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ordinary meaning.” *Id.* Second, “the presumption also will be rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.” *Id.*

The *Texas Digital* court explained that it advanced the methodology set forth in \*1320 that opinion in an effort to combat what this court has termed “one of the cardinal sins of patent law-reading a limitation from the written description into the claims,” *SciMed Life Sys.*, 242 F.3d at 1340. The court concluded that it is improper to consult “the written description and prosecution history as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary meanings attributed to the words themselves.” *Texas Digital*, 308 F.3d at 1204. To do so, the court reasoned, “invites a violation of our precedent counseling against importing limitations into the claims.” *Id.* Summarizing its analysis, the *Texas Digital* court stated:

By examining relevant dictionaries, encyclopedias, and treatises to ascertain possible meanings that would have been attributed to the words of the claims by those skilled in the art, and by further utilizing the intrinsic record to select from those possible meanings the one or ones most consistent with the use of the words by the inventor, the full breadth of the limitations intended by the inventor will be more accurately determined and the improper importation of unintended limitations from the written description into the claims will be more easily avoided.

*Id.* at 1205.

B

Although the concern expressed by the court in *Texas Digital* was valid, the methodology it adopted placed too much reliance on extrinsic sources such as dictionaries, treatises, and encyclopedias and too little on intrinsic sources, in particular the specification and prosecution history. While the court noted that the specification must be consulted in every case, it suggested a methodology for claim interpretation in which the specification should be consulted only after a determination is made, whether based on a dictionary, treatise, or other source, as to the ordinary meaning or meanings of the claim term in dispute. Even then, recourse to the specification is limited to determining whether the specification excludes one of the meanings derived from the dictionary, whether the presumption in favor of the

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dictionary definition of the claim term has been overcome by “an explicit definition of the term different from its ordinary meaning,” or whether the inventor “has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.” 308 F.3d at 1204. In effect, the *Texas Digital* approach limits the role of the specification in claim construction to serving as a check on the dictionary meaning of a claim term if the specification requires the court to conclude that fewer than all the dictionary definitions apply, or if the specification contains a sufficiently specific alternative definition or disavowal. See, e.g., *Texas Digital*, 308 F.3d at 1202 (“unless compelled otherwise, a court will give a claim term the full range of its ordinary meaning”); *Nystrom v. TREX Co.*, 374 F.3d 1105, 1111-13 (Fed.Cir.2004) (ascertaining the “full range” of the ordinary meaning of the term “board” through a collection of dictionary definitions, and stating that those candidate definitions should be removed from consideration only if they were “disclaimed” in the written description or prosecution history); *Imverness Med. Switz.*, 309 F.3d at 1379 (claim should be construed to encompass multiple dictionary meanings unless “the specification or prosecution history clearly demonstrates that only one of the multiple meanings was intended”). That approach, in our view, improperly restricts the role of the specification in claim construction.

Assigning such a limited role to the specification, and in particular requiring \*1321 that any definition of claim language in the specification be express, is inconsistent with our rulings that the specification is “the single best guide to the meaning of a disputed term,” and that the specification “acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication.” *Vitronics*, 90 F.3d at 1582; *Irdeto Access, Inc. v. EchoStar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed.Cir.2004) (“Even when guidance is not provided in explicit definitional format, the specification may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents.”) (citations omitted); *Novartis Pharms. Corp. v. Abbott Labs.*, 375 F.3d 1328, 1334-35 (Fed.Cir.2004) (same); *Bell Atl. Network Servs., Inc. v. Covad Communications Group, Inc.*, 262 F.3d 1258, 1268 (Fed.Cir.2001) (“[A] claim term may be clearly redefined without an explicit statement of redefinition.”).

The main problem with elevating the dictionary to

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such prominence is that it focuses the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent. Properly viewed, the “ordinary meaning” of a claim term is its meaning to the ordinary artisan after reading the entire patent. Yet heavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context, which is the specification. The patent system is based on the proposition that claims cover only the invented subject matter. As the Supreme Court has stated, “[i]t seems to us that nothing can be more just and fair, both to the patentee and the public, than that the former should understand, and correctly describe, just what he has invented, and for what he claims a patent.” *Merrill v. Yeomans*, 94 U.S. at 573-74. The use of a dictionary definition can conflict with that directive because the patent applicant did not create the dictionary to describe the invention. Thus, there may be a disconnect between the patentee’s responsibility to describe and claim his invention, and the dictionary editors’ objective of aggregating all possible definitions for particular words.

Although the *Texas Digital* line of cases permit the dictionary definition to be narrowed in some circumstances even when there is not an explicit disclaimer or redefinition in the specification, too often that line of cases has been improperly relied upon to condone the adoption of a dictionary definition entirely divorced from the context of the written description. The problem is that if the district court starts with the broad dictionary definition in every case and fails to fully appreciate how the specification implicitly limits that definition, the error will systematically cause the construction of the claim to be unduly expansive. The risk of systematic overbreadth is greatly reduced if the court instead focuses at the outset on how the patentee used the claim term in the claims, specification, and prosecution history, rather than starting with a broad definition and whittling it down.

Dictionaries, by their nature, provide an expansive array of definitions. General dictionaries, in particular, strive to collect all uses of particular words, from the common to the obscure. By design, general dictionaries collect the definitions of a term as used not only in a particular art field, but in many different settings. In such circumstances, it is inevitable that the multiple dictionary definitions for a term will extend beyond the “construction of the patent [that] is confirmed by the avowed

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understanding of the patentee, expressed by him, or on his behalf, when his application\*1322 for the original patent was pending.” *Goodyear Dental Vulcanite Co. v. Davis*, 102 U.S. 222, 227, 26 L.Ed. 149 (1880). Thus, the use of the dictionary may extend patent protection beyond what should properly be afforded by the inventor’s patent. See *Smith v. Snow*, 294 U.S. 1, 14, 55 S.Ct. 279, 79 L.Ed. 721 (1935) (“if the claim were fairly susceptible of two constructions, that should be adopted which will secure to the patentee his actual invention”) (emphasis added). For that reason, we have stated that “a general-usage dictionary cannot overcome art-specific evidence of the meaning” of a claim term. *Vanderlande Indus. Nederland*, 366 F.3d at 1321; see also *Remishaw*, 158 F.3d at 1250, quoting *Liebscher v. Boothroyd*, 46 C.C.P.A. 701, 258 F.2d 948, 951 (CCPA 1958) (“Indiscriminate reliance on definitions found in dictionaries can often produce absurd results.... One need not arbitrarily pick and choose from the various accepted definitions of a word to decide which meaning was intended as the word is used in a given claim. The subject matter, the context, etc., will more often than not lead to the correct conclusion.”).

Even technical dictionaries or treatises, under certain circumstances, may suffer from some of these deficiencies. There is no guarantee that a term is used in the same way in a treatise as it would be by the patentee. In fact, discrepancies between the patent and treatises are apt to be common because the patent by its nature describes something novel. See *Autogiro*, 384 F.2d at 397 (“Often the invention is novel and words do not exist to describe it. The dictionary does not always keep abreast of the inventor. It cannot.”).

Moreover, different dictionaries may contain somewhat different sets of definitions for the same words. A claim should not rise or fall based upon the preferences of a particular dictionary editor, or the court’s independent decision, uninformed by the specification, to rely on one dictionary rather than another. Finally, the authors of dictionaries or treatises may simplify ideas to communicate them most effectively to the public and may thus choose a meaning that is not pertinent to the understanding of particular claim language. See generally Ellen P. April, *The Law of the Word: Dictionary Shopping in the Supreme Court*, 30 Ariz. St. L.J. 275, 293-314 (1998). The resulting definitions therefore do not necessarily reflect the inventor’s goal of distinctly setting forth his invention as a person of ordinary skill in that particular art would understand it.

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[20] As we have noted above, however, we do not intend to preclude the appropriate use of dictionaries. Dictionaries or comparable sources are often useful to assist in understanding the commonly understood meaning of words and have been used both by our court and the Supreme Court in claim interpretation. See *Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 134, 62 S.Ct. 513, 86 L.Ed. 736 (1942) (relying on dictionaries to construe the claim term “embedded”); *Weber Elec. Co. v. E.H. Freeman Elec. Co.*, 256 U.S. 668, 678, 41 S.Ct. 600, 65 L.Ed. 1162 (1921) (approving circuit court’s use of dictionary definitions to define claim terms); *Renishaw*, 158 F.3d at 1247-53 (approving the use of dictionaries with proper respect for the role of intrinsic evidence). A dictionary definition has the value of being an unbiased source “accessible to the public in advance of litigation.” *Vitronics*, 90 F.3d at 1585. As we said in *Vitronics*, judges are free to consult dictionaries and technical treatises at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict\*1323 any definition found in or ascertained by a reading of the patent documents.

*Id.* at 1584 n. 6.

We also acknowledge that the purpose underlying the *Texas Digital* line of cases-to avoid the danger of reading limitations from the specification into the claim-is sound. Moreover, we recognize that the distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to apply in practice. See *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186-87 (Fed.Cir.1998) (“there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification”). However, the line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court’s focus remains on understanding how a person of ordinary skill in the art would understand the claim terms. For instance, although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments. See, e.g., *Nazomi Communications, Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1369 (Fed.Cir.2005) (claims may embrace “different subject matter than is illustrated in the specific

embodiments in the specification”); *Liebel-Flarsheim*, 358 F.3d at 906-08; *Teleflex*, 299 F.3d at 1327; *SRI Int’l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1121 (Fed.Cir.1985). In particular, we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment. *Gemstar-TV Guide*, 383 F.3d at 1366. That is not just because section 112 of the Patent Act requires that the claims themselves set forth the limits of the patent grant, but also because persons of ordinary skill in the art rarely would confine their definitions of terms to the exact representations depicted in the embodiments.

To avoid importing limitations from the specification into the claims, it is important to keep in mind that the purposes of the specification are to teach and enable those of skill in the art to make and use the invention and to provide a best mode for doing so. See *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533 (Fed.Cir.1987). One of the best ways to teach a person of ordinary skill in the art how to make and use the invention is to provide an example of how to practice the invention in a particular case. Much of the time, upon reading the specification in that context, it will become clear whether the patentee is setting out specific examples of the invention to accomplish those goals, or whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive. See *SciMed Life Sys.*, 242 F.3d at 1341. The manner in which the patentee uses a term within the specification and claims usually will make the distinction apparent. See *Snow v. Lake Shore & M.S. Ry. Co.*, 121 U.S. 617, 630, 7 S.Ct. 1343, 30 L.Ed. 1004 (1887) (it was clear from the specification that there was “nothing in the context to indicate that the patentee contemplated any alternative” embodiment to the one presented).

In the end, there will still remain some cases in which it will be hard to determine whether a person of skill in the art would understand the embodiments to define the outer limits of the claim term or merely to be exemplary in nature. While that task may present difficulties in some cases, we nonetheless believe that attempting to resolve that problem in the context of the \*1324 particular patent is likely to capture the scope of the actual invention more accurately than either strictly limiting the scope of the claims to the embodiments disclosed in the specification or divorcing the claim language from the specification.

[21] In *Vitronics*, this court grappled with the same

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problem and set forth guidelines for reaching the correct claim construction and not imposing improper limitations on claims. 90 F.3d at 1582. The underlying goal of our decision in *Vitronics* was to increase the likelihood that a court will comprehend how a person of ordinary skill in the art would understand the claim terms. See *id.* at 1584. In that process, we recognized that there is no magic formula or catechism for conducting claim construction. Nor is the court barred from considering any particular sources or required to analyze sources in any specific sequence, as long as those sources are not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence. See *id.* at 1583-84; *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1367 (Fed.Cir.2003). For example, a judge who encounters a claim term while reading a patent might consult a general purpose or specialized dictionary to begin to understand the meaning of the term, before reviewing the remainder of the patent to determine how the patentee has used the term. The sequence of steps used by the judge in consulting various sources is not important; what matters is for the court to attach the appropriate weight to be assigned to those sources in light of the statutes and policies that inform patent law. *Vitronics*, 90 F.3d at 1582. In *Vitronics*, we did not attempt to provide a rigid algorithm for claim construction, but simply attempted to explain why, in general, certain types of evidence are more valuable than others. Today, we adhere to that approach and reaffirm the approach to claim construction outlined in that case, in *Markman*, and in *Innova*. We now turn to the application of those principles to the case at bar.

IV

A

[22] The critical language of claim 1 of the ‘798 patent—“further means disposed inside the shell for increasing its load bearing capacity comprising internal steel baffles extending inwardly from the steel shell walls”—imposes three clear requirements with respect to the baffles. First, the baffles must be made of steel. Second, they must be part of the load-bearing means for the wall section. Third, they must be pointed inward from the walls. Both parties, stipulating to a dictionary definition, also conceded that the term “baffles” refers to objects that check, impede, or obstruct the flow of something. The intrinsic evidence confirms that a person of skill in the art would understand that the term “baffles,” as

used in the ‘798 patent, would have that generic meaning.

The other claims of the ‘798 patent specify particular functions to be served by the baffles. For example, dependent claim 2 states that the baffles may be “oriented with the panel sections disposed at angles for deflecting projectiles such as bullets able to penetrate the steel plates.” The inclusion of such a specific limitation on the term “baffles” in claim 2 makes it likely that the patentee did not contemplate that the term “baffles” already contained that limitation. See *Dow Chem. Co. v. United States*, 226 F.3d 1334, 1341-42 (Fed.Cir.2000) (concluding that an independent claim should be given broader scope than a dependent claim to avoid rendering the dependent claim redundant). Independent claim 17 further supports that proposition. It states that baffles are \*1325 placed “projecting inwardly from the outer shell at angles tending to deflect projectiles that penetrate the outer shell.” That limitation would be unnecessary if persons of skill in the art understood that the baffles inherently served such a function. See *TurboCare*, 264 F.3d at 1123 (claim terms should not be read to contain a limitation “where another claim restricts the invention in exactly the [same] manner”). Dependent claim 6 provides an additional requirement for the baffles, stating that “the internal baffles of both outer panel sections overlap and interlock at angles providing deflector panels extending from one end of the module to the other.” If the baffles recited in claim 1 were inherently placed at specific angles, or interlocked to form an intermediate barrier, claim 6 would be redundant.

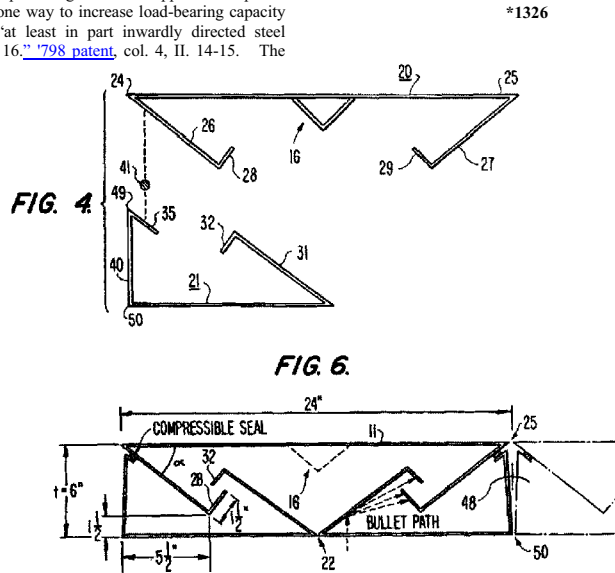
The specification further supports the conclusion that persons of ordinary skill in the art would understand the baffles recited in the ‘798 patent to be load-bearing objects that serve to check, impede, or obstruct flow. At several points, the specification discusses positioning the baffles so as to deflect projectiles. See ‘798 patent, col. 2, II. 13-15; *id.*, col. 5, II. 17-19. The patent states that one advantage of the invention over the prior art is that “[t]here have not been effective ways of dealing with these powerful impact weapons with inexpensive housing.” *Id.*, col. 3, II. 28-30. While that statement makes clear the invention envisions baffles that serve that function, it does not imply that in order to qualify as baffles within the meaning of the claims, the internal support structures must serve the projectile-deflecting function in all the embodiments of all the claims. The specification must teach and enable all the claims, and the section of the written

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description discussing the use of baffles to deflect projectiles serves that purpose for claims 2, 6, 17, and 23, which specifically claim baffles that deflect projectiles. See [In re Wright](#), 999 F.2d 1557, 1561 (Fed.Cir.1993).

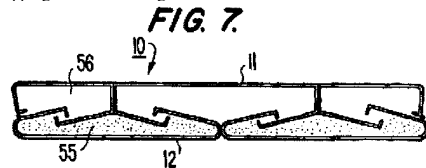
The specification discusses several other purposes served by the baffles. For example, the baffles are described as providing structural support. The patent states that one way to increase load-bearing capacity is to use "at least in part inwardly directed steel baffles 15, 16." ['798 patent](#), col. 4, ll. 14-15. The

baffle 16 is described as a "strengthening triangular baffle." *Id.*, col. 4, line 37. Importantly, Figures 4 and 6 do not show the baffles as part of an "intermediate interlocking, but not solid, internal barrier." In those figures, the baffle 16 simply provides structural support for one of the walls, as depicted below:



baffles to produce substantially an intermediate barrier wall between the opposite [wall] faces":

Other uses for the baffles are listed in the specification as well. In Figure 7, the overlapping flanges "provide for overlapping and interlocking the



['798 patent](#), col. 5, ll. 26-29. Those baffles thus create small compartments that can be filled with

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either sound and thermal insulation or rock and gravel to stop projectiles. *Id.*, col. 5, ll. 29-34. By separating the interwall area into compartments (see, e.g., compartment 55 in Figure 7), the user of the modules can choose different types of material for each compartment, so that the module can be "easily custom tailored for the specific needs of each installation." *Id.*, col. 5, ll. 36-37. When material is placed into the wall during installation, the baffles obstruct the flow of material from one compartment to another so that this "custom tailoring" is possible.

[23] The fact that the written description of the ['798 patent](#) sets forth multiple [\\*1327](#) objectives to be served by the baffles recited in the claims confirms that the term "baffles" should not be read restrictively to require that the baffles in each case serve all of the recited functions. We have held that "[t]he fact that a patent asserts that an invention achieves several objectives does not require that each of the claims be construed as limited to structures that are capable of achieving all of the objectives." [Liebel-Flarsheim](#), 358 F.3d at 908; see also [Resonate Inc. v. Altheon Websystems, Inc.](#), 338 F.3d 1360, 1367 (Fed.Cir.2003). Although deflecting projectiles is one of the advantages of the baffles of the ['798 patent](#), the patent does not require that the inward extending structures always be capable of performing that function. Accordingly, we conclude that a person of skill in the art would not interpret the disclosure and claims of the ['798 patent](#) to mean that a structure extending inward from one of the wall faces is a "baffle" if it is at an acute or obtuse angle, but is not a "baffle" if it is disposed at a right angle.

B

[24] Invoking the principle that "claims should be so construed, if possible, as to sustain their validity," [Rhine v. Casio, Inc.](#), 183 F.3d 1342, 1345 (Fed.Cir.1999), AWH argues that the term "baffles" should be given a restrictive meaning because if the term is not construed restrictively, the asserted claims would be invalid.

While we have acknowledged the maxim that claims should be construed to preserve their validity, we have not applied that principle broadly, and we have certainly not endorsed a regime in which validity analysis is a regular component of claim construction. See [Nazomi Communications](#), 403 F.3d at 1368-69. Instead, we have limited the maxim to cases in which "the court concludes, after applying all the available tools of claim construction, that the

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claim is still ambiguous." [Liebel-Flarsheim](#), 358 F.3d at 911; see also [Generation II Orthotics Inc. v. Med. Tech. Inc.](#), 263 F.3d 1356, 1365 (Fed.Cir.2001) ("[C]laims can only be construed to preserve their validity where the proposed claim construction is 'practicable,' is based on sound claim construction principles, and does not revise or ignore the explicit language of the claims."); [Elekta Instrument S.A. v. O.U.R. Scientific Int'l, Inc.](#), 214 F.3d 1302, 1309 (Fed.Cir.2000) ("having concluded that the amended claim is susceptible of only one reasonable construction, we cannot construe the claim differently from its plain meaning in order to preserve its validity"); [E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.](#), 849 F.2d 1430, 1434 (Fed.Cir.1988) (rejecting argument that limitations should be added to claims to preserve the validity of the claims). In such cases, we have looked to whether it is reasonable to infer that the PTO would not have issued an invalid patent, and that the ambiguity in the claim language should therefore be resolved in a manner that would preserve the patent's validity.

That is the rationale that gave rise to the maxim in the first place. In [Klein v. Russell](#), 86 U.S. (19 Wall.) 433, 466, 22 L.Ed. 116 (1873), the owner of a reissued patent argued for a narrow construction of the patent, while the accused infringer argued for a broader construction. The Court noted that the law "required that the reissue should be for the same invention as the original patent." *Id.* Because the reissue, which was granted under the predecessor to [35 U.S.C. § 251](#), would have been improper under the broader construction, the Court "presumed the Commissioner did his duty" and did not issue an invalid patent. For that reason, among others, the Court construed the [\\*1328](#) disputed claim language in a manner that "sustain[ed]" the patent and the construction claimed by the patentee," since that "can be done consistently with the language which he has employed." *Id.* The applicability of the doctrine in a particular case therefore depends on the strength of the inference that the PTO would have recognized that one claim interpretation would render the claim invalid, and that the PTO would not have issued the patent assuming that to be the proper construction of the term.

In this case, unlike in [Klein](#) and other cases in which the doctrine of construing claims to preserve their validity has been invoked, the claim term at issue is not ambiguous. Thus, it can be construed without the need to consider whether one possible construction would render the claim invalid while the other would not. The doctrine of construing claims

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to preserve their validity, a doctrine of limited utility in any event, therefore has no applicability here.

In sum, we reject AWH's arguments in favor of a restrictive definition of the term "baffles." Because we disagree with the district court's claim construction, we reverse the summary judgment of noninfringement. In light of our decision on claim construction, it is necessary to remand the infringement claims to the district court for further proceedings.

## V

With respect to Mr. Phillips's allegation of misappropriation of trade secrets, we agree with the panel's decision upholding the district court's ruling on that issue, in which the district court dismissed the trade secret claim on statute of limitations grounds. See *Phillips*, 363 F.3d at 1214-1216. Accordingly, based on the panel's disposition of that issue, we affirm the district court's dismissal of the trade secret claim. With respect to AWH's cross-appeal, we also agree with the panel's reasoning and its conclusion that the cross-appeal is improper. See *id.* at 1216. We therefore dismiss the cross-appeal.

## VI

In our order granting rehearing en banc, we asked the parties to brief various questions, including the following: "Consistent with the Supreme Court's decision in *Markman v. Westview Instruments*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), and our en banc decision in *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed.Cir.1998), is it appropriate for this court to accord any deference to any aspect of trial court claim construction rulings? If so, on what aspects, in what circumstances, and to what extent?" After consideration of the matter, we have decided not to address that issue at this time. We therefore leave undisturbed our prior en banc decision in *Cybor*.

