Parthasarathy's user-selected threshold. The examiner was quite clear in this respect. In the Final Office Action, the examiner expressly found that Rose alone discloses a predetermined threshold based on a number of words and cited to Rose's relevance algorithm. J.A. 384 (citing J.A. 502 at 4:28–54). Later, in an advisory action preceding Google's appeal to the Board, the examiner was even more explicit:

> The score value as disclosed in Rose *is equivalent
> to* the threshold value as claimed because the
> threshold is a value which depends on the number
> of words in the query and increases or decreases
> based on the number of words in the query and the
> score in Rose is also a value which depends on the
> query length and increases or decreases based on
> the query length; *they are therefore the same.*

J.A. 427 (emphasis added); *see also* J.A. 428 ("Rose is relied
on for . . . using the query length as a threshold for relevancy comparison . . . ."). And in briefing to the Board, the
examiner again asserted it would have been obvious to "use
the technique of calculating a value based on the number
of words included in the search query as taught by Rose *as
a configurable threshold value* to which a different score is
compared as taught by Parthasarathy." J.A. 479 (emphasis added). Thus, although the Board purported to "agree"
with the examiner that it would have been obvious to modify Parthasarathy's threshold using Rose, *Decision* at *4,
we see no such statement in the examiner's analysis and
thus no basis for the Board's conclusion.

The PTO also rests its arguments on the Board's finding, quoting the examiner, that using query length as a
threshold was "very well known in the art." *Decision* at *3
(quoting J.A. 384). In making this assertion, however, neither the Board nor the examiner cited any evidence suggesting such a technique was in fact conventional or
widespread. Instead, the Board, again quoting the examiner, cited only to Rose's discussion of its modified relevance-ranking algorithm. But as the PTO concedes on
appeal, Rose does not disclose using query length as a
threshold, and there is no record evidence that supports a
finding that using query length as a threshold was well
known in the art. The PTO also argues that simple logic or
common knowledge might fill these evidentiary gaps. But
while common knowledge "can be invoked, even potentially
to supply a limitation missing from the prior art, it must

still be supported by evidence and a reasoned explanation." *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1363 (Fed. Cir. 2016). An examiner's assertion that a particular fact or principle is well-known is not evidentiary support. *See id.* at 1362; *see also DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006) ("[A]ssumptions about common sense cannot substitute for evidence thereof . . . ."). Particularly in light of the absence of any explanation of how query length could be used as, or to modify, Parthasarathy's threshold, the Board's unsupported assertion cannot provide substantial evidence supporting its decision.

Further, to the extent the Board found that Rose's score could be substituted for Parthasarathy's threshold to achieve the disputed limitation of claim 1, that finding is not supported by substantial evidence. As the PTO now concedes, Rose does not by itself disclose a predetermined threshold based on a number of words. Rather, it discloses a method of calculating result-dependent relevance scores, one that can necessarily only be implemented after the results of the query are retrieved. J.A. 502 at 4:29–54; J.A. 503 at 5:66–6:56. Unlike a predetermined threshold, which applies to a collection of search results, Rose's relevance score will in general vary from result to result. Simple substitution of Rose's score for Parthasarathy's user-selected threshold therefore cannot provide the predetermined threshold of claim 1.

For the reasons given, we conclude that the Board's expressed reasoning cannot sustain its rejection of claims 1, 3–10, 12–19, and 21–27 and therefore vacate the Board's decision. Google urges us to find that the PTO's arguments based on Parthasarathy and Rose, which the Board did not invoke, lack merit. But, as Google concedes, those arguments rest on factual predicates unaddressed by the examiner or Board. We will not address their merits in the first instance on appeal.

CONCLUSION

We have considered the parties' other arguments and find them unpersuasive. For the reasons given, we vacate the Board's decision and remand for further proceedings consistent with this opinion.

VACATED AND REMANDED

COSTS

No costs.