Each party shall bear its own costs for this appeal.

*AFFIRMED IN PART, REVERSED IN PART, DISMISSED IN PART, and REMANDED.*

LOURIE, Circuit Judge, concurring in part and dissenting in part, with whom PAULINE NEWMAN, Circuit Judge, joins.

I fully join the portion of the court's opinion resolving the relative weights of specification and dictionaries

in interpreting patent claims, in favor of the specification. I could elaborate more expansively on that topic, but Judge Bryson's opinion for the majority says it so well, there is little reason for me to repeat its truths. I also agree with the court that claims need not necessarily be limited to specific or preferred embodiments in the specification, although they are limited to what is \*1329 contained in the overall disclosure of the specification.

However, I do dissent from the court's decision to reverse and remand the district court's decision. The original panel decision of this court, which implicitly decided the case based on the priorities that the en banc court has now reaffirmed, interpreted the claims in light of the specification and found that the defendant did not infringe the claims. We affirmed the district court, which had arrived at a similar conclusion. The dissent from the panel decision relied on the "dictionaries first" procedure, which the court now has decided not to follow. Thus, while the claim construction issue had to be decided by the en banc court, I see no reason for the court, having reaffirmed the principle on which the district judge and the panel originally decided the case, to send it back for further review.

The court premises its reverse-and-remand decision on the concept of claim differentiation and the reasoning that the contested term "baffle" need not fulfill all of the functions set out for it in the specification. Reasonable people can differ on those points. However, the court did not take this case en banc because the full court differed with the panel majority on those disputable criteria. It did so to resolve the claim construction issue, which it has now done so well. Having done so, I believe that it should simply affirm the district court's decision on the merits, consistently with that court's rationale and that of the panel that affirmed the district court, which it now adopts.

I will not critique in detail particular statements the majority makes in rationalizing its reversal of the district court's decision, such as "that a person of skill in the art would not interpret the disclosure and claims of the '798 patent to mean that a structure extending inward from one of the wall faces is a 'baffle' if it is at an acute or obtuse angle, but is not a 'baffle' if it is disposed at a right angle," or that "the patent does not require that the inward extending structures always be capable of performing that function [deflecting projectiles]" in order to be considered 'baffles'.

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I will simply point out that the specification contains no disclosure of baffles at right angles. Moreover, as the majority correctly states, a patent specification is intended to describe one's invention, and it is essential to read a specification in order to interpret the meaning of the claims. This specification makes clear that the "baffles" in this invention are angled. There is no reference to baffles that show them to be other than angled. The abstract refers to "bullet deflecting ... baffles." Only angled baffles can deflect. It then mentions "internal baffles at angles for deflecting bullets." That could not be clearer. The specification then refers several times to baffles, often to figures in the drawings, all of which are to angled baffles. A compelling point is that the only numbered references to baffles (15, 16, 26, 27, 30, and 31) all show angled baffles.

The specification further states that steel panels "form the internal baffles at angles for deflecting bullets." It states that the baffles are "disposed at such angles that bullets which might penetrate the outer steel panels are deflected." It explains that if bullets "were to penetrate the outer steel wall, the baffles are disposed at angles which tend to deflect the bullets." There is no specific reference in this patent to a baffle that is not angled at other than 90.

While, as the majority states, the specification indicates that multiple objectives are achieved by the invention, none of the other objectives is dependent upon whether the baffles are at other than a 90 angle, whereas the constantly stated objective of \*1330 deflection of bullets is dependent upon such an angle.

Finally, even though claim construction is a question of law, reviewable by this court without formal deference, I do believe that we ought to lean toward affirmance of a claim construction in the absence of a strong conviction of error. I do not have such a conviction in this case, after considering the district court's opinion and the patent specification.

For these reasons, while I wholeheartedly join the majority opinion in its discussion and resolution of the "specification v. dictionaries" issue, I would affirm the decision below.

MAYER, Circuit Judge, with whom PAULINE NEWMAN, Circuit Judge, joins, dissenting.

Now more than ever I am convinced of the futility, indeed the absurdity, of this court's persistence in adhering to the falsehood that claim construction is a matter of law devoid of any factual component. Because any attempt to fashion a coherent standard

under this regime is pointless, as illustrated by our many failed attempts to do so, I dissent.

This court was created for the purpose of bringing consistency to the patent field. See H.R. Rep. No. 312, 97th Cong., 1st Sess. 20-23 (1981). Instead, we have taken this noble mandate, to reinvigorate the patent and introduce predictability to the field, and focused inappropriate power in this court. In our quest to elevate our importance, we have, however, disregarded our role as an appellate court; the resulting mayhem has seriously undermined the legitimacy of the process, if not the integrity of the institution.

In the name of uniformity, *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed.Cir.1998) (en banc), held that claim construction does not involve subsidiary or underlying questions of fact and that we are, therefore, unbridled by either the expertise or efforts of the district court.<sup>FN1</sup> What we have wrought, instead, is the substitution of a black box, as it so pejoratively has been said of the jury, with the black hole of this court. Out of this void we emit "legal" pronouncements by way of "interpretive necromancy"<sup>FN2</sup>; these rulings resemble reality, if at all, only by chance. Regardless, and with a blind eye to the consequences, we continue to struggle under this irrational and reckless regime, trying every alternative-dictionaries first, dictionaries second, never dictionaries, etc., etc., etc.

<sup>FN1</sup> The Supreme Court did not suggest in affirming *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (1995) (en banc), that claim construction is a purely legal question. 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). It held only that, as a policy matter, the judge, as opposed to the jury, should determine the meaning of a patent claim. See *Cybor, 138 F.3d at 1464* (Mayer, C.J., dissenting) (explaining that "the [Supreme] Court chose not to accept our formulation of claim construction: as a pure question of law to be decided *de novo* in all cases on appeal").

<sup>FN2</sup> See *The Holmes Group, Inc. v. Vornado Air Circulation Sys., Inc.*, 535 U.S. 826, 833, 122 S.Ct. 1889, 153 L.Ed.2d 13 (2002).

Again today we vainly attempt to establish standards by which this court will interpret claims. But after

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proposing no fewer than seven questions, receiving more than thirty *amici curiae* briefs, and whipping the bar into a frenzy of expectation, we say nothing new, but merely restate what has become the practice over the last ten years—that we will decide cases according to whatever mode or method results in the outcome we desire, or at least allows us a seemingly plausible way out of the case. I am not surprised by this. \*1331 Indeed, there can be no workable standards by which this court will interpret claims so long as we are blind to the factual component of the task. See *Cooter & Gell v. Hartmarx Corp.*, 496 U.S. 384, 405, 110 S.Ct. 2447, 110 L.Ed.2d 359 (1990) (“Fact-bound resolutions cannot be made uniform through appellate review, de novo or otherwise.” (quoting *Mars Steel Corp. v. Cont'l Bank N.A.*, 880 F.2d 928, 936 (7th Cir.1989))).<sup>FN3</sup>

FN3. The question asked but not answered by the court which might have allowed it to cure its self-inflicted wound was: “Question 7. Consistent with the Supreme Court's decision in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) and our *en banc* decision in *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed.Cir.1998), is it appropriate for this court to accord any deference to any aspect of trial court claim construction rulings? If so, on what aspects, in what circumstances, and to what extent?”

Federal Rule of Civil Procedure 52(a) states that “[f]indings of fact ... shall not be set aside unless clearly erroneous, and due regard shall be given to the opportunity of the trial court to judge of the credibility of witnesses.” According to the Supreme Court, this “[r]ule means what it says”—that findings of fact, even “those described as ‘ultimate facts’ because they may determine the outcome of litigation,” are to be reviewed deferentially on appeal.<sup>FN4</sup> *Bose Corp. v. Consumers Union of United States*, 466 U.S. 485, 498 & 501, 104 S.Ct. 1949, 80 L.Ed.2d 502 (1984); see also *Anderson v. Bessemer City*, 470 U.S. 564, 575, 105 S.Ct. 1504, 84 L.Ed.2d 518 (1985) (“[R]eview of factual findings under the clearly-erroneous standard—with its deference to the trier of fact—is the rule, not the exception.”); *Pullman-Standard v. Swint*, 456 U.S. 273, 287, 102 S.Ct. 1781, 72 L.Ed.2d 66 (1982) (“Rule 52(a) broadly requires that findings of fact not be set aside unless clearly erroneous.”); *United States v. United States Gypsum Co.*, 333 U.S. 364, 394, 68 S.Ct. 525,

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92 L.Ed. 746 (1948). \*1332 Even those findings of fact based entirely on documentary evidence are entitled to deference. *Anderson*, 470 U.S. at 574, 105 S.Ct. 1504 (“That [Rule 52(a)] goes on to emphasize the special deference to be paid credibility determinations does not alter its clear command: Rule 52(a) ‘does not make exceptions or purport to exclude certain categories of factual findings from the obligation of a court of appeals to accept a district court's findings unless clearly erroneous.’” (quoting *Pullman-Standard*, 456 U.S. at 287, 102 S.Ct. 1781)). In short, we are obligated by Rule 52(a) to review the factual findings of the district court that underlie the determination of claim construction for clear error.

FN4. Because some facts are so intertwined with a constitutional standard the Supreme Court has held that *de novo* review is appropriate. For example, whether a defendant has acted with actual malice in a defamation suit is reviewed *de novo* because, among other reasons, the scope of the First Amendment is shaped and applied by reference to such factual determinations. *Bose*, 466 U.S. at 502, 104 S.Ct. 1949 (“[T]he content of the rule is not revealed simply by its literal text, but rather is given meaning through the evolutionary process of common-law adjudication.”). Similarly, whether there is reasonable suspicion to conduct an investigatory stop or probable cause to perform a search under the Fourth Amendment are reviewed without deference. *Ornelas v. United States*, 517 U.S. 690, 696, 116 S.Ct. 1657, 134 L.Ed.2d 911 (1996) (holding that the protections afforded by the Fourth Amendment are “fluid concepts that take their substantive content from the particular contexts in which the standards are being assessed”). The reasoning behind these limited exceptions surely does not apply to claim construction. While appearing from the perspective of this court's limited sphere of influence to be dreadfully important, claim construction does not implicate a constitutional value. Cf. *Bose*, 466 U.S. at 502, 104 S.Ct. 1949 (“[T]he constitutional values protected by the rule make it imperative that judges—and in some cases judges of [the Supreme] Court—make sure that it is correctly applied.”). This is illustrated by the fact that the outcome of a patent case, unlike a defamation or illegal search case, has little

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impact on how future cases are decided or on how future parties behave. Cf. *id.* at 501 n. 17, 104 S.Ct. 1949 (“Regarding certain largely factual questions in some areas of the law, the stakes-in terms of impact on future cases and future conduct—are too great to entrust them finally to the judgment of the trier of fact.”). Even if claim construction did implicate a constitutional value, it, unlike the decisions underlying the First and Fourth Amendments, could readily be reduced, when distinguished from its factual underpinnings, to “a neat set of legal rules.” *Ornelas*, 517 U.S. at 695-96, 116 S.Ct. 1657 (quoting *Ill. v. Gates*, 462 U.S. 213, 232, 103 S.Ct. 2317, 76 L.Ed.2d 527 (1983)).

While this court may persist in the delusion that claim construction is a purely legal determination, unaffected by underlying facts, it is plainly not the case. Claim construction is, or should be, made in context: a claim should be interpreted both from the perspective of one of ordinary skill in the art and in view of the state of the art at the time of invention. See *Multiform Desiccants, Inc. v. Medcam, Ltd.*, 133 F.3d 1473, 1477 (Fed.Cir.1998) (“It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed.”). These questions, which are critical to the correct interpretation of a claim, are inherently factual. They are hotly contested by the parties, not by resort to case law as one would expect for legal issues, but based on testimony and documentary evidence.<sup>FN5</sup> During so called *Markman* “hearings,” which are often longer than jury trials, parties battle over experts offering conflicting evidence regarding who qualifies as one of ordinary skill in the art; the meaning of patent terms to that person; the state of the art at the time of the invention; contradictory dictionary definitions and which would be consulted by the skilled artisan; the scope of specialized terms; the problem a patent was solving; what is related or pertinent art; whether a construction was disallowed during prosecution; how one of skill in the art would understand statements during prosecution; and on and on. In order to reconcile the parties' inconsistent submissions and arrive at a sound interpretation, the district court is required to sift through and weigh volumes of evidence. While this court treats the district court as an intake clerk, whose only role is to collect, shuffle and collate evidence, the reality, as revealed by conventional practice, is far different.

FN5. That most of the cases now appealed

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to this court are “summary judgments” is irrelevant. We have artificially renamed findings of fact as legal conclusions; the district courts have dutifully conformed to our fictional characterization, but this does not change the inherent nature of the inquiry. Of course, if the parties do not dispute the material facts, summary judgment is appropriate.

Even if the procedures employed by the district court did not show that it is engaging in factfinding, the nature of the questions underlying claim construction illustrate that they are factual and should be reviewed in accordance with Rule 52(a). For each patent, for example, who qualifies as one of ordinary skill in the art will differ, just as the state of the art at the time of invention will differ. These subsidiary determinations are specific, multifarious and not susceptible to generalization; as such their resolution in one case will bear very little, if at all, on the resolution of subsequent cases. See *Ornelas*, 517 U.S. at 703, 116 S.Ct. 1657 (“Law clarification requires generalization, and some issues lend themselves to generalization much more than others.”); *Pierce v. Underwood*, 487 U.S. 552, 561-62, 108 S.Ct. 2541, 101 L.Ed.2d 490 (1988) (“Many questions that arise in litigation are not amenable\*1333 to regulation by rule because they involve multifarious, fleeting, special, narrow facts that utterly resist generalization.” (quoting Maurice Rosenberg, *Judicial Discretion of the Trial Court, Viewed from Above*, 22 Syracuse L.Rev. 635, 662 (1971))); *Icicle Seafoods, Inc. v. Worthington*, 475 U.S. 709, 714, 106 S.Ct. 1527, 89 L.Ed.2d 739 (1986) (rejecting *de novo* review of factual questions, even when outcome determinative). That the determination of the meaning of a particular term in one patent will not necessarily bear on the interpretation of the same term in a subsequent patent illustrates this point; while the term is the same, the underlying factual context is different. It further proves that these questions (e.g., who qualifies as one of ordinary skill in the art and what was the state of the art at the time of invention, among others) are implicitly being determined in each case; because we refuse to acknowledge either their existence or importance, however, the manner of their resolution is never elucidated. Finally, that claim construction is dependent on underlying factual determinations has been verified by our experience, which shows that reviewing these questions *de novo* has not clarified the law, but has instead “distort[ed] the appellate process,” causing confusion among the district courts and bar. See *Cooter*, 496 U.S. at 404,

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[110 S.Ct. 2447](#) (quoting [Pierce](#), 487 U.S. at 561, 108 S.Ct. 2541); see also [Koon v. United States](#), 518 U.S. 81, 99, 116 S.Ct. 2035, 135 L.Ed.2d 392 (1996).

Our purely *de novo* review of claim interpretation also cannot be reconciled with the Supreme Court's instructions regarding obviousness. While ultimately a question of law, obviousness depends on several underlying factual inquiries. [Graham v. John Deere Co.](#), 383 U.S. 1, 17, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966); see also [Demison Mfg. Co. v. Panduit Corp.](#), 475 U.S. 809, 811, 106 S.Ct. 1578, 89 L.Ed.2d 817 (1986) (holding that [Rule 52\(a\)](#) requires that the district court's subsidiary factual determinations should be reviewed for clear error); cf. [Graver Tank & Mfg. Co. v. Linde Air Prods. Co.](#), 336 U.S. 271, 275, 69 S.Ct. 535, 93 L.Ed. 672 (1949) (holding that validity, while ultimately a question of law, is founded on factual determinations that are entitled to deference). "Under [section] 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved." [Graham](#), 383 U.S. at 17, 86 S.Ct. 684.

To a significant degree, each of these factual inquiries is also necessary to claim construction. Before beginning claim construction, "the scope and content of the prior art [should] be determined," *id.* to establish context. The "differences between the prior art and the claims at issue [should] be ascertained," *id.*, to better define what the inventor holds out as the invention. And, the foundation for both the obviousness and claim construction determinations is "the level of ordinary skill in the pertinent art." *Id.*; see [Multiform](#), 133 F.3d at 1477. These underlying factual considerations receive the level of deference due under [Rule 52\(a\)](#) when considering obviousness, but they are scrutinized *de novo* in the claim construction context. As directed by the Supreme Court, however, it is especially important in the patent field, "where so much depends upon familiarity with specific scientific problems and principles not usually contained in the general storehouse of knowledge and experience," to give deference to the district court's findings of fact. [Graver Tank & Mfg. Co. v. Linde Air Prods. Co.](#), 339 U.S. 605, 609-10, 70 S.Ct. 854, 94 L.Ed. 1097 (1950).

\*1334 While the court flails about in an attempt to solve the claim construction "conundrum," the solution to our plight is straightforward. We simply must follow the example of every other appellate

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court, which, regarding the vast majority of factual questions, reviews the trial court for clear error.<sup>FN6</sup> This equilibrium did not come about as the result of chance or permissive appellate personalities, but because two centuries of experience has shown that the trial court's factfinding ability is "unchallenged." [Salve Regina Coll. v. Russell](#), 499 U.S. 225, 233, 111 S.Ct. 1217, 113 L.Ed.2d 190 (1991); [Inwood](#), 456 U.S. at 856, 102 S.Ct. 2182 ("Determining the weight and credibility of the evidence is the special province of the trier of fact."). Time has similarly revealed that it is more economical for the district court to find facts. [Pierce](#), 487 U.S. at 560, 108 S.Ct. 2541 ("Moreover, even where the district judge's full knowledge of the factual setting can be acquired by the appellate court, that acquisition will often come at unusual expense, requiring the court to undertake the unaccustomed task of reviewing the entire record ....").

<sup>FN6</sup>. While jurisprudentially sound, the bar also supports this proposition, as evident by the many *amici curiae* briefs urging adherence to [Rule 52\(a\)](#).

Therefore, not only is it more efficient for the trial court to construct the record, the trial court is *better*, that is, more accurate, by way of both position and practice, at finding facts than appellate judges. [Anderson](#), 470 U.S. at 574, 105 S.Ct. 1504 ("The rationale for deference to the original finder of fact is not limited to the superiority of the trial judge's position to make determinations of credibility. The trial judge's major role is the determination of fact, and with experience on fulfilling that role comes expertise."); [Zenith Radio Corp. v. Hazeltine Research, Inc.](#), 395 U.S. 100, 123, 89 S.Ct. 1562, 23 L.Ed.2d 129 (1969). Our rejection of this fundamental premise has resulted, not surprisingly, in several serious problems, including increased litigation costs, needless consumption of judicial resources, and uncertainty, as well as diminished respect for the court and less "decisional accuracy." [Salve](#), 499 U.S. at 233, 111 S.Ct. 1217. We should abandon this unsound course.<sup>FN7</sup>

<sup>FN7</sup>. There are some scenarios where it is difficult to weed facts from law, see [Pullman-Standard](#), 456 U.S. at 288, 102 S.Ct. 1781, but claim construction is not one of them.

If we persist in deciding the subsidiary factual

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components of claim construction without deference, there is no reason why litigants should be required to parade their evidence before the district courts or for district courts to waste time and resources evaluating such evidence. It is excessive to require parties, who "have already been forced to concentrate their energies and resources on persuading the trial judge that their account of the facts is the correct one," to "persuade three more judges at the appellate level." [Anderson](#), 470 U.S. at 575, 105 S.Ct. 1504. If the proceedings before the district court are merely a "tryout on the road," *id.* (quoting [Wainwright v. Sykes](#), 433 U.S. 72, 90, 97 S.Ct. 2497, 53 L.Ed.2d 594 (1977)), as they are under our current regimen, it is wasteful to require such proceedings at all. Instead, all patent cases could be filed in this court; we would determine whether claim construction is necessary, and, if so, the meaning of the claims. Those few cases in which claim construction is not dispositive can be remanded to the district court for trial. In this way, we would at least eliminate the time and expense of the charade currently played out before the district court.

Eloquent words can mask much mischief. The court's opinion today is akin to \*1335 rearranging the deck chairs on the Titanic—the orchestra is playing as if nothing is amiss, but the ship is still heading for Davey Jones' locker.

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(Slip Opinion)

OCTOBER TERM, 2006

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## Syllabus

NOTE: Where it is feasible, a syllabus (headnote) will be released, as is being done in connection with this case, at the time the opinion is issued. The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See *United States v. Detroit Timber & Lumber Co.*, 200 U. S. 321, 337.

## SUPREME COURT OF THE UNITED STATES

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KSR INTERNATIONAL CO. *v.* TELEFLEX INC. ET AL.CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR  
THE FEDERAL CIRCUIT

No. 04–1350. Argued November 28, 2006—Decided April 30, 2007

To control a conventional automobile's speed, the driver depresses or releases the gas pedal, which interacts with the throttle via a cable or other mechanical link. Because the pedal's position in the footwell normally cannot be adjusted, a driver wishing to be closer or farther from it must either reposition himself in the seat or move the seat, both of which can be imperfect solutions for smaller drivers in cars with deep footwells. This prompted inventors to design and patent pedals that could be adjusted to change their locations. The Asano patent reveals a support structure whereby, when the pedal location is adjusted, one of the pedal's pivot points stays fixed. Asano is also designed so that the force necessary to depress the pedal is the same regardless of location adjustments. The Redding patent reveals a different, sliding mechanism where both the pedal and the pivot point are adjusted.

In newer cars, computer-controlled throttles do not operate through force transferred from the pedal by a mechanical link, but open and close valves in response to electronic signals. For the computer to know what is happening with the pedal, an electronic sensor must translate the mechanical operation into digital data. Inventors had obtained a number of patents for such sensors. The so-called '936 patent taught that it was preferable to detect the pedal's position in the pedal mechanism, not in the engine, so the patent disclosed a pedal with an electronic sensor on a pivot point in the pedal assembly. The Smith patent taught that to prevent the wires connecting the sensor to the computer from chafing and wearing out, the sensor should be put on a fixed part of the pedal assembly rather than in or on the pedal's footpad. Inventors had also patented self-contained modular sensors, which can be taken off the shelf and attached to any

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mechanical pedal to allow it to function with a computer-controlled throttle. The '068 patent disclosed one such sensor. Chevrolet also manufactured trucks using modular sensors attached to the pedal support bracket, adjacent to the pedal and engaged with the pivot shaft about which the pedal rotates. Other patents disclose electronic sensors attached to adjustable pedal assemblies. For example, the Rixon patent locates the sensor in the pedal footpad, but is known for wire chafing.

After petitioner KSR developed an adjustable pedal system for cars with cable-actuated throttles and obtained its '976 patent for the design, General Motors Corporation (GMC) chose KSR to supply adjustable pedal systems for trucks using computer-controlled throttles. To make the '976 pedal compatible with the trucks, KSR added a modular sensor to its design. Respondents (Teleflex) hold the exclusive license for the Engelgau patent, claim 4 of which discloses a position-adjustable pedal assembly with an electronic pedal position sensor attached a fixed pivot point. Despite having denied a similar, broader claim, the U. S. Patent and Trademark Office (PTO) had allowed claim 4 because it included the limitation of a fixed pivot position, which distinguished the design from Redding's. Asano was neither included among the Engelgau patent's prior art references nor mentioned in the patent's prosecution, and the PTO did not have before it an adjustable pedal with a fixed pivot point. After learning of KSR's design for GMC, Teleflex sued for infringement, asserting that KSR's pedal system infringed the Engelgau patent's claim 4. KSR countered that claim 4 was invalid under §103 of the Patent Act, which forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art."

*Graham v. John Deere Co. of Kansas City*, 383 U. S. 1, 17–18, set out an objective analysis for applying §103: "[T]he scope and content of the prior art are . . . determined; differences between the prior art and the claims at issue are . . . ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." While the sequence of these questions might be reordered in any particular case, the factors define the controlling inquiry. However, seeking to resolve the obviousness question with more uniformity and consistency, the Federal Circuit has employed a "teaching, suggestion, or motivation" (TSM) test, under which a pat-

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ent claim is only proved obvious if the prior art, the problem's nature, or the knowledge of a person having ordinary skill in the art reveals some motivation or suggestion to combine the prior art teachings.

The District Court granted KSR summary judgment. After reviewing pedal design history, the Engelgau patent's scope, and the relevant prior art, the court considered claim 4's validity, applying *Graham's* framework to determine whether under summary-judgment standards KSR had demonstrated that claim 4 was obvious. The court found "little difference" between the prior art's teachings and claim 4: Asano taught everything contained in the claim except using a sensor to detect the pedal's position and transmit it to a computer controlling the throttle. That additional aspect was revealed in, *e.g.*, the '068 patent and Chevrolet's sensors. The court then held that KSR satisfied the TSM test, reasoning (1) the state of the industry would lead inevitably to combinations of electronic sensors and adjustable pedals, (2) Rixon provided the basis for these developments, and (3) Smith taught a solution to Rixon's chafing problems by positioning the sensor on the pedal's fixed structure, which could lead to the combination of a pedal like Asano with a pedal position sensor.

Reversing, the Federal Circuit ruled the District Court had not applied the TSM test strictly enough, having failed to make findings as to the specific understanding or principle within a skilled artisan's knowledge that would have motivated one with no knowledge of the invention to attach an electronic control to the Asano assembly's support bracket. The Court of Appeals held that the District Court's recourse to the nature of the problem to be solved was insufficient because, unless the prior art references addressed the precise problem that the patentee was trying to solve, the problem would not motivate an inventor to look at those references. The appeals court found that the Asano pedal was designed to ensure that the force required to depress the pedal is the same no matter how the pedal is adjusted, whereas Engelgau sought to provide a simpler, smaller, cheaper adjustable electronic pedal. The Rixon pedal, said the court, suffered from chafing but was not designed to solve that problem and taught nothing helpful to Engelgau's purpose. Smith, in turn, did not relate to adjustable pedals and did not necessarily go to the issue of motivation to attach the electronic control on the pedal assembly's support bracket. So interpreted, the court held, the patents would not have led a person of ordinary skill to put a sensor on an Asano-like pedal. That it might have been obvious to try that combination was likewise irrelevant. Finally, the court held that genuine issues of material fact precluded summary judgment.

*Held:* The Federal Circuit addressed the obviousness question in a narrow, rigid manner that is inconsistent with §103 and this Court's



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precedents. KSR provided convincing evidence that mounting an available sensor on a fixed pivot point of the Asano pedal was a design step well within the grasp of a person of ordinary skill in the relevant art and that the benefit of doing so would be obvious. Its arguments, and the record, demonstrate that the Engelgau patent's claim 4 is obvious. Pp. 11–24.

1. *Graham* provided an expansive and flexible approach to the obviousness question that is inconsistent with the way the Federal Circuit applied its TSM test here. Neither §103's enactment nor *Graham*'s analysis disturbed the Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. See *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U. S. 147, 152. Such a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. See, e.g., *United States v. Adams*, 383 U. S. 39, 50–52. When a work is available in one field, design incentives and other market forces can prompt variations of it, either in the same field or in another. If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, §103 likely bars its patentability. Moreover, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person's skill. A court must ask whether the improvement is more than the predictable use of prior-art elements according to their established functions. Following these principles may be difficult if the claimed subject matter involves more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. To determine whether there was an apparent reason to combine the known elements in the way a patent claims, it will often be necessary to look to interrelated teachings of multiple patents; to the effects of demands known to the design community or present in the marketplace; and to the background knowledge possessed by a person having ordinary skill in the art. To facilitate review, this analysis should be made explicit. But it need not seek out precise teachings directed to the challenged claim's specific subject matter, for a court can consider the inferences and creative steps a person of ordinary skill in the art would employ. Pp. 11–14.

(b) The TSM test captures a helpful insight: A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art. Although common sense directs caution as to a patent application claiming as

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innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does. Inventions usually rely upon building blocks long since uncovered, and claimed discoveries almost necessarily will be combinations of what, in some sense, is already known. Helpful insights, however, need not become rigid and mandatory formulas. If it is so applied, the TSM test is incompatible with this Court's precedents. The diversity of inventive pursuits and of modern technology counsels against confining the obviousness analysis by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasizing the importance of published articles and the explicit content of issued patents. In many fields there may be little discussion of obvious techniques or combinations, and market demand, rather than scientific literature, may often drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, for patents combining previously known elements, deprive prior inventions of their value or utility. Since the TSM test was devised, the Federal Circuit doubtless has applied it in accord with these principles in many cases. There is no necessary inconsistency between the test and the *Graham* analysis. But a court errs where, as here, it transforms general principle into a rigid rule limiting the obviousness inquiry. Pp. 14–15.

(c) The flaws in the Federal Circuit's analysis relate mostly to its narrow conception of the obviousness inquiry consequent in its application of the TSM test. The Circuit first erred in holding that courts and patent examiners should look only to the problem the patentee was trying to solve. Under the correct analysis, any need or problem known in the field and addressed by the patent can provide a reason for combining the elements in the manner claimed. Second, the appeals court erred in assuming that a person of ordinary skill in the art attempting to solve a problem will be led only to those prior art elements designed to solve the same problem. The court wrongly concluded that because Asano's primary purpose was solving the constant ratio problem, an inventor considering how to put a sensor on an adjustable pedal would have no reason to consider putting it on the Asano pedal. It is common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle. Regardless of Asano's primary purpose, it provided an obvious example of an adjustable pedal with a fixed pivot point, and the prior art was replete with patents indicating that such a point was an ideal mount for a sensor. Third, the

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court erred in concluding that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. Finally, the court drew the wrong conclusion from the risk of courts and patent examiners falling prey to hindsight bias. Rigid preventative rules that deny recourse to common sense are neither necessary under, nor consistent with, this Court's case law. Pp. 15–18.

2. Application of the foregoing standards demonstrates that claim 4 is obvious. Pp. 18–23.

(a) The Court rejects Teleflex's argument that the Asano pivot mechanism's design prevents its combination with a sensor in the manner claim 4 describes. This argument was not raised before the District Court, and it is unclear whether it was raised before the Federal Circuit. Given the significance of the District Court's finding that combining Asano with a pivot-mounted pedal position sensor fell within claim 4's scope, it is apparent that Teleflex would have made clearer challenges if it intended to preserve this claim. Its failure to clearly raise the argument, and the appeals court's silence on the issue, lead this Court to accept the District Court's conclusion. Pp. 18–20.

(b) The District Court correctly concluded that when Engelgau designed the claim 4 subject matter, it was obvious to a person of ordinary skill in the art to combine Asano with a pivot-mounted pedal position sensor. There then was a marketplace creating a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for doing so. The Federal Circuit considered the issue too narrowly by, in effect, asking whether a pedal designer writing on a blank slate would have chosen both Asano and a modular sensor similar to the ones used in the Chevrolet trucks and disclosed in the '068 patent. The proper question was whether a pedal designer of ordinary skill in the art, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to upgrading Asano with a sensor. For such a designer starting with Asano, the question was where to attach the sensor. The '936 patent taught the utility of putting the sensor on the pedal device. Smith, in turn, explained not to put the sensor on the pedal footpad, but instead on the structure. And from Rixon's known wire-chafing problems, and Smith's teaching that the pedal assemblies must not precipitate any motion in the connecting wires,

## Syllabus

the designer would know to place the sensor on a nonmoving part of the pedal structure. The most obvious such point is a pivot point. The designer, accordingly, would follow Smith in mounting the sensor there. Just as it was possible to begin with the objective to upgrade Asano to work with a computer-controlled throttle, so too was it possible to take an adjustable electronic pedal like Rixon and seek an improvement that would avoid the wire-chafing problem. Teleflex has not shown anything in the prior art that taught away from the use of Asano, nor any secondary factors to dislodge the determination that claim 4 is obvious. Pp. 20–23.

3. The Court disagrees with the Federal Circuit's holding that genuine issues of material fact precluded summary judgment. The ultimate judgment of obviousness is a legal determination. *Graham*, 383 U. S., at 17. Where, as here, the prior art's content, the patent claim's scope, and the level of ordinary skill in the art are not in material dispute and the claim's obviousness is apparent, summary judgment is appropriate. P. 23.

119 Fed. Appx. 282, reversed and remanded.

KENNEDY, J., delivered the opinion for a unanimous Court.

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## Opinion of the Court

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## SUPREME COURT OF THE UNITED STATES

No. 04-1350

KSR INTERNATIONAL CO., PETITIONER v.  
TELEFLEX INC. ET AL.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF  
APPEALS FOR THE FEDERAL CIRCUIT

[April 30, 2007]

JUSTICE KENNEDY delivered the opinion of the Court.

Teleflex Incorporated and its subsidiary Technology Holding Company—both referred to here as Teleflex—sued KSR International Company for patent infringement. The patent at issue, United States Patent No. 6,237,565 B1, is entitled “Adjustable Pedal Assembly With Electronic Throttle Control.” Supplemental App. 1. The patentee is Steven J. Engelgau, and the patent is referred to as “the Engelgau patent.” Teleflex holds the exclusive license to the patent.

Claim 4 of the Engelgau patent describes a mechanism for combining an electronic sensor with an adjustable automobile pedal so the pedal’s position can be transmitted to a computer that controls the throttle in the vehicle’s engine. When Teleflex accused KSR of infringing the Engelgau patent by adding an electronic sensor to one of KSR’s previously designed pedals, KSR countered that claim 4 was invalid under the Patent Act, 35 U. S. C. §103, because its subject matter was obvious.

Section 103 forbids issuance of a patent when “the differences between the subject matter sought to be pat-

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ented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.”

In *Graham v. John Deere Co. of Kansas City*, 383 U. S. 1 (1966), the Court set out a framework for applying the statutory language of §103, language itself based on the logic of the earlier decision in *Hotchkiss v. Greenwood*, 11 How. 248 (1851), and its progeny. See 383 U. S., at 15–17. The analysis is objective:

“Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” *Id.*, at 17–18.

While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls. If a court, or patent examiner, conducts this analysis and concludes the claimed subject matter was obvious, the claim is invalid under §103.

Seeking to resolve the question of obviousness with more uniformity and consistency, the Court of Appeals for the Federal Circuit has employed an approach referred to by the parties as the “teaching, suggestion, or motivation” test (TSM test), under which a patent claim is only proved obvious if “some motivation or suggestion to combine the prior art teachings” can be found in the prior art, the nature of the problem, or the knowledge of a person having ordinary skill in the art. See, e.g., *Al-Site Corp. v. VSI*

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*Int'l, Inc.*, 174 F.3d 1308, 1323–1324 (CA Fed. 1999). KSR challenges that test, or at least its application in this case. See 119 Fed. Appx. 282, 286–290 (CA Fed. 2005). Because the Court of Appeals addressed the question of obviousness in a manner contrary to §103 and our precedents, we granted certiorari, 547 U. S. \_\_\_\_ (2006). We now reverse.

## I

## A

In car engines without computer-controlled throttles, the accelerator pedal interacts with the throttle via cable or other mechanical link. The pedal arm acts as a lever rotating around a pivot point. In a cable-actuated throttle control the rotation caused by pushing down the pedal pulls a cable, which in turn pulls open valves in the carburetor or fuel injection unit. The wider the valves open, the more fuel and air are released, causing combustion to increase and the car to accelerate. When the driver takes his foot off the pedal, the opposite occurs as the cable is released and the valves slide closed.

In the 1990's it became more common to install computers in cars to control engine operation. Computer-controlled throttles open and close valves in response to electronic signals, not through force transferred from the pedal by a mechanical link. Constant, delicate adjustments of air and fuel mixture are possible. The computer's rapid processing of factors beyond the pedal's position improves fuel efficiency and engine performance.

For a computer-controlled throttle to respond to a driver's operation of the car, the computer must know what is happening with the pedal. A cable or mechanical link does not suffice for this purpose; at some point, an electronic sensor is necessary to translate the mechanical operation into digital data the computer can understand.

Before discussing sensors further we turn to the me-

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chanical design of the pedal itself. In the traditional design a pedal can be pushed down or released but cannot have its position in the footwell adjusted by sliding the pedal forward or back. As a result, a driver who wishes to be closer or farther from the pedal must either reposition himself in the driver's seat or move the seat in some way. In cars with deep footwells these are imperfect solutions for drivers of smaller stature. To solve the problem, inventors, beginning in the 1970's, designed pedals that could be adjusted to change their location in the footwell. Important for this case are two adjustable pedals disclosed in U. S. Patent Nos. 5,010,782 (filed July 28, 1989) (Asano) and 5,460,061 (filed Sept. 17, 1993) (Redding). The Asano patent reveals a support structure that houses the pedal so that even when the pedal location is adjusted relative to the driver, one of the pedal's pivot points stays fixed. The pedal is also designed so that the force necessary to push the pedal down is the same regardless of adjustments to its location. The Redding patent reveals a different, sliding mechanism where both the pedal and the pivot point are adjusted.

We return to sensors. Well before Engelgau applied for his challenged patent, some inventors had obtained patents involving electronic pedal sensors for computer-controlled throttles. These inventions, such as the device disclosed in U. S. Patent No. 5,241,936 (filed Sept. 9, 1991) ('936), taught that it was preferable to detect the pedal's position in the pedal assembly, not in the engine. The '936 patent disclosed a pedal with an electronic sensor on a pivot point in the pedal assembly. U. S. Patent No. 5,063,811 (filed July 9, 1990) (Smith) taught that to prevent the wires connecting the sensor to the computer from chafing and wearing out, and to avoid grime and damage from the driver's foot, the sensor should be put on a fixed part of the pedal assembly rather than in or on the pedal's footpad.

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In addition to patents for pedals with integrated sensors inventors obtained patents for self-contained modular sensors. A modular sensor is designed independently of a given pedal so that it can be taken off the shelf and attached to mechanical pedals of various sorts, enabling the pedals to be used in automobiles with computer-controlled throttles. One such sensor was disclosed in U. S. Patent No. 5,385,068 (filed Dec. 18, 1992) ('068). In 1994, Chevrolet manufactured a line of trucks using modular sensors "attached to the pedal support bracket, adjacent to the pedal and engaged with the pivot shaft about which the pedal rotates in operation." 298 F. Supp. 2d 581, 589 (E.D. Mich. 2003).

The prior art contained patents involving the placement of sensors on adjustable pedals as well. For example, U. S. Patent No. 5,819,593 (filed Aug. 17, 1995) (Rixon) discloses an adjustable pedal assembly with an electronic sensor for detecting the pedal's position. In the Rixon pedal the sensor is located in the pedal footpad. The Rixon pedal was known to suffer from wire chafing when the pedal was depressed and released.

This short account of pedal and sensor technology leads to the instant case.

## B

KSR, a Canadian company, manufactures and supplies auto parts, including pedal systems. Ford Motor Company hired KSR in 1998 to supply an adjustable pedal system for various lines of automobiles with cable-actuated throttle controls. KSR developed an adjustable mechanical pedal for Ford and obtained U. S. Patent No. 6,151,976 (filed July 16, 1999) ('976) for the design. In 2000, KSR was chosen by General Motors Corporation (GMC or GM) to supply adjustable pedal systems for Chevrolet and GMC light trucks that used engines with computer-controlled throttles. To make the '976 pedal compatible with the

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trucks, KSR merely took that design and added a modular sensor.

Teleflex is a rival to KSR in the design and manufacture of adjustable pedals. As noted, it is the exclusive licensee of the Engelgau patent. Engelgau filed the patent application on August 22, 2000 as a continuation of a previous application for U. S. Patent No. 6,109,241, which was filed on January 26, 1999. He has sworn he invented the patent's subject matter on February 14, 1998. The Engelgau patent discloses an adjustable electronic pedal described in the specification as a "simplified vehicle control pedal assembly that is less expensive, and which uses fewer parts and is easier to package within the vehicle." Engelgau, col. 2, lines 2-5, Supplemental App. 6. Claim 4 of the patent, at issue here, describes:

"A vehicle control pedal apparatus comprising:

a support adapted to be mounted to a vehicle structure;

an adjustable pedal assembly having a pedal arm moveable in fore[ward] and aft directions with respect to said support;

a pivot for pivotally supporting said adjustable pedal assembly with respect to said support and defining a pivot axis; and

an electronic control attached to said support for controlling a vehicle system;

said apparatus characterized by said electronic control being responsive to said pivot for providing a signal that corresponds to pedal arm position as said pedal arm pivots about said pivot axis between rest and applied positions wherein the position of said pivot remains constant while said pedal arm moves in fore and aft directions with respect to said pivot." *Id.*, col.

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6, lines 17–36, Supplemental App. 8 (diagram numbers omitted).

We agree with the District Court that the claim discloses “a position-adjustable pedal assembly with an electronic pedal position sensor attached to the support member of the pedal assembly. Attaching the sensor to the support member allows the sensor to remain in a fixed position while the driver adjusts the pedal.” 298 F. Supp. 2d, at 586–587.

Before issuing the Engelgau patent the U. S. Patent and Trademark Office (PTO) rejected one of the patent claims that was similar to, but broader than, the present claim 4. The claim did not include the requirement that the sensor be placed on a fixed pivot point. The PTO concluded the claim was an obvious combination of the prior art disclosed in Redding and Smith, explaining:

“Since the prior ar[t] references are from the field of endeavor, the purpose disclosed . . . would have been recognized in the pertinent art of Redding. Therefore it would have been obvious . . . to provide the device of Redding with the . . . means attached to a support member as taught by Smith.” *Id.*, at 595.

In other words Redding provided an example of an adjustable pedal and Smith explained how to mount a sensor on a pedal's support structure, and the rejected patent claim merely put these two teachings together.

Although the broader claim was rejected, claim 4 was later allowed because it included the limitation of a fixed pivot point, which distinguished the design from Redding's. *Ibid.* Engelgau had not included Asano among the prior art references, and Asano was not mentioned in the patent's prosecution. Thus, the PTO did not have before it an adjustable pedal with a fixed pivot point. The patent issued on May 29, 2001 and was assigned to Teleflex.

Upon learning of KSR's design for GM, Teleflex sent a

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warning letter informing KSR that its proposal would violate the Engelgau patent. “Teleflex believes that any supplier of a product that combines an adjustable pedal with an electronic throttle control necessarily employs technology covered by one or more” of Teleflex's patents. *Id.*, at 585. KSR refused to enter a royalty arrangement with Teleflex; so Teleflex sued for infringement, asserting KSR's pedal infringed the Engelgau patent and two other patents. *Ibid.* Teleflex later abandoned its claims regarding the other patents and dedicated the patents to the public. The remaining contention was that KSR's pedal system for GM infringed claim 4 of the Engelgau patent. Teleflex has not argued that the other three claims of the patent are infringed by KSR's pedal, nor has Teleflex argued that the mechanical adjustable pedal designed by KSR for Ford infringed any of its patents.

## C

The District Court granted summary judgment in KSR's favor. After reviewing the pertinent history of pedal design, the scope of the Engelgau patent, and the relevant prior art, the court considered the validity of the contested claim. By direction of 35 U. S. C. §282, an issued patent is presumed valid. The District Court applied *Graham's* framework to determine whether under summary-judgment standards KSR had overcome the presumption and demonstrated that claim 4 was obvious in light of the prior art in existence when the claimed subject matter was invented. See §102(a).

The District Court determined, in light of the expert testimony and the parties' stipulations, that the level of ordinary skill in pedal design was “an undergraduate degree in mechanical engineering (or an equivalent amount of industry experience) [and] familiarity with pedal control systems for vehicles.” 298 F. Supp. 2d, at 590. The court then set forth the relevant prior art, in-

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cluding the patents and pedal designs described above.

Following *Graham's* direction, the court compared the teachings of the prior art to the claims of Engelgau. It found "little difference." 298 F. Supp. 2d, at 590. Asano taught everything contained in claim 4 except the use of a sensor to detect the pedal's position and transmit it to the computer controlling the throttle. That additional aspect was revealed in sources such as the '068 patent and the sensors used by Chevrolet.

Under the controlling cases from the Court of Appeals for the Federal Circuit, however, the District Court was not permitted to stop there. The court was required also to apply the TSM test. The District Court held KSR had satisfied the test. It reasoned (1) the state of the industry would lead inevitably to combinations of electronic sensors and adjustable pedals, (2) Rixon provided the basis for these developments, and (3) Smith taught a solution to the wire chafing problems in Rixon, namely locating the sensor on the fixed structure of the pedal. This could lead to the combination of Asano, or a pedal like it, with a pedal position sensor.

The conclusion that the Engelgau design was obvious was supported, in the District Court's view, by the PTO's rejection of the broader version of claim 4. Had Engelgau included Asano in his patent application, it reasoned, the PTO would have found claim 4 to be an obvious combination of Asano and Smith, as it had found the broader version an obvious combination of Redding and Smith. As a final matter, the District Court held that the secondary factor of Teleflex's commercial success with pedals based on Engelgau's design did not alter its conclusion. The District Court granted summary judgment for KSR.

With principal reliance on the TSM test, the Court of Appeals reversed. It ruled the District Court had not been strict enough in applying the test, having failed to make "finding[s] as to the specific understanding or principle

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within the knowledge of a skilled artisan that would have motivated one with no knowledge of [the] invention' . . . to attach an electronic control to the support bracket of the Asano assembly." 119 Fed. Appx., at 288 (brackets in original) (quoting *In re Kotzab*, 217 F. 3d 1365, 1371 (CA Fed. 2000)). The Court of Appeals held that the District Court was incorrect that the nature of the problem to be solved satisfied this requirement because unless the "prior art references address[ed] the precise problem that the patentee was trying to solve," the problem would not motivate an inventor to look at those references. 119 Fed. Appx., at 288.

Here, the Court of Appeals found, the Asano pedal was designed to solve the "constant ratio problem"—that is, to ensure that the force required to depress the pedal is the same no matter how the pedal is adjusted—whereas Engelgau sought to provide a simpler, smaller, cheaper adjustable electronic pedal. *Ibid.* As for Rixon, the court explained, that pedal suffered from the problem of wire chafing but was not designed to solve it. In the court's view Rixon did not teach anything helpful to Engelgau's purpose. Smith, in turn, did not relate to adjustable pedals and did not "necessarily go to the issue of motivation to attach the electronic control on the support bracket of the pedal assembly." *Ibid.* When the patents were interpreted in this way, the Court of Appeals held, they would not have led a person of ordinary skill to put a sensor on the sort of pedal described in Asano.

That it might have been obvious to try the combination of Asano and a sensor was likewise irrelevant, in the court's view, because "[o]bvious to try" has long been held not to constitute obviousness." *Id.*, at 289 (quoting *In re Deuel*, 51 F. 3d 1552, 1559 (CA Fed. 1995)).

The Court of Appeals also faulted the District Court's consideration of the PTO's rejection of the broader version of claim 4. The District Court's role, the Court of Appeals

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explained, was not to speculate regarding what the PTO might have done had the Engalgau patent mentioned Asano. Rather, the court held, the District Court was obliged first to presume that the issued patent was valid and then to render its own independent judgment of obviousness based on a review of the prior art. The fact that the PTO had rejected the broader version of claim 4, the Court of Appeals said, had no place in that analysis.

The Court of Appeals further held that genuine issues of material fact precluded summary judgment. Teleflex had proffered statements from one expert that claim 4 “was a simple, elegant, and novel combination of features,” 119 Fed. Appx., at 290, compared to Rixon, and from another expert that claim 4 was nonobvious because, unlike in Rixon, the sensor was mounted on the support bracket rather than the pedal itself. This evidence, the court concluded, sufficed to require a trial.

## II

## A

We begin by rejecting the rigid approach of the Court of Appeals. Throughout this Court’s engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test here. To be sure, *Graham* recognized the need for “uniformity and definiteness.” 383 U. S., at 18. Yet the principles laid down in *Graham* reaffirmed the “functional approach” of *Hotchkiss*, 11 How. 248. See 383 U. S., at 12. To this end, *Graham* set forth a broad inquiry and invited courts, where appropriate, to look at any secondary considerations that would prove instructive. *Id.*, at 17.

Neither the enactment of §103 nor the analysis in *Graham* disturbed this Court’s earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. For over a

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half century, the Court has held that a “patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men.” *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U. S. 147, 152 (1950). This is a principal reason for declining to allow patents for what is obvious. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. Three cases decided after *Graham* illustrate the application of this doctrine.

In *United States v. Adams*, 383 U. S. 39, 40 (1966), a companion case to *Graham*, the Court considered the obviousness of a “wet battery” that varied from prior designs in two ways: It contained water, rather than the acids conventionally employed in storage batteries; and its electrodes were magnesium and cuprous chloride, rather than zinc and silver chloride. The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result. 383 U. S., at 50–51. It nevertheless rejected the Government’s claim that Adams’s battery was obvious. The Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious. *Id.*, at 51–52. When Adams designed his battery, the prior art warned that risks were involved in using the types of electrodes he employed. The fact that the elements worked together in an unexpected and fruitful manner supported the conclusion that Adams’s design was not obvious to those skilled in the art.

In *Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U. S. 57 (1969), the Court elaborated on this approach.



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The subject matter of the patent before the Court was a device combining two pre-existing elements: a radiant-heat burner and a paving machine. The device, the Court concluded, did not create some new synergy: The radiant-heat burner functioned just as a burner was expected to function; and the paving machine did the same. The two in combination did no more than they would in separate, sequential operation. *Id.*, at 60–62. In those circumstances, “while the combination of old elements performed a useful function, it added nothing to the nature and quality of the radiant-heat burner already patented,” and the patent failed under §103. *Id.*, at 62 (footnote omitted).

Finally, in *Sakraida v. AG Pro, Inc.*, 425 U. S. 273 (1976), the Court derived from the precedents the conclusion that when a patent “simply arranges old elements with each performing the same function it had been known to perform” and yields no more than one would expect from such an arrangement, the combination is obvious. *Id.*, at 282.

The principles underlying these cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* and *Anderson's-Black Rock* are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

Following these principles may be more difficult in other

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cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. See *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

## B

When it first established the requirement of demonstrating a teaching, suggestion, or motivation to combine known elements in order to show that the combination is obvious, the Court of Customs and Patent Appeals captured a helpful insight. See *Application of Bergel*, 292 F. 2d 955, 956–957 (1961). As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established

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functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

Helpful insights, however, need not become rigid and mandatory formulas; and when it is so applied, the TSM test is incompatible with our precedents. The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

In the years since the Court of Customs and Patent Appeals set forth the essence of the TSM test, the Court of Appeals no doubt has applied the test in accord with these principles in many cases. There is no necessary inconsistency between the idea underlying the TSM test and the *Graham* analysis. But when a court transforms the general principle into a rigid rule that limits the obviousness inquiry, as the Court of Appeals did here, it errs.

C

The flaws in the analysis of the Court of Appeals relate

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for the most part to the court's narrow conception of the obviousness inquiry reflected in its application of the TSM test. In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under §103. One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.

The first error of the Court of Appeals in this case was to foreclose this reasoning by holding that courts and patent examiners should look only to the problem the patentee was trying to solve. 119 Fed. Appx., at 288. The Court of Appeals failed to recognize that the problem motivating the patentee may be only one of many addressed by the patent's subject matter. The question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art. Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

The second error of the Court of Appeals lay in its assumption that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem. *Ibid.* The primary purpose of Asano was solving the constant ratio problem; so, the court concluded, an inventor considering how to put a sensor on an adjustable pedal would have no reason to consider putting it on the Asano pedal. *Ibid.* Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a

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puzzle. Regardless of Asano's primary purpose, the design provided an obvious example of an adjustable pedal with a fixed pivot point; and the prior art was replete with patents indicating that a fixed pivot point was an ideal mount for a sensor. The idea that a designer hoping to make an adjustable electronic pedal would ignore Asano because Asano was designed to solve the constant ratio problem makes little sense. A person of ordinary skill is also a person of ordinary creativity, not an automaton.

The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was "obvious to try." *Id.*, at 289 (internal quotation marks omitted). When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103.

The Court of Appeals, finally, drew the wrong conclusion from the risk of courts and patent examiners falling prey to hindsight bias. A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. See *Graham*, 383 U. S., at 36 (warning against a "temptation to read into the prior art the teachings of the invention in issue" and instructing courts to "guard against slipping into the use of hindsight" (quoting *Monroe Auto Equipment Co. v. Heckelhorn Mfg. & Supply Co.*, 332 F.2d 406, 412 (CA6 1964))). Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it.

We note the Court of Appeals has since elaborated a

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broader conception of the TSM test than was applied in the instant matter. See, e.g., *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (2006) ("Our suggestion test is in actuality quite flexible and not only permits, but *requires*, consideration of common knowledge and common sense"); *Alza Corp. v. Mylan Labs., Inc.*, 464 F.3d 1286, 1291 (2006) ("There is flexibility in our obviousness jurisprudence because a motivation may be found *implicitly* in the prior art. We do not have a rigid test that requires an actual teaching to combine . . ."). Those decisions, of course, are not now before us and do not correct the errors of law made by the Court of Appeals in this case. The extent to which they may describe an analysis more consistent with our earlier precedents and our decision here is a matter for the Court of Appeals to consider in its future cases. What we hold is that the fundamental misunderstandings identified above led the Court of Appeals in this case to apply a test inconsistent with our patent law decisions.

## III

When we apply the standards we have explained to the instant facts, claim 4 must be found obvious. We agree with and adopt the District Court's recitation of the relevant prior art and its determination of the level of ordinary skill in the field. As did the District Court, we see little difference between the teachings of Asano and Smith and the adjustable electronic pedal disclosed in claim 4 of the Engelgau patent. A person having ordinary skill in the art could have combined Asano with a pedal position sensor in a fashion encompassed by claim 4, and would have seen the benefits of doing so.

## A

Teleflex argues in passing that the Asano pedal cannot be combined with a sensor in the manner described by

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claim 4 because of the design of Asano's pivot mechanisms. See Brief for Respondents 48–49, and n. 17. Therefore, Teleflex reasons, even if adding a sensor to Asano was obvious, that does not establish that claim 4 encompasses obvious subject matter. This argument was not, however, raised before the District Court. There Teleflex was content to assert only that the problem motivating the invention claimed by the Engelgau patent would not lead to the solution of combining of Asano with a sensor. See Teleflex's Response to KSR's Motion for Summary Judgment of Invalidity in No. 02–74586 (ED Mich.), pp. 18–20, App. 144a–146a. It is also unclear whether the current argument was raised before the Court of Appeals, where Teleflex advanced the nonspecific, conclusory contention that combining Asano with a sensor would not satisfy the limitations of claim 4. See Brief for Plaintiffs-Appellants in No. 04–1152 (CA Fed.), pp. 42–44. Teleflex's own expert declarations, moreover, do not support the point Teleflex now raises. See Declaration of Clark J. Radcliffe, Ph.D., Supplemental App. 204–207; Declaration of Timothy L. Andresen, *id.*, at 208–210. The only statement in either declaration that might bear on the argument is found in the Radcliffe declaration:

“Asano . . . and Rixon . . . are complex mechanical linkage-based devices that are expensive to produce and assemble and difficult to package. It is exactly these difficulties with prior art designs that [Engelgau] resolves. The use of an adjustable pedal with a single pivot reflecting pedal position combined with an electronic control mounted between the support and the adjustment assembly at that pivot was a simple, elegant, and novel combination of features in the Engelgau '565 patent.” *Id.*, at 206, ¶16.

Read in the context of the declaration as a whole this is best interpreted to mean that Asano could not be used to

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solve “[t]he problem addressed by Engelgau '565[] to provide a less expensive, more quickly assembled, and smaller package adjustable pedal assembly with electronic control.” *Id.*, at 205, ¶10.

The District Court found that combining Asano with a pivot-mounted pedal position sensor fell within the scope of claim 4. 298 F. Supp. 2d, at 592–593. Given the significance of that finding to the District Court's judgment, it is apparent that Teleflex would have made clearer challenges to it if it intended to preserve this claim. In light of Teleflex's failure to raise the argument in a clear fashion, and the silence of the Court of Appeals on the issue, we take the District Court's conclusion on the point to be correct.

## B

The District Court was correct to conclude that, as of the time Engelgau designed the subject matter in claim 4, it was obvious to a person of ordinary skill to combine Asano with a pivot-mounted pedal position sensor. There then existed a marketplace that created a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for achieving this advance. The Court of Appeals considered the issue too narrowly by, in effect, asking whether a pedal designer writing on a blank slate would have chosen both Asano and a modular sensor similar to the ones used in the Chevrolet truckline and disclosed in the '068 patent. The District Court employed this narrow inquiry as well, though it reached the correct result nevertheless. The proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading Asano with a sensor.

In automotive design, as in many other fields, the interaction of multiple components means that changing one

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component often requires the others to be modified as well. Technological developments made it clear that engines using computer-controlled throttles would become standard. As a result, designers might have decided to design new pedals from scratch; but they also would have had reason to make pre-existing pedals work with the new engines. Indeed, upgrading its own pre-existing model led KSR to design the pedal now accused of infringing the Engelgau patent.

For a designer starting with Asano, the question was where to attach the sensor. The consequent legal question, then, is whether a pedal designer of ordinary skill starting with Asano would have found it obvious to put the sensor on a fixed pivot point. The prior art discussed above leads us to the conclusion that attaching the sensor where both KSR and Engelgau put it would have been obvious to a person of ordinary skill.

The '936 patent taught the utility of putting the sensor on the pedal device, not in the engine. Smith, in turn, explained to put the sensor not on the pedal's footpad but instead on its support structure. And from the known wire-chafing problems of Rixon, and Smith's teaching that "the pedal assemblies must not precipitate any motion in the connecting wires," Smith, col. 1, lines 35-37, Supplemental App. 274, the designer would know to place the sensor on a nonmoving part of the pedal structure. The most obvious nonmoving point on the structure from which a sensor can easily detect the pedal's position is a pivot point. The designer, accordingly, would follow Smith in mounting the sensor on a pivot, thereby designing an adjustable electronic pedal covered by claim 4.

Just as it was possible to begin with the objective to upgrade Asano to work with a computer-controlled throttle, so too was it possible to take an adjustable electronic pedal like Rixon and seek an improvement that would avoid the wire-chafing problem. Following similar steps to

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those just explained, a designer would learn from Smith to avoid sensor movement and would come, thereby, to Asano because Asano disclosed an adjustable pedal with a fixed pivot.

Teleflex indirectly argues that the prior art taught away from attaching a sensor to Asano because Asano in its view is bulky, complex, and expensive. The only evidence Teleflex marshals in support of this argument, however, is the Radcliffe declaration, which merely indicates that Asano would not have solved Engelgau's goal of making a small, simple, and inexpensive pedal. What the declaration does not indicate is that Asano was somehow so flawed that there was no reason to upgrade it, or pedals like it, to be compatible with modern engines. Indeed, Teleflex's own declarations refute this conclusion. Dr. Radcliffe states that Rixon suffered from the same bulk and complexity as did Asano. See *id.*, at 206. Teleflex's other expert, however, explained that Rixon was itself designed by adding a sensor to a pre-existing mechanical pedal. See *id.*, at 209. If Rixon's base pedal was not too flawed to upgrade, then Dr. Radcliffe's declaration does not show Asano was either. Teleflex may have made a plausible argument that Asano is inefficient as compared to Engelgau's preferred embodiment, but to judge Asano against Engelgau would be to engage in the very hindsight bias Teleflex rightly urges must be avoided. Accordingly, Teleflex has not shown anything in the prior art that taught away from the use of Asano.

Like the District Court, finally, we conclude Teleflex has shown no secondary factors to dislodge the determination that claim 4 is obvious. Proper application of *Graham* and our other precedents to these facts therefore leads to the conclusion that claim 4 encompassed obvious subject matter. As a result, the claim fails to meet the requirement of §103.

We need not reach the question whether the failure to

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disclose Asano during the prosecution of Engelgau voids the presumption of validity given to issued patents, for claim 4 is obvious despite the presumption. We nevertheless think it appropriate to note that the rationale underlying the presumption—that the PTO, in its expertise, has approved the claim—seems much diminished here.

## IV

A separate ground the Court of Appeals gave for reversing the order for summary judgment was the existence of a dispute over an issue of material fact. We disagree with the Court of Appeals on this point as well. To the extent the court understood the *Graham* approach to exclude the possibility of summary judgment when an expert provides a conclusory affidavit addressing the question of obviousness, it misunderstood the role expert testimony plays in the analysis. In considering summary judgment on that question the district court can and should take into account expert testimony, which may resolve or keep open certain questions of fact. That is not the end of the issue, however. The ultimate judgment of obviousness is a legal determination. *Graham*, 383 U. S., at 17. Where, as here, the content of the prior art, the scope of the patent claim, and the level of ordinary skill in the art are not in material dispute, and the obviousness of the claim is apparent in light of these factors, summary judgment is appropriate. Nothing in the declarations proffered by Teleflex prevented the District Court from reaching the careful conclusions underlying its order for summary judgment in this case.

\* \* \*

We build and create by bringing to the tangible and palpable reality around us new works based on instinct, simple logic, ordinary inferences, extraordinary ideas, and sometimes even genius. These advances, once part of our

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shared knowledge, define a new threshold from which innovation starts once more. And as progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts. See U. S. Const., Art. I, §8, cl. 8. These premises led to the bar on patents claiming obvious subject matter established in *Hotchkiss* and codified in §103. Application of the bar must not be confined within a test or formulation too constrained to serve its purpose.

KSR provided convincing evidence that mounting a modular sensor on a fixed pivot point of the Asano pedal was a design step well within the grasp of a person of ordinary skill in the relevant art. Its arguments, and the record, demonstrate that claim 4 of the Engelgau patent is obvious. In rejecting the District Court's rulings, the Court of Appeals analyzed the issue in a narrow, rigid manner inconsistent with §103 and our precedents. The judgment of the Court of Appeals is reversed, and the case remanded for further proceedings consistent with this opinion.

*It is so ordered.*

**APPENDIX I****B.4.3 Validity—The Claims****4.3b OBVIOUSNESS**

Even though an invention may not have been identically disclosed or described before it was made by an inventor, in order to be patentable the invention must also not have been obvious to a person of ordinary skill in the field of technology of the patent at the time the invention was made.

[Alleged infringer] may establish that a patent claim is invalid by showing, by clear and convincing evidence, that the claimed invention would have been obvious to persons of ordinary skill in the art at the time the invention was made. For the claim to be invalid because it would have been obvious you must first evaluate the following factors:

- (1) What is the scope and content of the prior art;
- (2) What are the differences, if any, between the invention(s) and the prior art;
- (3) What was the level of ordinary skill in the art at the time the invention(s) was(were) made; and
- (4) What evidence is there, if any, of certain additional considerations relating to the obviousness or non-obviousness of the invention(s)?

Evidence establishing that it would have been obvious to try the claimed invention at the time it(they) was(were) made is not sufficient, by itself, to prove that the invention(s) is(are) invalid for obviousness. Rather, the evidence presented to you in this case must be sufficient to establish that the invention itself would have been obvious.

You must decide, in view of the evidence presented to you on these factors, whether or not the invention(s), considered as a whole, would have been obvious to one having ordinary skill in the art at the time the invention(s) was(were) made. You must make this determination separately, for each of the inventions described in each of claims [ ].

Before doing so, however, you must keep in mind that it is not permissible to use hindsight in assessing whether the invention(s) is(are) invalid for obviousness. You cannot look at the invention knowing what persons of ordinary skill in the art know today. Rather, you must place yourself in the shoes of a person having ordinary skill in the field of technology of the patent at the time the invention(s) was(were) made who is trying to address the issue(s) or solve the problem(s) faced by the inventor(s).

[In this case, [alleged infringer] contends that the inventions are obvious in view of a combination of more than one "prior art" reference. In placing yourself in the shoes of a person having ordinary skill in the field of technology relevant to this case at the time the invention(s) was(were) made, you must also consider whether such a person would have been motivated to combine these prior art references in order to arrive at the claimed invention(s)].

I will now provide you more detailed instructions on each of these factors.

#### Authorities

35 U.S.C. § 103; *Graham v. John Deere Co.*, 383 U.S. 1 (1966); *Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 2005 U.S. App. Lexis 10672 at \*10-\*12 (Fed. Cir. June 9, 2005); *McNeil-PPC, Inc. v. L. Perrigo Co.*, 337 F.3d 1362 (Fed. Cir. 2003); *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000); *Monarch Knitting Machinery Corp. v. Sulzer Morat GmbH*, 139 F.3d 877 (Fed. Cir. 1998).

#### **B.4.3 Validity—The Claims**

##### **4.3bi SCOPE AND CONTENT OF THE PRIOR ART**

The first question you must answer in determining whether or not the invention(s) was(were) obvious is the scope and content of the prior art at the time the invention(s) were made. You must decide whether specific references relied upon in this case are “prior art” to the invention(s) described in claim(s) [ ] of the [ ] patent(s).

“Prior art” includes previous devices, methods, articles and methods that were offered for sale, printed publications or patents that disclose the inventions or elements of the invention. Once you decide whether or not specific references are prior art, you must also decide what those references would have disclosed or taught to one having ordinary skill in the field of technology of the patent at the time the invention(s) was(were) made.

[Patent holder] and [alleged infringer] disagree about whether the following references should be included in the prior art that you use to decide whether the invention(s) is(are) invalid for obviousness: [Identify the contested prior art reference(s)].

In order for a reference to be considered “prior art,” you must find that the reference was known, used, published, or patented, as appropriate to the particular reference, before the invention was made by the inventor, in this case before [insert date of reduction to practice or filing date of the invention].

Alternatively, even if a reference is not before the date of invention, the reference is nonetheless “prior art” if the reference was known, used, published, or patented more than one year before the filing date of the application for the [ ] patent.

In order for a reference to be relevant for you to consider in deciding whether or not the claimed invention(s) would have been obvious, the reference must be within the field of the inventor’s(inventors’) endeavor, or if it is from another field of endeavor, the reference must be reasonably related to the particular problem(s) or issue(s) the inventor(s) faced or addressed when making the invention(s) described in claim(s) [ ] of the [ ] patent(s). A reference from a field of endeavor other than the inventor’s (inventors’) is reasonably related to the problem(s) or issue(s) the inventor(s) faced if the reference is one which, because of the matter with which the reference deals, logically would have commended itself to the attention of the inventor(s) when considering the problem(s) or issue(s) he(they) faced in this case. It is for you to decide what the problem(s) or issue(s) was(were) that the inventor(s) faced at the time the invention(s) in claim(s) [ ] was(were) made.

#### Authorities

*Graham v. John Deere Co.*, 383 U.S. 1 (1966); *Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 2005 U.S. App. Lexis 10672 at \*17-\*18 (Fed. Cir. June 9, 2005); *Ruiz v.*



*A.B. Chance Co.*, 234 F.3d 654, 664-65 (Fed. Cir. 2000) *Wang Labs. v. Toshiba Corp.*, 993 F.2d 858, 864 (Fed. Cir. 1993).

**B.4.3 Validity—The Claims**

**4.3bii DIFFERENCES OVER THE PRIOR ART**

The second question you must answer in determining whether or not the invention(s) was(were) obvious at the time it(they) was(were) made is what differences there are, if any, between the prior art and the patented invention(s). In analyzing this issue, do not focus solely on the differences between the prior art and the invention(s) because the test is not whether there are differences. Rather, the test is whether or not the (each) invention, as a whole, would have been obvious to one having ordinary skill in view of all the prior art at the time the(each) invention was(were) made.

Authorities

*Graham v. John Deere Co.*, 383 U.S. 1 (1966); *Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 2005 U.S. App. Lexis 10672 at \*11-\*12 (Fed. Cir. June 9, 2005); *Yamanouchi Pharm. Co. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339, 1343-45 (Fed. Cir. 2000); *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 935 (Fed. Cir. 1990).

**B.4.3 Validity—The Claims****4.3biii LEVEL OF ORDINARY SKILL IN THE FIELD**

The third question you must answer in determining whether the invention(s) was(were) obvious at the time it(they) was(were) made is what was the level of ordinary skill in the field at the time. [Patent holder] contends that the level of ordinary skill in the field was [ ] at the time the invention(s) was(were) made. [Alleged infringer] contends that the level of ordinary skill in the field was [ ] at the time the invention(s) was(were) made. It is for you to decide what the level of ordinary skill was at the time the invention was made based on the evidence presented to you in this case. In doing so, you may consider any evidence relating to this issue that is introduced at trial, including in particular any evidence introduced of:

- (1) the educational level(s) and experience of the inventor(s) at the time the invention(s) was(were) made;
- (2) the education level(s) and experience of other persons working in the field of the invention(s) at the time the invention(s) was(were) made[, and particularly of any person(s) you may find to have independently made the invention(s) at about the same time as the inventor(s)];
- (3) the types of problems encountered in the field at the time the invention(s) was(were) made;
- (4) the sophistication of the technology in the field at the time the invention(s) was(were) made;
- (5) the teachings and disclosures of prior art references such as patents and publications; and
- (6) the teachings and disclosures of any references that, while not prior art to the invention(s), nonetheless contain teachings or disclosures of what the level of ordinary skill in the field may have been at the time the invention(s) was(were) made.

**Authorities**

*Graham v. John Deere Co.*, 383 U.S. 1 (1966); *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1125 (Fed. Cir. 2000); *SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349, 1355 (Fed. Cir. 2000); *Ecolochem, Inc. v. S. Calif. Edison Co.*, 227 F.3d 1361, 1379 (Fed. Cir. 2000); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718-19 (Fed. Cir. 1991).

**B.4.3 Validity—The Claims****4.3biv ADDITIONAL CONSIDERATIONS**

The fourth question you must answer in determining whether or not the invention(s) was(were) obvious at the time it(they) was(were) made is what evidence there is, if any, of additional considerations relating to the obviousness or nonobviousness of the invention(s). You may consider in your analysis any evidence that was presented to you in this case regarding the presence or absence of the following factors in deciding whether or not (each of) the invention(s) would have been obvious at the time it(they) was(were) made: [choose those that apply]

- (1) Whether or not the invention(s) proceeded in a direction contrary to accepted wisdom in the field;
- (2) Whether or not there was long felt but unresolved need in the art that was satisfied by the invention(s);
- (3) Whether or not others had tried but failed to make the invention(s);
- (4) Whether or not others copied the invention(s);
- (5) Whether or not the invention(s) achieved any unexpected results;
- (6) Whether or not the invention(s) were praised by others;
- (7) Whether or not other have taken licenses to use the invention(s);
- (8) Whether or not experts or those skilled in the art at the making of the invention(s) expressed surprise or disbelief regarding the invention(s);
- (9) Whether or not products incorporating the invention(s) have achieved commercial success; and
- (10) Whether or not others having ordinary skill in the field of the invention independently made the claimed invention at about the same time the inventor(s) made the invention(s);

Evidence that you find establishes the existence of items 1 through 8 tends to show that the invention(s) was(were) not obvious at the time it(they) was(were) made. You may also consider the lack of evidence on these items to support a conclusion that the invention would have been obvious to persons of ordinary skill in the art at the time it was made.

Evidence of item 9, commercial success, also tends to show that the invention(s) was(were) not obvious at the time it(they) was(were) made; Provided the success is

directly attributable to the unique characteristics of the invention(s) or to the inclusion of the invention(s) in the commercially successful product(s). If you do not find that the commercial success of the product(s) is attributable to other factors, such as advertising or commercial incentives, for example, the commercial success would not be attributable to the unique characteristics of the invention(s) and any commercial success of products incorporating the invention(s) has no bearing on whether the invention(s) was(were) obvious.

Evidence establishing item 10, independent making of the invention(s) by others at about the same time as the inventor(s), may tend to show that the patented invention(s) was(were) obvious at the time; Provided the independent invention by others was done with no knowledge of the patented invention(s) or the efforts that went into the making of the patented invention(s). The weight and relevancy of any independent making of the invention(s) at about the same time as the inventor(s) that you may find depends on all of the circumstances at the time, including the following:

- (1) The similarities between the inventor's(s') conception of the patent solution and the independent inventor's(s') conception of the independently developed solution;
- (2) The time between the identification of a need for a solution to a problem by the inventor(s) of the patented invention(s) and the conception of the patented solution;
- (3) The time between the identification of a need for a solution to a problem by the independent inventor(s) and the conception of the independently developed solution; and
- (4) The sequence of and time between the inventor's(s') conception of the patented solution and the independent inventor's(s') conception of the independently developed solution.

#### Authorities

*Graham v. John Deere Co.*, 383 U.S. 1 (1966); *Merck & Co. v. Teva Pharmaceuticals USA, Inc.*, 395 F.3d 1364, 1376-77 (Fed. Cir. 2005); *Iron Grip Barbell Co., Inc. v. York Barbell Co., Inc.*, 392 F.3d 1317, 1324 (Fed. Cir. 2004); *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000); *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 833 (Fed. Cir. 1998); *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996); *Lindeman Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1460-61 (Fed. Cir. 1984); *Dennison Mfg. Co. v. Ben Clements & Sons, Inc.*, 467 F.Supp. 391, 419 (SDNY 1979).

#### **B.4.3 Validity—The Claims**

##### **4.3bv COMBINATION OF KNOWN ELEMENTS**

In this case, [the invention(s) is/are a combination of known elements] [and/or] [alleged infringer contends that the invention(s) would have been obvious over a combination of prior art references]. In determining whether or not the invention(s) would have been obvious to one of ordinary skill in the art at the time the inventions were made, you must consider whether or not the combination is more than the predictable use of prior art elements according to their established functions. If a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique would have been obvious unless the actual application is beyond that person's skill. In answering this question, it will often be necessary to consider: any apparent reason to combine the known elements in the manner the patent claims; interrelated teachings of multiple patents; the effects of demands that were known to the design community or that were present in the marketplace; and to the background knowledge possessed by persons of ordinary skill in the art.

If you find by clear and convincing evidence that the invention would have been obvious, it is important for you to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the invention(s) do/does. Advances that would have occurred anyway in the ordinary course of development of the art may have been obvious but you need not limit your consideration to only the same problem, or same prior art elements, or same solution adopted by the inventor(s). You may consider the level of common sense and creativity of persons of ordinary skill in the art and that familiar items may have obvious uses beyond their primary purposes, and that a person of ordinary skill in the art may be able to fit the teachings of multiple patents and/or references together like the pieces of a puzzle. The motivation to select and combine features, the predictability of the results of doing so, and a reasonable expectation of success may be found in the teachings of the prior art references themselves, in the nature of any need or problem in the field that was addressed by the patent, in the knowledge of persons having ordinary skill in the field at the time, as well as in common sense or the level of creativity exhibited by persons of ordinary skill in the art. There need not be an express or explicit suggestion to combine references.

#### Authorities

*KSR International Co. v. Teleflex Inc.*, \_\_\_ U.S. \_\_\_ (2007); *Dystar Textilfarben GMBH v. C.H. Patrick*, 464 F.3d 1356 (Fed. Cir. 2006); *Alza Corp. v. Mylan Laboratories, Inc.*, 464 F.3d 1286 (Fed. Cir. 2006); *Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 411 F.3d 1332, 1337-39 (Fed. Cir. June 9, 2005); *Group One Ltd. v. Hallmark Cards, Inc.*, 407 F.3d 1297, 1305-06 (Fed. Cir. 2005); *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 665 (Fed. Cir. 2000); *Smiths Indus. Med. Sys., Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1355 (Fed. Cir. 1999); *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998); *ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546 (Fed. Cir. 1998); *Pro-Mold v. Great Lake Plastics*, 75

F.3d 1568, 1573 (Fed. Cir. 1996).

## APPENDIX J

## PUBLIC RECORD VERSION

In the Matter of Rambus, Inc.  
Docket No. 9302

## OPINION OF THE COMMISSION ON REMEDY

By Majoras, Chairman:

I.<sup>1</sup>

On July 31, 2006, the Commission ruled that Rambus Inc.'s "acts of deception constituted exclusionary conduct under Section 2 of the Sherman Act, and that Rambus unlawfully monopolized the markets for four technologies"<sup>2</sup> incorporated into the Joint Electron Device Engineering Council ("JEDEC") standards in violation of Section 5 of the Federal Trade Commission Act ("FTC Act").<sup>3</sup> The Commission further found "a sufficient causal link between Rambus's exclusionary conduct and JEDEC's adoption of the SDRAM and DDR-SDRAM standards (but not the subsequent DDR2-SDRAM standard)."<sup>4</sup>

We asked the parties to provide supplemental briefs on the question of remedy.<sup>5</sup> The parties submitted initial briefs on September 15, 2006, and reply briefs on September 30, 2006. Several interested parties also submitted amicus briefs.<sup>6</sup> We heard oral argument on the issue of remedy on November 15, 2006.

<sup>1</sup> This opinion uses the following abbreviations:

CCBR - Complaint Counsel's Brief on Remedy  
CCRBR - Complaint Counsel's Reply Brief on Remedy  
CX - Complaint Counsel's Exhibit  
ID - Initial Decision of the Administrative Law Judge (ALJ)  
JX - Joint Exhibits  
Op. - Commission's Liability Opinion  
RB - Respondent's Brief on Appeal and Cross-Appeal  
RBR - Respondent's Brief on Remedy  
RRBR - Respondent's Reply Brief on Remedy  
RX - Respondent's Exhibit  
Tr. - Trial Transcript

<sup>2</sup> Op. at 1.

<sup>3</sup> 15 U.S.C. § 45.

<sup>4</sup> Op. at 5.

<sup>5</sup> *Id.* at 119.

<sup>6</sup> Brief for Amicus Curiae Broadcom Corporation and Freescale Semiconductor, Inc. on the Issue of Appropriate Remedy (Sept. 15, 2006); Brief for Amicus Curiae JEDEC Solid State Technology Association (Sept. 15, 2006); Brief for Amicus Curiae Gesmer Updegrave LLP and Andrew Updegrave on the Issue of Appropriate Remedy (Sept. 15, 2006); Brief for Amicus Curiae Nvidia Corporation, Micron Technology, Inc., Samsung Electronics Corporation, Ltd., and Hynix Semiconductor, Inc. on the Issue of Appropriate Remedy (Sept. 15, 2006); Brief for Amicus Curiae American Antitrust Institute on the Issue of Appropriate Remedy (Sept. 29, 2006).

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The parties agree that the Commission has the authority to issue an injunction against future deceptive conduct by Rambus. Rambus acknowledged that the Commission has authority to "issue orders broad enough to prevent Rambus from misleading any [standard-setting organization ("SSO")] from unknowingly adopting its proprietary technology."<sup>7</sup> To that end, Rambus submitted a proposed order that is limited to prohibiting repetition of the conduct in this case – that is "knowingly" engaging in a deceptive course of conduct as a member of an SSO.<sup>8</sup> We believe the order should be broader. In Part IV, we summarize and explain the terms of the Commission's Order, including the requirement that Rambus cease and desist from future deceptive conduct while a member or a participant in an SSO.

The fundamental question upon which the parties disagree is whether the Commission may order broader relief, and, if broader relief is authorized, on the scope of an appropriate remedy on the basis of the record before us. The Supreme Court has not yet addressed the scope of the Commission's remedial authority where, as here, the Commission has applied the legal standards of Section 2 of the Sherman Act.<sup>9</sup> This counsels caution but does not limit our ability to create a forward-looking remedy tailored to our liability findings. In assessing the appropriate remedy in this case, we have studied the principles that guide the courts in the exercise of their remedial authority in Sherman Act cases.

## II.

The threshold issue is whether the Commission's remedial authority is limited to prohibitory "cease-and-desist" orders. Rambus argues that Section 5 of the FTC Act "gives the Commission authority [only] to issue forward-looking cease-and-desist orders that prevent conduct deemed to be unlawful and ensure against its repetition."<sup>10</sup> Thus, Rambus concludes, even if it obtained monopoly power as a result of its deceptive course of conduct, the Commission is limited to a mere prohibitory injunction on any future deceptive conduct.<sup>11</sup> Rambus asserts that these limitations are supported by the language of Section 5, decisions of the U.S. Supreme Court and the U.S. Court of Appeals for the District of Columbia Circuit, and Commission testimony in support of the enactment of Section 13(b) of the FTC Act in 1973 to enable the Commission to seek broader relief from district courts.

<sup>7</sup> RRBR at 12; *see also* RBR at 1.

<sup>8</sup> RBR at 5. In our July 31, 2006, ruling, the Commission determined that Rambus's deceptive course of conduct was "intentionally pursued," Op. at 51, and that Rambus "intentionally and willfully engaged in deceptive conduct." Op. at 68.

<sup>9</sup> 15 U.S.C. § 2. This is not surprising given that the Court has not considered a government Section 2 challenge for over thirty years. *See Otter Tail Power Co. v. United States*, 410 U.S. 366 (1973).

<sup>10</sup> RRBR at 2; *see also* RBR at 1, 4-5.

<sup>11</sup> RBR at 2 ("Rambus does not believe . . . that the Commission has or should exercise the statutory authority to order" relief that would affirmatively alter current market conditions).

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Rambus's contention that the Commission is limited to prohibiting future deceptive conduct is mistaken. Insofar as the argument is premised on principles of Section 2, it is contrary to clear Supreme Court precedent.<sup>12</sup> Insofar as the argument is based on the language of Section 5,<sup>13</sup> it is inconsistent with long-established principles of implied agency authority.<sup>14</sup> The Supreme Court's decision in *FTC v. Dean Foods Co.*<sup>15</sup> recognized that the Commission possesses the ancillary powers essential to the effective discharge of its responsibilities. The Court relied on its earlier decision in *Pan American World Airways, Inc. v. United States*,<sup>16</sup> which held that "the power to order divestiture need not be explicitly included in the powers of an administrative agency to be part of its arsenal of authority."<sup>17</sup>

Indeed, the Commission's authority to terminate the ill effects of a violation repeatedly has been confirmed. As the D.C. Circuit has held, "[I]t is clear that the Commission has the power to shape remedies that go beyond the simple cease and desist order."<sup>18</sup> None of the cases cited by Rambus teaches otherwise. To the contrary, in *FTC v. National Lead Co.*,<sup>19</sup> a case involving the Commission's prohibition of specific conduct by which the effects of an unlawful agreement might be continued, the Court held that the Commission had "wide discretion" in bringing an end to the unfair practices at issue, but expressly indicated that it was *not* defining

<sup>12</sup> See *Schine Chain Theatres, Inc. v. United States*, 334 U.S. 110, 128 (1948) ("In this type of case we start from the premise that an injunction against future violations is not adequate to protect the public interest. If all that was done was to forbid a repetition of the illegal conduct, those who had unlawfully built their empires could preserve them intact. They could retain the full dividends of their monopolistic practices and profit from the unlawful restraints of trade they had inflicted on competitors.").

<sup>13</sup> The FTC Act states that the Commission shall order an offending party "to cease and desist from using such method of competition or such act or practice." 15 U.S.C. § 45(b).

<sup>14</sup> See Neil W. Averitt, *Structural Remedies in Competition Cases Under the Federal Trade Commission Act*, 40 OHIO ST. L.J. 781, 784 (1979) (concluding that "case law has clearly established the Commission's authority [under Section 5 of the FTC Act] to impose divestiture and other affirmative requirements").

<sup>15</sup> 384 U.S. 597, 606-07 (1966) (rejecting an argument that the Commission needed express statutory authority to seek a preliminary injunction).

<sup>16</sup> 371 U.S. 296 (1963),

<sup>17</sup> *Dean Foods*, 384 U.S. at 606 n.4 (quoting *Pan Am.*, 371 U.S. at 312 n.17).

<sup>18</sup> *Warner-Lambert Co. v. FTC*, 562 F.2d 749, 757 (1977) (upholding the Commission's corrective advertising order designed to terminate the otherwise continuing ill effects of false advertising). See also *Novartis Corp. v. FTC*, 223 F.3d 783, 787 (D.C. Cir. 2000) (upholding corrective advertising order); *Detroit Auto Dealers Ass'n, Inc. v. FTC*, 955 F.2d 457 (6th Cir. 1992) (upholding, with modification, an order requiring automobile dealers to maintain a minimum number of showroom hours per week in order to eliminate the continuing effects of an unlawful agreement to limit showroom hours); *L.G. Balfour Co. v. FTC*, 442 F.2d 1, 23-24 (7th Cir. 1971) (upholding FTC order requiring divestiture as remedy for illegal monopolization); *Charles Pfizer & Co. v. FTC*, 401 F.2d 574, 586 (6th Cir. 1968) (upholding an order requiring compulsory licensing).

<sup>19</sup> 352 U.S. 419 (1957).

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the full scope of Commission powers.<sup>20</sup> The Court also declared that the Commission "was not obliged to assume, contrary to common experience, that a violator of the antitrust laws will relinquish the fruits of his violation more completely than [it] requires."<sup>21</sup>

Since *National Lead*, no court has held, or indicated, that the Commission is powerless to ensure that antitrust violations are fully remedied.<sup>22</sup> The only remedy issues in *FTC v. Colgate-Palmolive Co.*,<sup>23</sup> a case cited by Rambus in this regard,<sup>24</sup> involved the clarity of the order and the scope of the Commission's "fencing-in" authority.<sup>25</sup> Moreover, the D.C. Circuit in *United States v. Philip Morris USA Inc.*<sup>26</sup> did not speak to the Commission's remedial authority at all, as Rambus represents.<sup>27</sup> That case involved the RICO statute, not the different language of Section 5 of the FTC Act, and the decision rejected a disgorgement order, not an order prospectively terminating the ill effects of unlawful conduct.

Rambus relies on *Reynolds Metals Co. v. FTC*<sup>28</sup> and *Ford Motor Co. v. United States*<sup>29</sup> to argue that the courts have distinguished the Commission's Section 5 authority from a district court's purportedly broader equitable powers.<sup>30</sup> Neither case holds that the Commission's authority to eliminate the ill effects of a violation is narrower than that exercised by the district courts. Rather than ruling that the Commission's authority is more limited than that of the

<sup>20</sup> *Id.* at 430 n.7 ("We need not discuss the full scope of the powers of the Federal Trade Commission, nor their relative breadth in comparison with those of a court of equity.").

<sup>21</sup> *Id.* at 430 (quoting *Int'l Salt Co. v. United States*, 332 U.S. 392, 400 (1947)). The Court's declaration in this respect is consistent with its repeated statements that an antitrust wrongdoer can – and should – be made to relinquish the fruits of his violation. *United States v. United Shoe Mach. Corp.*, 391 U.S. 244, 250 (1968); *United States v. U.S. Gypsum Co.*, 340 U.S. 76, 88 (1950).

<sup>22</sup> As the Supreme Court has recognized, in a monopolization case, there is a presumption that a mere prohibitory injunction allows a monopolist "to retain the full dividends of [its] monopolistic practices . . ." *Schine Chain Theatres*, 334 U.S. at 128; accord *United States v. Grinnell Corp.*, 384 U.S. 563, 577 (1966) ("We start from the premise that adequate relief in a monopolization case should . . . render impotent the monopoly power found to be in violation of the Act.").

<sup>23</sup> 380 U.S. 374, 395 (1965).

<sup>24</sup> See RBR at 4.

<sup>25</sup> *Id.* at 392-95. See *infra* Part IV (discussing "fencing-in" relief).

<sup>26</sup> *United States v. Philip Morris USA Inc.*, 396 F.3d 1190 (D.C. Cir. 2005).

<sup>27</sup> See RBR at 6 n.4.

<sup>28</sup> 309 F.2d 223 (D.C. Cir. 1962).

<sup>29</sup> 405 U.S. 562 (1972).

<sup>30</sup> See RBR at 2-3.

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courts, *Reynolds Metals* merely determined that the record did not support going *beyond* that by ordering divestiture of unrelated assets. The court of appeals in *Reynolds Metals* overturned a Commission order requiring divestiture of a factory acquired after a merger when the Commission had failed to demonstrate that there was “any nexus between the continued possession of [the factory] and the violation of Section 7 . . .” or a need to divest the factory for “restoration of the competitive status quo.”<sup>31</sup> In rejecting a suggestion that *Reynolds Metals* limited remedies in a district court action brought by the United States, the Supreme Court’s *Ford Motor* opinion cursorily noted that *Reynolds Metals* concerned the enforcement powers of the Commission, not those of the courts; set that issue to the side, without further comment; and proceeded to focus on the appropriate remedy in the district court action before it.<sup>32</sup> In sum, neither opinion provides a basis for Rambus’s claim that the Commission is confined to issuing prohibitive injunctions.

We turn next to the legislative history of the 1973 amendments to the FTC Act. Contrary to Rambus’s claim,<sup>33</sup> there is no basis for concluding that Congress, in enacting Section 13(b), or the Commission, in requesting the provision, effectively acknowledged the Commission’s inability to take action affirmatively to terminate the ill effects of a violation. To begin with, courts “will not construe an agency’s request for authorizing legislation as affirmative proof of no authority; [p]ublic policy requires that agencies feel free to ask [for] legislation which will terminate or avoid adverse contentions and litigations.”<sup>34</sup> Moreover, Congress intended Section 13(b) to provide a mechanism that would enable the Commission to obtain equitable relief from district courts without the delay that administrative proceedings entail.<sup>35</sup> Nothing in the legislation or the legislative history of Section 13(b) suggests that the Commission lacks power *after* administrative proceedings have concluded to issue an order requiring a violator to relinquish the “fruits” of its violation of Section 2.<sup>36</sup> Thus, the limitation that the legislation was

<sup>31</sup> 309 F.2d at 231.

<sup>32</sup> 405 U.S. at 573 n.8.

<sup>33</sup> See RRB at 3.

<sup>34</sup> *Warner-Lambert Co.*, 562 F.2d at 758 n.39 (quoting *Dean Foods*, 384 U.S. at 610, in rejecting a contention that a congressional grant of court remedial authority meant that the Commission itself lacked such authority).

<sup>35</sup> See James T. Halverson, *The Federal Trade Commission’s Injunctive Powers Under the Alaskan Pipeline Amendments: An Analysis* 69 Nw. U. L. Rev. 872-73 (1974-75).

<sup>36</sup> Citing the testimony of Commissioner Elman during a 1969 Congressional hearing, Rambus argues that the Commission itself has recognized limits on its Section 5 authority. See RRB at 3 n.4. Rambus’s reliance on the cited testimony is misplaced, however, because former Commissioner Elman’s statement relates to the FTC’s authority to administratively assess civil penalties and award so-called “civil damages” in consumer fraud cases. *Id.* at 57-70. Moreover, as Rambus conceded at oral argument, Commissioner Elman indicated that his testimony represented his own “separate statement” and not necessarily the views of the other Commissioners. See Oral Argument before the Commission on the Issue of Remedy (Nov. 15, 2006), at 42-43. Commissioner Elman provided that caveat during a colloquy with Senator Moss, which Rambus did not cite in its brief. See *Consumer Protection:*

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designed to correct – the absence of a specific grant of authority to obtain ancillary and preliminary equitable relief in the district courts in aid of administrative adjudicative proceedings – was not a limitation on the remedies that are available to the Commission in crafting an administrative cease-and-desist order.

In sum, we do not agree with Rambus’s contention that the Commission’s remedial authority is limited to enjoining it from deceiving an SSO in the future. Instead, the Commission’s authority extends to restoring, to the extent possible, the competitive conditions that would have been present absent Rambus’s unlawful conduct.<sup>37</sup> We now address the Commission’s authority to order compulsory patent licenses.

## A.

Rambus argues that even if the Commission has remedial power beyond the issuance of a cease-and-desist order, the Commission does not have the authority to order compulsory licensing on terms prescribed by the Commission.<sup>38</sup> Rambus would have us conclude that it can continue to reap the royalty rates it is now charging (and demanding in pending litigation).<sup>39</sup> Rambus asserts that this conclusion is supported by the Supreme Court’s decision in *FTC v. Ruberoid Co.*,<sup>40</sup> in which the Court held that the Commission cannot order compensatory or punitive relief.<sup>41</sup>

We disagree with Rambus. The Commission enjoys “wide latitude for judgment” in fashioning a remedial order, subject to the constraint that the requirements of the order bear a reasonable relationship to the unlawful practices that the Commission has found.<sup>42</sup> The Supreme Court’s acknowledgment in *Ruberoid* that orders of the Commission “are not intended to impose

*Hearings on S.2246, et al., before the Consumer Subcomm. of the Comm. on Commerce*, 91st Cong. 57 (1969).

Rambus also incorrectly relies on other former FTC commissioners’ statements, which do not address the Commission’s authority to restore competitive conditions after a finding of liability under Section 2. See RRB at 3, n.4; *Agriculture-Environmental and Consumer Protection Appropriations for 1974: Hearings before a Subcomm. of the House Comm. on Appropriations*, 93rd Cong. 99 (1974); S. Rep. No. 93-151, at 10 (1973).

<sup>37</sup> *Ekco Products Co.*, 65 F.T.C. 1163, 1216 (1964), *aff’d*, 347 F.2d 745 (7th Cir. 1965).

<sup>38</sup> RRB at 6.

<sup>39</sup> *Id.* at 2, 16.

<sup>40</sup> 343 U.S. at 473 (1952).

<sup>41</sup> RRB at 5 n.3.

<sup>42</sup> *Jacob Siegel Co. v. FTC*, 327 U.S. 608, 613 (1946). See also *Colgate-Palmolive Co.*, 380 U.S. at 394-95; *FTC v. Nat’l Lead Co.*, 352 U.S. at 428-29; *Ruberoid Co.*, 343 U.S. at 473.

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criminal punishment or exact compensatory damages for past acts<sup>43</sup> is not contrary authority. The Court in that case emphasized the Commission's wide discretion in its choice of remedy, and stated the expectation that the Commission would "exercise a special competence in formulating remedies to deal with problems in the general sphere of competitive practices."<sup>44</sup> The district courts similarly exercise broad discretion in determining what kind of decree "will best remedy the conduct [they have] found to be unlawful . . . This is no less true in antitrust cases."<sup>45</sup> The broad authority of the Commission and the district courts to remedy violations of the FTC Act and the other antitrust laws includes "mandatory selling on specified terms and compulsory licensing at reasonable charges."<sup>46</sup>

Courts have blessed compulsory licensing orders in the past,<sup>47</sup> including at least one crafted by the Commission.<sup>48</sup> Following that precedent, the Commission has ordered licensing of intellectual property to remedy antitrust violations in litigated cases.<sup>49</sup> If prospective only (which Complaint Counsel agree it should be), such a compulsory licensing order is not "compensatory." Moreover, as discussed below, if the order attempts to replicate the "but for" world – *i.e.*, the circumstances that would exist had Rambus not engaged in its deceptive course of conduct – such an order is not "punitive." It would simply stop Rambus from continuing to exploit its illegally acquired monopoly power in violation of Section 2 and terminate the anticompetitive effects of the deceptive course of conduct by which it acquired that monopoly power.

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<sup>43</sup> 343 U.S. at 473.

<sup>44</sup> *Id.*

<sup>45</sup> *United States v. Microsoft Corp.*, 253 F.3d 34, 105 (D.C. Cir. 2001) (*en banc*).

<sup>46</sup> *United States v. Glaxo Group*, 410 U.S. 52, 64 (1973). *See also Besser Mfg. Co. v. United States*, 343 U.S. 444, 447 (1952) ("compulsory patent licensing [on a fair royalty basis] is a well-recognized remedy where patent abuses are proved in antitrust actions and it is required for effective relief"); *Am. Cyanamid Co.*, 72 F.T.C. 623, 690 (1967) (requiring licensing at a specified, non-zero royalty rate), *aff'd*, *Charles Pfizer & Co. v. FTC*, 401 F.2d 574 (6th Cir. 1968).

<sup>47</sup> *See United States v. Nat'l Lead Co.*, 332 U.S. 319, 349 (1947) (upholding compulsory licensing remedy); *United States v. United Shoe Mach. Corp.*, 110 F. Supp. 295, 351 (D. Mass. 1953) (same).

<sup>48</sup> *Am. Cyanamid Co. v. FTC*, 363 F.2d 757, 772 (6th Cir. 1966) ("assuming the facts found by the Commission to be supported by substantial evidence, the Commission had jurisdiction to require as a remedy the compulsory licensing of tetracycline and aureomycin on a reasonable royalty basis.").

<sup>49</sup> *See Grand Calliou Packing Co., Inc.*, 65 F.T.C. 799 (1960), *rev'd in part on other grounds sub nom.*, *La Peyre v. FTC*, 366 F.2d 117 (5th Cir. 1966); *Am. Cyanamid Co.*, 63 F.T.C. 1747 (1963) – an early ruling in the series of *American Cyanamid* cases cited in footnotes 46 and 48.

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## B.

Complaint Counsel ask the Commission to enjoin Rambus from enforcing its pre-1996 patents with respect to JEDEC-compliant products.<sup>50</sup> In effect, Complaint Counsel request that the Commission order royalty-free compulsory licenses for Rambus's pre-1996 patent portfolio for those firms practicing JEDEC's standards. Complaint Counsel argue that this remedy – "far from being extreme – merely restores, six years later, the competitive conditions that should have prevailed" had Rambus not engaged in deception.<sup>51</sup> Moreover, Complaint Counsel argue that imposition of royalty-free compulsory licenses is well within the Commission's broad discretion to restore competition and to deny Rambus the benefits of its illegal conduct.<sup>52</sup> We agree that the Commission has that authority.

Rambus argues that the Commission lacks the power to order any form of royalty-free licensing.<sup>53</sup> In support of this proposition, Rambus quotes *Hartford-Empire Co. v. United States*<sup>54</sup> that "it is difficult to say that, however much in the past such defendant has abused the rights thereby conferred [by a patent], it must now dedicate them to the public."<sup>55</sup> Rambus also quotes from *United States v. National Lead*,<sup>56</sup> in which the Supreme Court stated that reducing "all royalties automatically to a total of zero . . . appears, on its face, to be inequitable without special proof to support such a conclusion."<sup>57</sup> Thus, Rambus would have us rule out a royalty-free licensing remedy, however limited, as a matter of law. We do not agree that the Commission is precluded from imposing such a remedy as a matter of law.

Compared to the extensive treatment of liability standards, antitrust courts have devoted relatively little attention to the question of remedies. The comparatively few modern cases that have addressed remedies have provided limited guidance about the suitability of specific cures for illegal monopolization.<sup>58</sup> In general terms, previous decisions have placed non-damage civil

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<sup>50</sup> CCB at 1-2.

<sup>51</sup> CCB at 2.

<sup>52</sup> CCB at 3, 11.

<sup>53</sup> RBR at 7-8; RRBR at 3-4.

<sup>54</sup> 323 U.S. 386 (1945).

<sup>55</sup> *Id.* at 415.

<sup>56</sup> 332 U.S. 319 (1947).

<sup>57</sup> 332 U.S. at 349; *see also* RRBR at 4.

<sup>58</sup> *See* Howard A. Shelanski & J. Gregory Sidak, *Antitrust Divestitures in Network Industries*, 68 U. CHI. L. REV. 1, 45 (2001) ("The jurisprudence of the Sherman and Clayton Antitrust Acts does not enunciate grand principles for the design of optimal remedies. One can observe recurrent themes, but they must be teased out of the



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remedies on a spectrum. At one end of the spectrum are controls on conduct, which the cases tend to depict as relatively less drastic. At the other end are structural measures such as divestiture, which courts have tended to regard as being more drastic. Compulsory licensing often lies between the two ends of the spectrum, although courts sometimes have likened compulsory licensing to “structural” relief where the licensing at issue enables the licensee to compete against the defendant in the relevant product market.<sup>59</sup> As we discuss below, the cases appear to establish the broad proposition that, as the plaintiff’s demands for relief move across the spectrum from less drastic (conduct) solutions toward more drastic (structural) solutions, the plaintiff’s duty to establish the need for such remedial intervention increases.

Compulsory patent licensing on a reasonable royalty basis is a well-recognized remedy,<sup>60</sup> yet few litigated decisions have ordered royalty-free compulsory licensing. Each time the Supreme Court has considered royalty-free licensing, it has determined that, under the facts presented, a less powerful remedy would suffice to restore competition.<sup>61</sup> We know of one litigated ruling in which royalty-free licensing was ordered.<sup>62</sup>

Cases such as *Hartford-Empire* have expressed caution about royalty-free licensing,<sup>63</sup> but the Supreme Court has not foreclosed the availability of this form of relief. Two years after *Hartford-Empire*, the Supreme Court in *United States v. Nat’l Lead* explicitly left open the possibility that, under different facts, the remedy of royalty-free licensing might be necessary and

disparate cases.”).

<sup>59</sup> See, e.g., *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 186, 244 (D.D.C. 2002) (analogizing the proposed remedy, which included a requirement for royalty-free licensing of software, to a divestiture of assets and therefore as “structural” in nature), *aff’d sub nom.* *Massachusetts v. Microsoft Corp.*, 373 F.3d 1199 (D.C. Cir. 2004). We note that the royalty-free compulsory licensing remedy that we are contemplating here would be more limited because it would apply only to certain JEDEC-compliant technologies; Rambus would be free to charge whatever royalties it wished otherwise.

<sup>60</sup> The availability of compulsory licensing at reasonable royalties is well-established in the Supreme Court’s jurisprudence on antitrust remedies. See *Glaxo Group*, 410 U.S. at 62; *Besser Mfg. Co.*, 343 U.S. at 448-49; *Nat’l Lead*, 332 U.S. at 348-49; *Hartford-Empire*, 323 U.S. at 418-19.

<sup>61</sup> In *Hartford-Empire*, for example, the Supreme Court rejected royalty-free licensing as a remedy for Sherman Act and Clayton Act violations arising from a patent pooling arrangement. Concerned that the remedy went “beyond what is required to dissolve the combination and prevent future combinations of like character[.]” 323 U.S. 386 at 414, the Court allowed for a reasonable royalty instead of the requested royalty-free licensing. Similarly, the Court rejected the Government’s proposal for royalty-free licensing in *United States v. Nat’l Lead*, a case in which a “proliferation of patents” and related agreements led to the “domination of an entire industry” and a violation of Section 1 of the Sherman Act. 332 U.S. at 327-28. The Court concluded that “licenses at uniform, reasonable royalties” would be sufficient to accomplish the discontinuance and prevention of the illegal restraints and patent misuse at issue. *Id.* at 348.

<sup>62</sup> See *United States v. Gen. Elec. Co.*, 115 F. Supp. 835 (D.N.J. 1953).

<sup>63</sup> See *Hartford-Empire*, 323 U.S. at 414-15 (stating reservations about the imposition of royalty-free licensing and concluding that royalty-free licensing was not warranted in the case at hand).

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appropriate.<sup>64</sup> Thus, the Commission has previously declared, and we agree, that “where the circumstances justify such relief, the Commission has the authority to require royalty-free licensing.”<sup>65</sup>

Although the Commission has the authority to require royalty-free licensing, the exercise of that power is subject to important limits. The courts, speaking in varying terms, have insisted on “special proof” for such remedies. This requirement is not well-specified in the cases. In the formative decision on this point, *United States v. Nat’l Lead*, the Supreme Court found that the “special proof” needed to justify royalty-free licensing was lacking, but the Court did not elaborate upon the meaning of this term.<sup>66</sup> Although the parties’ briefs provide no insights on this point, Complaint Counsel stated at oral argument that “special proof” means “proof of the competitive conditions [that] would have existed absent the conduct in question that would not have resulted in any enforcement of the patent.”<sup>67</sup> Accordingly, Complaint Counsel ask us to find that the “special proof” requirement is satisfied here by evidence that they believe demonstrates that Rambus would have received no royalties at all in the “but for” world. Without embracing a precise definition of “special proof,” we agree that, before ordering royalty-free licensing, Complaint Counsel must show that this form of relief is necessary to restore the competitive conditions that would have prevailed absent Rambus’s misconduct. We discuss whether Complaint Counsel have met that burden in Part III of this Opinion.

Rambus, on the other hand, argues that “the burden to justify a remedy that would restrict Rambus’s ability to license its patents is heavier than the burden to establish liability.”<sup>68</sup> In

<sup>64</sup> *United States v. Nat’l Lead*, 332 U.S. at 349. Compare *Schine Chain Theatres*, 334 U.S. at 128-30 (endorsing the availability of structural remedies of divestiture or dissolution to cure illegal monopolization).

<sup>65</sup> *Am. Cyanamid Co.*, *supra* at n.46. In a number of consent orders, the Commission has accepted the prohibition of enforcement of patents as a remedy. For example, in *Dell Computer Corp.*, 121 F.T.C. 616, 620-22 (1996) and *Chevron Corp.*, 140 F.T.C. 100 (2005), available at <http://www.ftc.gov/os/decisions/docs/volume140.pdf> (Aug. 2, 2005), the Commission approved consent orders that prohibited enforcement of patents against those practicing a standard. See also *Eli Lilly & Co.*, 95 F.T.C. 538, 546-52 (1980) (ordering royalty-free licensing of patents); *Xerox Corp.*, 86 F.T.C. 364, 373-83 (1975) (same). In addition, in the context of alleged violations of Section 7 of the Clayton Act, the Commission has approved consent orders that require divestiture or licensing of, or place other limitations on, patent rights. See, e.g., *Cephalon, Inc.*, 138 F.T.C. 583, 604 (2004), available at <http://www.ftc.gov/os/decisions/docs/volume138.pdf>.

<sup>66</sup> In *United States v. Nat’l Lead*, the Court observed that the growing strength of royalty-paying licensees demonstrated that royalty-free licenses were not essential to their ability to compete. 332 U.S. at 351. In contrast, the district court in *General Electric*, 115 F. Supp. at 844, found that, in light of GE’s vast arsenal of patents and the narrow cost margins that prevailed in the market for lamps and related parts, smaller firms would be unable to gain a foothold in the market if they had to bear any licensing fees. Therefore, the court determined that royalty-free licensing was necessary to restore competition. *Id.*

<sup>67</sup> Oral Argument before the Commission on the Issue of Remedy (Nov. 15, 2006), at 23.

<sup>68</sup> RBR at 7; see also RRBR at 6.

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support of this proposition, Rambus cites *United States v. Microsoft Corp.*,<sup>69</sup> in which the D.C. Circuit held that “structural relief, which is ‘designed to eliminate the monopoly altogether . . . require[s] a clearer indication of a *significant causal connection* between the conduct and creation or maintenance of the market power.’”<sup>70</sup> Most recently, in *Massachusetts v. Microsoft Corp.*,<sup>71</sup> the D.C. Circuit, affirming the district court’s refusal to order royalty-free licensing, held that requiring Microsoft to license Internet Explorer on a royalty-free basis, as sought by the Commonwealth of Massachusetts, was a “de facto” divestiture that would require a more “significant causal connection.”<sup>72</sup> Collectively, the case law appears to indicate that the farther remedies expand beyond simple prohibitions against future anticompetitive conduct (with divestiture at the other outer end), the stronger the proof that is needed to justify the remedy.

We reaffirm that the Commission has the authority to order royalty-free licensing when the factual circumstances justify it. With the guiding principles of the case law discussed above firmly in mind, we turn to determining the appropriate remedy in this case based on the record before us. Having found liability, we want a remedy strong enough to restore ongoing competition and thereby to inspire confidence in the standard-setting process. At the same time, we do not want to impose an unnecessarily restrictive remedy that could undermine the attainment of procompetitive goals.<sup>73</sup>

III.

A.

The question, then, becomes whether Complaint Counsel are correct that we should order royalty-free licensing here. Complaint Counsel contend that they have offered “special proof” that justifies requiring Rambus to license its technology royalty-free. Specifically, according to Complaint Counsel, enjoining enforcement of the relevant patents against JEDEC-compliant products is appropriate because, absent Rambus’s deception, JEDEC would have selected

<sup>69</sup> 253 F.3d 34 (D.C. Cir. 2001).

<sup>70</sup> *Id.* at 111 (quoting 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION, ¶ 653b at 91-92) (2d ed. 2002) (emphasis in original); see also AREEDA, ¶ 653c at 100 n. 8 (“Compulsory licensing of intellectual property rights could . . . constitute ‘structural’ relief, particularly when intellectual property rights make up a significant part of defendant’s output.”).

<sup>71</sup> 373 F.3d 1199 (D.C. Cir. 2004).

<sup>72</sup> *Id.* at 1233.

<sup>73</sup> Op. at 3, 33. The Commission has stressed the contribution of intellectual property to innovation and consumer welfare, and has cautioned against unwarranted antitrust enforcement activity that might undermine the patent system’s incentives for innovation. See FED. TRADE COMM’N, TO PROMOTE INNOVATION, THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY, ch.1 at 2 (2003).

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alternative technologies – including alternatives with inferior performance – in lieu of paying royalties, thus leaving Rambus with no claim to royalties.<sup>74</sup>

Rambus, however, contends that there is no basis for the Commission to assume that Rambus – had it disclosed its patents – would have been left with no claim to royalties. According to Rambus, JEDEC selected, and thereby showed a preference for, Rambus technologies after serious and searching consideration of the alternatives.<sup>75</sup> Furthermore, Rambus contends, JEDEC also would have preferred Rambus’s technologies in the “but for” world in which Rambus had disclosed its patent position.<sup>76</sup> At most, according to Rambus, JEDEC would have requested a commitment to license on reasonable and nondiscriminatory (“RAND”) terms, and Rambus would have had no real choice but to comply.<sup>77</sup> Thus, according to Rambus, because Rambus would have received royalties for its patented technologies, Complaint Counsel lack adequate support for their contention that “a zero-royalty remedy flows directly from Rambus’s misconduct.”<sup>78</sup>

We recognize that Rambus’s unlawful conduct makes it difficult to reconstruct the “but for” world, as is typically the case when a party has violated the antitrust laws. We conclude, however, that Complaint Counsel have not satisfied their burden of demonstrating that a royalty-free remedy is necessary to restore the competition that would have existed in the “but for” world – *i.e.*, that absent Rambus’s deception, JEDEC would not have standardized Rambus technologies, thus leaving Rambus with no royalties.

We have examined the record for the proof that the courts have found necessary to impose royalty-free licensing, but do not find it. Our liability opinion identified two realistic possibilities for what would have occurred had Rambus not engaged in deception of JEDEC members: either (i) JEDEC would have chosen alternative technologies, or (ii) JEDEC would have incorporated Rambus’s technologies into the standard but would have demanded, as a pre-condition of adopting Rambus’s technology, that Rambus agree to license the technology on RAND terms.<sup>79</sup> There is evidence in the record to support both possibilities.

As to the first possibility, it is true that if JEDEC had chosen to include other, non-Rambus technologies, its members would have paid no royalties to Rambus. But that does not mean that incorporating those technologies rather than the Rambus technologies would have

<sup>74</sup> CCB at 4-5.

<sup>75</sup> RBR at 8, 11.

<sup>76</sup> RBR at 10; RRR at 9.

<sup>77</sup> RRR at 10.

<sup>78</sup> CCR at 6.

<sup>79</sup> Op. at 74.

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been costless. Because Rambus's cost analysis was faulty,<sup>80</sup> and Complaint Counsel did not provide a cost-benefit comparison of the available technologies, we do not know what the costs might have been. We do know, however, that without knowledge that payment of royalties to Rambus would be required, JEDEC found the Rambus technologies desirable and chose them for the JEDEC DRAM standards. On the current record, we can neither confirm nor reject the possibility that JEDEC would have preferred Rambus's technologies over the alternatives, even with some reasonable royalty. Yet, for purposes of supporting the need for a zero-royalty remedy, it was Complaint Counsel's burden to show that Rambus would not have received reasonable royalties in the "but for" world.

Complaint Counsel suggest that the evidentiary gap can be closed because Rambus would not have issued the commitment to license on RAND terms required by JEDEC and EIA regulations. Complaint Counsel point to evidence that shows that Rambus did not want to license technology on RAND terms and that it even made statements that offering RAND terms was contrary to its business model.<sup>81</sup> Rambus, however, had not disclosed its patents at the time of these statements. An unwillingness to comport with JEDEC policy while pursuing a hold-up strategy is not necessarily indicative of how Rambus would have acted after disclosure, when hold up no longer was attainable.

It is hardly surprising that Rambus would rather have the freedom to choose what license fees to charge than to be required to license on RAND terms. Indeed, Rambus was so desperate to avoid having to license on RAND terms that it chose to deceive JEDEC rather than to succumb. But that also shows how desperate Rambus was to have its technology incorporated into the standard. Rambus does not manufacture anything; it innovates, obtains patents, and then

<sup>80</sup> Although Rambus presented its analysis of relative costs and performance characteristics of the relevant Rambus technologies and their alternatives, the Commission found Rambus's calculations "fraught with uncertainty and potential for error" and concluded that Rambus had failed to demonstrate that alternatives would have been more expensive or that JEDEC would have standardized Rambus's technologies even if Rambus had disclosed its patent position. Op. at 94.

With respect to these and other evaluations of the evidence in the record – both here and in the July 31, 2006, liability opinion – the Commission, "to the extent necessary or desirable, exercise[s] all the powers which it could have exercised if it had made the initial decision." 16 C.F.R. 3.54(a). Thus, in particular, any Commission citation to any trial testimony, exhibit, or deposition segment – either in this opinion or in the July 31, 2006, opinion – constitutes a determination by the Commission that the cited testimony, exhibit, or deposition segment is relevant, material, and reliable evidence, and therefore admitted into the record of this proceeding. 16 C.F.R. 3.43(b). Each such determination shall be conclusive, with respect to determining the contents of the record of this proceeding, notwithstanding any objection or response thereto registered by either Complaint Counsel or Counsel for Respondent. The Commission also has determined that all exhibits listed on the Joint Exhibit Index filed by Complaint Counsel and Counsel for Respondent on September 29, 2003, whether or not marked as "pending," are admitted into the record of this proceeding, with any objections and responses thereto as to any exhibit marked "pending" going to the weight to be accorded that exhibit, rather than to its admissibility.

<sup>81</sup> CCRBR at 10.

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licenses.<sup>82</sup> To conclude that, had Rambus "come clean," it still would have refused JEDEC's demand for RAND terms because it preferred licensing according to its own terms, is to conclude that Rambus, faced with two choices it did not like, would have chosen the path that resulted in no royalties from SDRAM and DDR and other technologies becoming the industry standard.<sup>83</sup> This is hard to square with the fact that "[r]oyalties are the lifeblood of Rambus"<sup>84</sup> and its reiterated objective of "get[ting] royalties from competitive memory."<sup>85</sup> Further, the record suggests that despite its protestations, Rambus was indeed willing to cater to the demands of powerful buyers,<sup>86</sup> and JEDEC, *ex ante*, was a very powerful potential source of business.<sup>87</sup> Given JEDEC's ability to turn to alternatives to Rambus's patented technologies and the historic importance of JEDEC standards to industry success, a choice by Rambus to forgo participation in the JEDEC standard at a reasonable royalty rate is not easily assumed without stronger evidence than Complaint Counsel have presented.<sup>88</sup>

Both dissents express the view that Rambus would not have offered a RAND commitment because Rambus's proprietary DRAM technology, RDRAM, was a "flagship" product, and Rambus would not have torpedoed its flagship to secure royalties on SDRAM and DDR SDRAM.<sup>89</sup> Nothing in the record, however, suggests that SDRAM and DDR SDRAM would have foundered if Rambus had withheld its four patented technologies.<sup>90</sup> If the Rambus technologies in SDRAM and DDR SDRAM came at a royalty equal to their value-added, so that improved performance carried with it commensurately higher cost, it is not clear why RDRAM would have been disadvantaged by their adoption. Moreover, the record suggests that Rambus

<sup>82</sup> Op. at 7.

<sup>83</sup> See Teece, Tr. 10740-46.

<sup>84</sup> CX 2106 at 221 (deposition transcript at 220) (Farmwald FTC Dep.) (*in camera*). See also Farmwald, Tr. 8095, 8150, 8248; RX 82 at 18.

<sup>85</sup> CX 5110 at 2.

<sup>86</sup> For example, Rambus licensed its RDRAM technology at rates quite favorable to Samsung, a significant market participant. In the Samsung RDRAM license, the applicable royalty rate drops to zero five years after shipment of the 500,000th unit, provided that more than 10 million units had been shipped. CX 1592 at 23.

<sup>87</sup> See Op. at 78-79 (noting "the historical record of the predominant market position of DRAMs compliant with the JEDEC standards"). JEDEC was a "broad-based organization that included essentially all the DRAM manufacturers and their largest customers." *Id.* at 78.

<sup>88</sup> See Teece, Tr. 10740-46 (testifying that Rambus had economic incentives to offer RAND assurances in a "but for" world in which it had already disclosed its patent position).

<sup>89</sup> Rambus developed RDRAM as a proposed solution to the computer hardware industry's "memory bottleneck problem." See Op. at 6-7.

<sup>90</sup> Rambus documents evince a belief that development of SDRAM was inevitable. See, e.g., CX 672 at 1 ("SDRAMs will happen").

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was proceeding on *two* tracks – developing RDRAM *and* pursuing royalties through SDRAM/DDR SDRAM<sup>91</sup> – and it seems unlikely that Rambus would have abandoned the latter track at the very time that royalties could have been secured.

As to the second possibility – that JEDEC would have standardized Rambus's technologies upon receipt of a RAND commitment – the evidence shows, and in the liability opinion the Commission found, that JEDEC was reluctant to incorporate patented technologies.<sup>92</sup> JEDEC's minutes state, "If it is known that a company has a patent on a proposal then the Committee will *be reluctant* to approve it as a standard."<sup>93</sup> This, too, is hardly surprising, given that all firms would strongly prefer to use technology without the cost of license fees. The minutes do not, however, state that the committee will *not* standardize a patented technology, and the basic JEDEC and EIA documents repeatedly spell out procedures under which patented technologies may be accepted.<sup>94</sup>

Moreover, the record identifies several occasions in which JEDEC incorporated patented technologies into some standards after securing agreement from the patent holder that the technologies would be licensed on RAND, or specific-royalty, terms: (1) JEDEC retained Texas Instruments's ("TI") Quad CAS patented technology in 1993 after TI provided written assurances complying with EIA patent policy<sup>95</sup>; (2) JEDEC selected Motorola patented technology for the SDRAM standard in 1992 after Motorola provided a letter offering RAND assurances<sup>96</sup>; and (3) JEDEC approved Digital Equipment Corporation's patented technology for an MPDRAM standard in 1990 after DEC agreed to license at a 1% royalty rate.<sup>97</sup> In addition, JEDEC's

<sup>91</sup> See, e.g., CX 1267 (1995 Rambus document, identified at Diepenbrock, Tr. 6129-31, headed "IP Strategy" announcing, with equal weight, in one column a "Defensive" strategy built around protecting RDRAM and in the other column an "Offensive" strategy based on "[f]ind[ing] key areas of innovation in our IP that are essential to creating a competing device to [RDRAM]" and "claim[ing] these areas as broadly as possible within the scope of what we invented"); CX 543 at 16-17 (June 1992 Rambus business plan identifying the marketing of RDRAM as the number one strategy while simultaneously articulating a strategy of capturing royalties from SDRAMs by "be[ing] in a position to request patent licensing (fees and royalties) from any manufacturer of Sync DRAMs").

<sup>92</sup> Op. at 74-75.

<sup>93</sup> JX 5 at 4 (emphasis added).

<sup>94</sup> See CX 208 at 19 (JEDEC's Manual of Organization and Procedure, JEP 21-1) (stating that "committees should ensure that no program of standardization shall refer to a product on which there is a known patent *unless* all the relevant technical information is known to the formulating committee[,] subcommittee, or working group" and specifically providing for including patented technologies on receipt of a written RAND assurance) (emphasis added); see also EIA publications EP-7-A, CX 207a at 8, and EP-3-F, CX 203a at 11 (containing similar provisions).

<sup>95</sup> JX 25 at 5-6.

<sup>96</sup> JX 13 at 9-10, 136.

<sup>97</sup> JX 1 at 6, 24.

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DRAM Task Group chairman, Gordon Kelley, testified that in "several instances[.]" JEDEC ceased consideration of alternatives once a RAND commitment letter on a patented technology had been received.<sup>98</sup> We have considered that on one occasion JEDEC rejected a technology known to be covered by a Rambus patent.<sup>99</sup> But that occurred nearly a year *after* Rambus had left JEDEC, leaving JEDEC with no way to impose the RAND requirement.

Complaint Counsel cite to the testimony of multiple JEDEC members that they likely would have opposed using the technologies in question and instead selected alternatives had they known of Rambus's patent applications.<sup>100</sup> While this testimony has some persuasion, it is ambiguous at times and – because it is based on a "but for" hypothetical – necessarily speculative, albeit sincere. The testimony of market participants, especially customers, is always important in the Commission's decisions. But we must look not only to what these members say they *would* have done, but also to what they actually have done. Here, the evidence shows that JEDEC members agreed to incorporate patented technologies into the SSO's standards in several instances, described above.

We reiterate that we agree with our colleagues Commissioner Rosch and Commissioner Harbour that the Commission has the authority to order royalty-free licensing. We also respect their differing conclusion regarding the "but for" world, construction of which is no simple or certain task. If we shared their assessment of the facts on this issue, we might well have endorsed a more powerful form of relief. We conclude, however, that while there is some evidence that supports the possibility that JEDEC would have chosen alternative technologies, Complaint Counsel have not met the burden of demonstrating that restoring the competition that would have existed in the "but for" world requires that Rambus license its technology with no compensation.

## B.

We therefore are left with the task of determining the maximum reasonable royalty rate that Rambus may charge those practicing the SDRAM and DDR-SDRAM standards.<sup>101</sup> Royalty rates unquestionably are better set in the marketplace, but Rambus's deceptive conduct has made

<sup>98</sup> G. Kelley, Tr. 2708-09.

<sup>99</sup> See Op. at 74 n.403 (describing JEDEC's reaction to a proposal for a "loop-back" clock system).

<sup>100</sup> CCBP at 5.

<sup>101</sup> Rambus argues that "if the Commission wishes now to replicate the conditions that would have existed in the but-for world, it should enter an order requiring Rambus to license the four relevant technologies to manufacturers of SDRAM or DDR SDRAM-compliant devices on RAND terms – that is, the terms on which Rambus would have been obligated to license those technologies if it had given a RAND commitment when it was a member of JEDEC." RBR at 14. To simply order Rambus to henceforth license on RAND terms undoubtedly would be fruitless, however. We already know that Rambus's views about what RAND terms would be differs from the views of the licensees. Consequently, if we do not set the maximum rate now, we will simply invite more disputes that we likely will have to resolve eventually.

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that impossible. Although we do not relish imposing a compulsory licensing remedy, the facts presented make that relief appropriate and indeed necessary to restore competition.

There is no direct evidence as to what royalty rates would have resulted from *ex ante* SDRAM negotiations among the parties had Rambus not engaged in the unlawful conduct. Naturally, adjudicators rarely if ever have such direct proof of the “but for” world before them.<sup>102</sup> An antitrust remedy, however, can be adequate even if knowledge of the “but for” world is imperfect. As the Supreme Court explained in *J. Truett Payne Co. v. Chrysler Motors Corp.*, “the vagaries of the marketplace usually deny [courts] sure knowledge of what [an antitrust] plaintiff’s situation would have been in the absence of the defendant’s antitrust violation.”<sup>103</sup> Indeed, to require the kind of detailed and concrete proof of injury that is available in other contexts would allow a wrongdoer to benefit from the uncertainty that its own unlawful conduct has created.<sup>104</sup>

Consistent with JEDEC policies and practices for the adoption of patented technologies in standards determinations, and our own findings in the liability opinion,<sup>105</sup> we conclude that in the “but for” world Rambus’s royalty rates would have been negotiated under the constraint of a RAND commitment. A reasonable royalty “is or approximates the outcome of an auction-like process appropriately designed to take lawful advantage of the state of competition existing *ex ante* . . . between and among available IP options.”<sup>106</sup> The parties agree that the “*ex ante* value of a technology is the amount that the industry participants would have been willing to pay to use a technology over its next best alternative prior to the incorporation of the technology into a standard.”<sup>107</sup>

<sup>102</sup> Even if we had a more complete record, we would not be able to apply a simple formula to predict “but for” royalties. In a “but for” world, the parties would have arrived at a rate on the basis of a number of factors that are not easily quantifiable – e.g., the respective negotiating skills and strengths of the parties and their respective business plans. *Cf. Georgia Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1121 (S.D.N.Y. 1970) (economic significance of the factors relevant to establishing a reasonable royalty for purposes of calculating infringement damages cannot be “automatically transduced into their pecuniary equivalent”), *aff’d as modified*, 446 F.2d 295 (2d Cir. 1971).

<sup>103</sup> 451 U.S. 557, 566 (1981). *Accord* *Conwood Co. v. U.S. Tobacco Co.*, 290 F.3d 768, 794 (6th Cir. 2002).

<sup>104</sup> *J. Truett Payne Co.*, 451 U.S. at 566-67 (citing *Bigelow v. RKO Radio Pictures, Inc.*, 327 U.S. 251, 264-65 (1946)).

<sup>105</sup> Op. at 97 (finding that JEDEC and EIA policies would have prohibited standardization of Rambus’s patented technologies absent a RAND commitment).

<sup>106</sup> Daniel G. Swanson and William J. Baumol, *Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1, 57 (2005).

<sup>107</sup> RBR at 12 (quoting Complaint Counsel’s Proposed Finding of Fact No. 2965 at 388).

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The adoption of Rambus’s technologies for the standard shows that JEDEC believed that – putting royalties aside – Rambus’s technologies were superior to alternatives. JEDEC members likely would have been willing to pay some amount reasonably reflecting that superiority. It is also true, however, that the record does not permit us precisely to quantify the closeness of substitution between Rambus’s technologies and the alternatives and the degree to which those alternatives would have entailed higher costs to achieve the same level of DRAM performance, higher costs in the form of decreased DRAM performance, or both.<sup>108</sup>

Lacking this information, we nevertheless consider and balance evidence that:

1. Alternative technologies were available, and it likely would have been possible for members to design around Rambus’s patents, albeit possibly with some higher cost,<sup>109</sup>
2. Absent any royalties, JEDEC members preferred Rambus’s technology;
3. JEDEC had a stated preference for open, patent-free standards,<sup>110</sup> and its members were highly cost-sensitive;<sup>111</sup> and
4. Rambus, despite its preference to avoid RAND commitments, had a strong economic incentive to do what was necessary to ensure that its technology was incorporated into JEDEC’s standards.<sup>112</sup>

In determining what royalty rates likely would have resulted from *ex ante* SDRAM negotiations, the Commission may look to real-world examples of negotiations involving similar technologies. Rambus agrees that this is the correct approach, noting that “the best way to determine these [RAND] rates is by examining rates for other comparable licenses in the industry.”<sup>113</sup> Complaint Counsel seem to agree, at least by implication, because they argue that the October 2000 Samsung SDRAM/DDR SDRAM license agreement and the March 2005

<sup>108</sup> As discussed in our liability opinion, the evidence that Rambus provided was flawed and unreliable. Op. at 82-96.

<sup>109</sup> *Id.* at 76, 82-96.

<sup>110</sup> *See, e.g.*, JX 5 at 4; CX 203a at 11; CX 207a at 8; CX 208 at 19.

<sup>111</sup> *Id.* at 74-75.

<sup>112</sup> *See, e.g.*, Teece, Tr. 10341-46. *See also* CX 2106 at 221 (deposition transcript at 220) (Farmwald FTC Dep.) (*in camera*) (“[r]oyalties are the lifeblood of Rambus”); CX 5110 at 2-3 (Rambus’s business objective was “get[ting] royalties from competitive memory”).

<sup>113</sup> RBR at 16. As discussed below, Rambus disagrees with our specific application of the approach taken herein, but it nonetheless endorses the general methodology.

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Infineon SDRAM and DDR SDRAM license agreement with Rambus indicate that the highest possible royalty rate in the “but for” world would be less than 0.25% on JEDEC-compliant DRAMs.<sup>114</sup> Similarly, the court in *Georgia Pacific*, a seminal source regarding the methodology for calculating a reasonable royalty owed to patent holders following a finding of infringement, identified several factors potentially pertinent to that exercise, including, prominently, “the rates paid by the licensee for the use of other patents comparable to the patent in suit.”<sup>115</sup> That court looked to multiple factors, seeking to exercise “a discriminating judgment reflecting its ultimate appraisal of all pertinent factors in the context of the credible evidence.”<sup>116</sup>

## C.

The Commission will extrapolate *ex ante* SDRAM and DDR SDRAM royalty rates using as its starting point the RDRAM license agreements found in the record. As we explained in our liability opinion, beginning in 1990, Rambus offered to license its RDRAM technology to manufacturers of DRAM chips and DRAM-compatible microprocessors, and it sought to “position RDRAM as the *de facto* standard.”<sup>117</sup> RDRAM failed to achieve significant market success, however, as industry participants instead turned to standards promulgated by JEDEC – which they hoped would represent a better value proposition.<sup>118</sup> RDRAM royalty rates nevertheless serve as an extraordinarily useful benchmark because they are the product of individual, arm’s-length negotiations between Rambus and manufacturers of DRAM chips and DRAM-compatible components for the use of all of the technologies at issue in this case, and more.<sup>119</sup> The manufacturers were aware early on that Rambus claimed patent protection for the

<sup>114</sup> CCBP at 19-20.

<sup>115</sup> 318 F. Supp. at 1120. *Accord* Mobil Oil Corp. v. Amoco Chems. Corp., 915 F. Supp. 1333, 1354 (D. Del. 1994) (noting that parties’ experts agreed that the price of comparable technology was of primary importance in determining a royalty rate); *see also* Mahurkar v. C.R. Bard, Inc., 79 F.3d 1572, 1579 (Fed. Cir. 1996) (noting that the task of calculating reasonable royalty is simplified when the record shows an established rate for “related patents or products”).

<sup>116</sup> *Georgia Pacific*, 318 F. Supp. at 1120-21.

<sup>117</sup> Op. at 8.

<sup>118</sup> *Id.*

<sup>119</sup> *See* Op. at 115 n.624 (“RDRAM royalties cover all four of the technologies at issue in this proceeding, as well as additional proprietary technologies. *See, e.g.,* Horowitz, Tr. 8547-48; RX 2183; RX 81 at 8.”); CX 2092 at 132 (Crisp *Infineon* Trial Tr.) (*in camera*) (stating that the ideas added to Rambus patent applications for the mode register and for programmable CAS latency were ideas [redacted] Rambus has acknowledged this point. *See* Rambus Response to Complaint Counsel’s Proposed Findings of Fact No. 723 at 285 (stating that “[w]hen first developed, RDRAM technology contained . . . the use of registers on the DRAM to store latency values, a variable burst length for data transfers, dual edge clocking in a synchronous memory device, and on-chip DLL or PLL.”).

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RDRAM technologies,<sup>120</sup> and there was no lock-in at the time these agreements were negotiated. In our effort to restore competitive conditions to those that would have prevailed in the “but for” world, for the reasons described above, we deem the RDRAM license agreements as the best available evidence from which to base our estimate of the likely “but for” results of negotiation.<sup>121</sup>

During the 1990s, Rambus licensed its proprietary RDRAM technologies at high-volume rates averaging 1-2% for use in DRAM chips,<sup>122</sup> with the rates declining significantly over time and with increases in the number of shipped units.<sup>123</sup> In the Samsung RDRAM license, for example, the rate drops to zero five years after shipment of the 500,000th unit, provided that more than 10 million units had been shipped.<sup>124</sup>

Rambus argues that 2% was its “standard rate” for RDRAM licenses, and that even this standard rate was an introductory, promotional rate reflecting an investment in the future. However, the 1-2% average RDRAM rate is corroborated by a November 1998 e-mail by Rambus CEO Geoff Tate (observing that three DRAM companies were “at 1% long term” and expressing the hope of *raising* their long-term rates to join three other “biggies” at 1.5%)<sup>125</sup> and by a November 2000 Rambus slide presented by Tate that reflects the company’s desire to “drive royalties from 1-2% average to 3-5%”.<sup>126</sup> These documents not only confirm the 1-2%

<sup>120</sup> *See, e.g.,* G. Kelley, Tr. 2504; Kellogg, Tr. 5053; Bechtelsheim, Tr. 5828-29, 5841-42; Lee, Tr. 6610-11; RX 279 at 8.

<sup>121</sup> Rambus cites evidence of royalty rates for other semiconductor technologies as a basis for an appropriate remedy. RBR at 18-20. We examined this evidence in our liability decision and determined that Rambus had provided no basis for treating the referenced licensing arrangements as comparable to licenses for the technologies here at issue. Op. at 114-15 n.624 (quoting Rambus CEO Geoffrey Tate’s testimony that comparing royalty rates for different technology licenses mixes “apples and oranges” because “[t]he royalty rate for one patent and the royalty rate for another patent, even in the [semiconductor] industry, can vary tremendously based on the value of the patent and the applications involved”). Clearly, RDRAM, with the *same* technologies at issue in this case, offers a superior point of comparison than the disparate semiconductor technologies cited by Rambus.

<sup>122</sup> *See* RDRAM licenses included in the record – CX 1592 (Samsung); CX 1600 (Hyundai); CX 1609 (Mitsubishi); CX 1612 (Amendment to Hyundai); CX 1617 (Siemens); CX 1646 (Micron); RX 538 (NEC).

<sup>123</sup> Although Commissioner Rosch’s dissenting opinion correctly notes that *initial* royalty rates set by the RDRAM licenses sometimes were higher, SDRAM and DDR SDRAM have been high-volume products for several years. *See* Rapp Tr. 10248-49; CX 2112 at 310-11 (deposition transcript at 309-10) (Mooring FTC Dep.) (*in camera*). Our goal – restoring competition – thus requires that we look to the royalties that the RDRAM licenses required for the later years in the life of a high-volume product.

<sup>124</sup> CX 1592 at 23.

<sup>125</sup> CX 1057.

<sup>126</sup> CX 1391A at 33 (emphasis added).

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average,<sup>127</sup> but reveal that that average held steady for the long term, not just for an introductory period as Rambus claims. Indeed, four alternative Rambus projections all assume RDRAM royalties of [redacted] on DRAM chips for each year from [redacted].<sup>128</sup>

In making the required “discriminating judgment reflecting [our] ultimate appraisal of all pertinent factors in the context of the credible evidence,”<sup>129</sup> we must consider several factors, each of which points to a reasonable royalty rate lower than the typical RDRAM royalty. First, Rambus’s RDRAM licenses covered substantially more technologies than those relevant here;<sup>130</sup> consequently, the royalties that Rambus collected for RDRAM provide too high an estimate of a reasonable royalty for just a subset of the RDRAM technologies.<sup>131</sup> Second, RDRAM royalty rates typically declined substantially for high volumes and with the passage of time; for Samsung, a significant DRAM producer,<sup>132</sup> the rates ultimately declined all the way to zero. Given the success of SDRAM and DDR SDRAM and the years that have passed since their introduction, we must take full account of the pattern of discounts specified in RDRAM licenses for high volumes and out-year production. Third, there is substantial evidence that market participants viewed the RDRAM royalties as too high for RDRAM to achieve a major presence in the market. For example, Intel regarded a royalty of less than .5% as appropriate for

<sup>127</sup> See also CX 1751 (*in camera*), a 1997 Rambus compilation in Rambus Vice President for Intellectual Property Joel Karp’s notebook, showing high-volume RDRAM rates [redacted] [redacted].

<sup>128</sup> See CX 527-30 (*in camera*) (identified in the Joint Exhibit List as “Rambus spreadsheet re: 2000-2005 Royalty scenarios”). Rambus also argues that RDRAM rates were artificially constrained because an agreement giving Intel any proceeds from RDRAM licenses in excess of 2% eliminated any incentive for Rambus to negotiate for a higher royalty rate. See RBR at 22. For present purposes, however, the important point is that Rambus was unable to achieve even a 2% royalty across the market – many licensees negotiated rates below that level for high-volumes and out-years. See Op. at 115 n.624. The alleged arrangement with Intel would not explain why Rambus licensed RDRAM for less than 2%.

<sup>129</sup> *Georgia Pacific*, 318 F. Supp. 1116 at 1120-21.

<sup>130</sup> See, e.g., Farmwald, Tr. 8115-18, 8270, 8275-77; Horowitz, Tr. 8619-25, 8646-47; RX 81 at 6-14; CX 1451. Indeed, Rambus has argued that “RDRAM technology in the early 1990s included numerous inventions,” Rambus Response to Complaint Counsel’s Finding of Fact No. 717 at 282, and Rambus has criticized Complaint Counsel for suggesting that a change from the four patented technologies in DDR SDRAM would require “anywhere near the magnitude of change required for the industry to switch to RDRAM” or “anywhere near the time involved” for switching to RDRAM. See Rambus Response to Complaint Counsel’s Proposed Findings of Fact No. 2557 at 1032-1033, No. 2564 at 1037 (describing RDRAM as “an entirely new DRAM architecture”).

<sup>131</sup> In terms of the criterion that both parties would apply, the additional technologies included in RDRAM licenses would have increased “the amount that the industry participants would have been willing to pay to use [RDRAM] over its next best alternative” and hence would have increased its *ex ante* value. See *supra* note 106 and accompanying text.

<sup>132</sup> See CX 1057 (e-mail from Rambus CEO Tate describing Samsung as one of the “biggies”).

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commodity RDRAM,<sup>133</sup> and JEDEC JC-42.3 subcommittee minutes from March 1997 reflect broad-based misgivings regarding RDRAM royalty rates.<sup>134</sup> Again, a rate below the RDRAM royalty range is appropriate for market-dominating products such as SDRAM and DDR SDRAM.<sup>135</sup> Finally, because it is Rambus’s own unlawful conduct that prevents perfect replication of the “but for” licensing picture, plausible doubts should be resolved against Rambus.<sup>136</sup> Together, these factors point to a reasonable royalty substantially below the 1-2% RDRAM range.

On the other hand, RDRAM licenses, in addition to requiring per-unit royalties, obligated licensees to make up-front, lump-sum payments of licensing fees.<sup>137</sup> We deem it appropriate to trade off compensation payable up-front and compensation based on future usage, with an increase in one compensating for a decrease in the other. For purposes of our remedial Order, we couch Rambus’s compensation entirely in terms of per-unit royalties, with no up-front licensing fees. Although we have accounted for up-front licensing fees by increasing slightly our estimate of the maximum royalty rates consistent with restoring competition, our remedy’s coverage of a substantially shorter period than the RDRAM licenses and its exemption of a substantial portion of Rambus’s JEDEC-compliant business, suggest that the adjustment should be small.<sup>138</sup>

Thus, starting at 1% – apart from the Samsung arrangement, the lower end of the RDRAM licensing range – and accounting for the factors presented above, we find that a maximum royalty rate of .5% for DDR SDRAM, for three years from the date the Commission’s Order is issued and then going to zero, is reasonable and appropriate.<sup>139</sup> We also find that a

<sup>133</sup> See CX 952; CX 961.

<sup>134</sup> See JX 36 at 7 (“Some Committee members did not feel that the Rambus [RDRAM] patent license fee fit the JEDEC requirement of being reasonable.”).

<sup>135</sup> One Rambus document, CX 960, reflects Rambus CEO Tate’s insistence that royalties on infringing DRAMs exceed royalties on RDRAM. By its terms, the document deals with a license of “all of our present and future patents for use for any infringing dram,” a substantially more extensive license than at issue here. In any case, Tate’s statement came in 1997, when Rambus was still pursuing its hold-up strategy. See Op. at 47. Rambus’s preferences when hold-up was in the offing are not good evidence of royalties achievable in a “but for” world in which *ex ante* disclosure had occurred.

<sup>136</sup> 3 AREEDA, ANTITRUST LAW ¶ 653c.

<sup>137</sup> RDRAM licenses required up-front license fees ranging from \$1.25 million (CX 1646 at 10-11, 20) to \$5.5 million (CX 1617 at 11, Siemens license) for use of Rambus technology in DRAMs.

<sup>138</sup> The RDRAM licenses ran (or were renewable without additional license fees) for the life of Rambus’s patents. See, e.g., CX 1592 at 31; CX 1600 at 17; CX 1609 at 15; CX 1617 at 16; CX 1646 at 17; RX 538 at 33. The RDRAM licenses contained no limitation comparable to our remedy’s exclusion of DDR2 SDRAM.

<sup>139</sup> Complaint Counsel suggest that appropriate downward adjustments to RDRAM royalties yield a royalty rate of 0.1%, but it is not clear what assumptions they have made to support this calculation. Further, we cannot accept Complaint Counsel’s arguments in favor of a maximum royalty rate of 0.25% or less drawn from

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corresponding .25% maximum rate for SDRAM is appropriate. Halving the DDR SDRAM rate reflects the fact that SDRAM utilizes only two of the relevant Rambus technologies, whereas DDR SDRAM uses four.<sup>140</sup> Moreover, Rambus's quality-adjusted cost comparison data indicate that alternatives to its two SDRAM technologies would add *less than half* the cost of alternatives to the four Rambus technologies in DDR SDRAM.<sup>141</sup> Applying Rambus's own cost figures to Rambus's own analytical paradigm – which looks to “the amount that the industry participants would have been willing to pay to use a technology over its next best alternative”<sup>142</sup> – we find the .25% maximum rate for SDRAM to be both reasonable and fully supported. As with DDR SDRAM, this maximum rate would go to zero three years after the date the Commission's Order is issued.

It is true that we cannot calculate to the penny the downward adjustment from 1%. Yet these royalties certainly are within the range of reasonableness in approximating the result drawn from what we know of the *ex ante* negotiating positions of Rambus and the other JEDEC members. The royalty rates take account of the relevant parties' preferences (*i.e.*, JEDEC's cost-sensitivity and preference for open, patent-free standards on the one hand, and Rambus's disinclination to agree to RAND terms on the other hand). They reflect appropriate downward adjustments from the prevailing RDRAM rates based on the nature and extent of the technology

extrapolations from terms of known or reported Rambus agreements with Samsung and Infineon. Neither the agreements nor the facts on which Complaint Counsel premise their extrapolations are in the record, and in each instance cited Rambus was at the most disadvantageous stage of its infringement litigation – *i.e.*, when it had lost its case at the trial court level.

Rambus, on the other hand, argues that it should be allowed to charge a royalty rate in excess of 2.5% – the rate agreed to in the “other DRAM” clause of the 1995 Hyundai-Rambus license agreement. RBR at 17-18. This is hardly a realistic estimate of reasonable royalty rates in the “but for” world: the Hyundai rate was not accepted by anyone other than Hyundai, and, at least according to Rambus, it was not even retained by that firm. *See* CX 1878 (Rambus answer and counterclaim alleging infringement by Hyundai for using Rambus technologies in JEDEC-compliant products); *Hynix Semiconductor Inc. v. Rambus Inc.*, 2006 WL 565893 at \*3-4 (N.D. Cal. 2006) (finding of fact describing Rambus position that the “other DRAM” provision has been superseded and no longer is in effect). Thus, from a market perspective, the Hyundai rate was neither broadly accepted nor sustained. Moreover, the 2.5% figure may have been inflated as a result of trade-offs with other aspects of the license. For example, Rambus's SDRAM and DDR/SDRAM licenses normally include up-front licensing fees of \$3 million, and Rambus RDRAM licenses required licensing fees varying from \$1.25 million to \$5.5 million. The Hyundai license, CX 1600 at 11, conferred a license for purposes of RDRAM memories for a licensing fee of \$2 million, with no additional license fee for rights covering SDRAM and DDR/SDRAM – so that Hyundai received its SDRAM and DDR/SDRAM license without having to make the normal \$3 million up-front payment. Similarly, there may have been trade-offs between the royalties payable by Hyundai for various uses of RDRAM technologies (and the dates and volume levels specified for setting those royalty rates) and the 2.5% royalty payable by Hyundai on other DRAMs. Such trade-offs, within a single license agreement, could have affected the “other DRAM” rate.

<sup>140</sup> Op. at 9-12; CX 1363 at 3.

<sup>141</sup> Rapp, Tr. 9832, 9852. The Commission has questioned the accuracy of Rambus's cost data, but we have not suggested that this relationship is invalid. Op. at 95 n.532-33.

<sup>142</sup> RBR at 12.

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at issue, and prevent Rambus from benefitting from the uncertainty that its unlawful actions generated. They also follow the negotiated RDRAM agreements pursuant to which the applicable royalty rate declined over time.<sup>143</sup> Setting a maximum royalty rate that is applicable for a period of three years before dropping to zero follows from the Samsung RDRAM agreement in particular; lends temporal and rate certainty to this remedy; and requires that the royalty rate decline to zero before the relevant patents expire, according to Complaint Counsel, in 2010.

The Commission also must determine an appropriate maximum royalty rate for memory controllers and other components that use the relevant Rambus technologies in complying with JEDEC's SDRAM and DDR SDRAM standards. The RDRAM licenses in the record, cited above, either set a royalty of between 3% and 5% (but 2 to 3% for NEC<sup>144</sup>) for the use of Rambus technologies in memory controllers, microprocessors, and other non-DRAM components, or they leave the rates open for future negotiation, generally specifying a maximum of between 3% and 5%. That is more than double the large-volume royalties for DRAMs. The SDRAM licenses charge [redacted] for the DRAM and [redacted] for the SDR Controllers; the DDR SDRAM licenses charge less [redacted] for the DRAMs and [redacted] for the DDR Controllers.<sup>145</sup> In addition, the record contains several exhibits that appear to provide Rambus's internal revenue projections based on anticipated royalties and licensing fees. In each, the stated royalty rate for RDRAM Controllers is [redacted], exactly [redacted] that for RDRAM devices.<sup>146</sup>

Based on this evidence, we adopt a coefficient of two for determining the maximum royalty rate for memory controllers and other non-memory-chip components that use the relevant Rambus technologies. For such products compliant with the SDRAM standard, this yields a maximum royalty of .5%, dropping to zero after three years; for such products compliant with the DDR SDRAM standard, this yields a maximum royalty of 1%, again dropping to zero after three years.

<sup>143</sup> *See, e.g.*, CX 1592; CX 1600; CX 1609; CX 1612.

<sup>144</sup> *See* RX 538 at 22.

<sup>145</sup> The SDRAM/DDR SDRAM licenses define “Controllers” broadly to include [redacted] [redacted] [redacted]. *See, e.g.*, CX 1680 at 22 (*in camera*); CX 1681 at 7 (*in camera*); CX 1687 at 6-7 (*in camera*). Although the licenses in the record involve firms known as DRAM manufacturers, several of those licenses identify specific products of the licensees that pursuant to the licenses qualify, and give rise to royalties, as Controllers. *See, e.g.*, CX 1681 at 7, 34 (*in camera*) (Hitachi license identifying approximately [redacted] Hitachi products as SDR and DDR Controllers); CX 1685 at 6 (*in camera*) (NEC license identifying [redacted] NEC products as SDR Controllers); CX 1689 at 6 (*in camera*) (Mitsubishi license identifying [redacted] Mitsubishi products as SDR Controllers).

<sup>146</sup> *See* CX 527-30 (*in camera*).



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We also find it appropriate to define the scope of Rambus royalties when products such as memory controllers become integrated into larger products.<sup>147</sup> Absent some limitation, our remedy could have unintended consequences if product integration were to markedly raise the selling price of the unit subject to the percentage royalty. This is best avoided by articulating a rule that specifies controller royalties in terms of dollars per unit, based on historical experience. Using terms derived from existing RDRAM licenses, our Order limits Rambus to the controller royalties per unit that would result from applying the .5% or 1% royalty rate to the average net sales per unit for SDR Controllers and DDR Controllers, respectively, [redacted] [redacted] redacted redacted]. Such an approach places a cap on these royalties consistent with historical experience and based on reported and verifiable information.<sup>148</sup>

Rambus points out that its RDRAM licenses entailed long-run, co-development efforts with licensees and argues for further compensation on that basis.<sup>149</sup> Given the importance that SDRAM and DDR SDRAM achieved in the market, and the retention of Rambus technologies in DDR2 SDRAM, Rambus already has largely secured the outcome sought by licensees' support without the *ex ante* risk that those efforts might fail.<sup>150</sup> No adjustment on this account appears necessary.

Rambus's RDRAM licenses provided additional compensation in the form of non-exclusive cross licenses and grant-backs.<sup>151</sup> These provisions, however, typically were limited to (i) patented technologies that would block Rambus from using its proprietary RDRAM technologies, and (ii) the licensee's improvements on RDRAM technologies.<sup>152</sup> Given the limited nature of these terms, and subject to those limitations, we will permit Rambus to include comparable provisions in any SDRAM/DDR SDRAM licenses entered under the Commission's remedial Order.

<sup>147</sup> See CCBR at 15.

<sup>148</sup> See, e.g., CX 1687 at 29 (showing licensees' [redacted] requirements) (*in camera*).

<sup>149</sup> RBR at 22.

<sup>150</sup> The RDRAM licenses also imposed corresponding duties on Rambus to ensure full technology transfer. See, e.g., CX 1592 at 19-21 (Samsung license stating Rambus technology transfer obligations); CX 1646 at 8-10 (Micron license stating Rambus technology transfer obligations). These obligations would be unnecessary given the long-established nature of the SDRAM and DDR SDRAM standards.

<sup>151</sup> See, e.g., CX 1600 at 16; CX 1609 at 14; CX 1646 at 15.

<sup>152</sup> See CX 1600 at 4-5; CX 1609 at 3-4; CX 1646 at 4.

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IV.

A.

As discussed above, the Commission has "wide latitude for judgment" in selecting a remedy, subject to the constraint that it must be reasonably related to the violation.<sup>153</sup> Furthermore, the Commission is not limited to merely proscribing unlawful conduct "in the precise form in which it [was] found to have existed in the past."<sup>154</sup> The Commission is authorized to both prohibit the practices that it has found unlawful and – in order to prevent future unlawful conduct – to "fence-in" the violator with provisions that are broader in scope.<sup>155</sup> So long as the remedy has a reasonable relationship to the violation that the Commission has found, the Commission may "close all roads to the prohibited goal," including proscribing conduct that is lawful.<sup>156</sup>

As we explained most recently in *Telebrands Corp.*,<sup>157</sup> in determining the appropriate scope of fencing-in relief, the Commission considers three factors: (1) the seriousness and deliberateness of the violation; (2) the ease with which the violation may be transferred to other products; and (3) whether the respondent has a history of prior violations. No single factor is determinative, but "the more egregious the facts with respect to a single element, the less important is it that another negative factor be present."<sup>158</sup>

We find that Rambus's intentional and willful deception,<sup>159</sup> described in detail in the Commission's liability opinion, is sufficient, without more, to justify broad fencing-in relief. Furthermore, factors such as Rambus's large portfolio of intellectual property and the company's status as a developer and licensor of memory technologies (but not a manufacturer) could increase the incentive for Rambus to attempt to circumvent the Commission's Order. Given these circumstances, we believe that merely prohibiting Rambus from "knowingly" engaging in a deceptive course of conduct as a member of an SSO – as Rambus proposes – would provide

<sup>153</sup> *Jacob Siegel Co.*, 327 U.S. at 612-13; see *FTC v. Nat'l Lead Co.*, 352 U.S. at 428; *Ruberoid Co.*, 343 U.S. at 473.

<sup>154</sup> *Colgate-Palmolive Co.*, 380 U.S. at 395 (quoting *Ruberoid Co.*, 343 U.S. at 473).

<sup>155</sup> See, e.g., *Colgate-Palmolive Co.*, 380 U.S. at 395; *Kraft, Inc. v. FTC*, 970 F.2d 311, 326-27 (7th Cir. 1992).

<sup>156</sup> *Ruberoid Co.*, 353 U.S. at 473.

<sup>157</sup> *Telebrands Corp.*, 140 F.T.C. 278, 334 (2005), available at <http://www.ftc.gov/os/deciisions/docs/volume140.pdf>, *aff'd*, 477 F.3d 354 (4th Cir. 2006).

<sup>158</sup> *Sears, Roebuck & Co. v. FTC*, 676 F.2d 385, 392 (9th Cir. 1982).

<sup>159</sup> In our liability opinion, we found that Rambus's deceptive course of conduct was "intentionally pursued," Op. at 51, and that Rambus "intentionally and willfully engaged in deceptive conduct." Op. at 68.

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inadequate incentive for it to put into place the procedures and policies that are necessary to ensure that its future participation in SSOs is conducted in an honest and forthright manner and that it does not simply circumvent the Commission's Order. The Order provisions described below represent the Commission's efforts to prohibit Rambus from engaging in the practices that we found in our liability opinion to violate Section 5 of the FTC Act, as well as to prevent future related conduct.

## B.

Paragraph II of the Commission's Order prohibits Rambus from making any misrepresentations concerning its patents, or applications for patents, to any SSO, or its members, and constrains Rambus from taking any action, or refraining from taking any action, that would lead the SSO, or any of its members, to unknowingly infringe any current or future Rambus patent. Additionally, Paragraph II requires Rambus to abide by any requirement or policy of an SSO in which it participates to make complete, accurate, and timely disclosures. These prohibitions are substantially the same as those set forth in Rambus's proposed order, but the scope of our Order is drawn more broadly to protect the public against a repetition of the same deceptive conduct with respect to other products.

Paragraph III of the Order requires Rambus to employ a compliance officer, who shall be responsible for communicating Rambus's intellectual property rights relating to any standard that is under consideration by an SSO in which Rambus participates. The compliance officer shall also be responsible for verifying the contents of Rambus's periodic reports to the Commission, and to supplement such reports when it is necessary to provide a complete and accurate picture of the status of Rambus's compliance with the terms of this Order. We believe that such a provision is necessary and appropriate to ensure that Rambus will adhere to SSO rules and policies, and to facilitate the Commission's efforts to monitor its compliance with the instant Order.

Paragraphs IV-VII are designed to restore – to the extent possible – the competitive conditions that would have existed but for Rambus's unlawful conduct. Our remedy covers all technologies used in JEDEC-compliant products and protected by patents derived from applications that Rambus filed while it was a member of JEDEC. Rambus contends that our remedy must be limited to the four technology markets that are identified in the Commission's liability decision.<sup>160</sup> However, claims of infringement based on JEDEC-compliant use of any of these technologies would take advantage of the same deceptive conduct – indeed, the same intentional failure to disclose – identified in the Commission's liability decision.<sup>161</sup> That is, the same violation condemned with regard to the four relevant technologies at issue in the liability

<sup>160</sup> See RBR at 9-10.

<sup>161</sup> Op. at 28-68.

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decision (programmable CAS latency, programmable burst length, dual-edge clocking, and on-chip PLL/DLL) could be readily transferred to additional technologies covered by Rambus's undisclosed patent rights.<sup>162</sup> Rambus repeatedly has indicated that it contemplates seeking infringement rulings against JEDEC-compliant uses of technologies other than the four at issue in the liability decision.<sup>163</sup> Consequently, coverage of all technologies used in JEDEC-compliant products and protected by patents derived from applications filed while Rambus was a member of JEDEC is necessary as fencing-in, in order to “effectively close all roads to the prohibited goal, so that [the Commission's] order may not be by-passed with impunity.”<sup>164</sup>

Paragraph IV prohibits Rambus from collecting royalties relating to the sale, manufacture or use of any JEDEC-Compliant DRAM or Non-DRAM Products that are greater than those that Rambus is allowed to collect under the terms of the present Order. The purpose of this provision – which applies both to U.S. patents and, with respect to imports or exports to or from the United

<sup>162</sup> This would include both patents derived from Rambus's original '898 application and those derived from any other applications filed by Rambus prior to its withdrawal from JEDEC. Rambus was hard at work during the period of its JEDEC membership to obtain patent rights on technologies other than those directly at issue in the liability opinion. See, e.g., CX 1949 at 5, CX 711 at 58, and Crisp, Tr. 3247-48 (all relating to source synchronous clocking); CX 1932, CX 3125 at 279-80, (Vincent *Infinion* Dep.) (*in camera*), CX 3126 at 448-52 (Vincent *Infinion* Dep.) (*in camera*), CX 1963 at 4, and Crisp, Tr. 3046 (all relating to low voltage swing signaling); CX 702, CX 734 at 1, CX 1949 at 1, and Crisp, Tr. 3097-99 (all relating to multi-bank technologies); CX 734 at 1 and, CX 738 (both relating to auto precharge technology); CX 691 and Crisp, Tr. at 3190-91 (both relating to externally supplied reference voltage).

<sup>163</sup> See, e.g., CX 1888 (May 2001 Rambus press release noting that “the Virginia case against Infineon [in which the trial court had dismissed infringement claims] involve[d] only four Rambus U.S. patents” but that “Rambus holds newly issued U.S. and European patents covering Rambus inventions used by SDRAMs and DDR SDRAMs that have not yet been asserted in any litigation and are not impacted by the [Infineon] Court's decision”); CX 1403 at 30 (July 2001 Rambus Presentation stating, “Virginia decision involved only 4 patents; we have many others which are used by SDRAM/DDR.”); CX 1371 at 5 (April 2000 Rambus patent licensing presentation to nVIDIA listing numerous alleged “Rambus Innovations” involving technologies beyond the four specifically at issue in the liability decision); CX 1383 at 4 (September 2000 Rambus patent licensing presentation to ATI listing numerous alleged “Rambus Innovations” involving technologies other than the four specifically at issue in the liability decision); CX 1363 at 3 (January 2000 Rambus presentation claiming that DDR SDRAM used a patented Rambus innovation involving “two bit prefetch architecture” as well as alleged Rambus innovations involving two external clocks, low voltage signaling, quadrature data alignment and source synchronous signaling).

<sup>164</sup> See *Rubero*, 343 U.S. at 473. *New York v. Microsoft*, 224 F. Supp. 2d 76 (D.D.C. 2002), relied upon by Rambus, RRBR at 7, is fully consistent. In that case, the court shaped its remedy to ensure that Microsoft's exclusionary conduct “broadly” defined was “fully enjoined.” *Id.* at 148 (quoting language now appearing in 3 AREEDA, ANITRUST LAW ¶ 653f at 102-03 (2d ed. 2002)), and stating that in cases involving a monopolist's consummated exclusionary act, “equitable relief beyond a mere injunction against repetition of the act is generally appropriate” and must be tailored with “sufficient breadth to ensure that a certain ‘class’ of acts, or acts of a certain type or having a certain effect, not be repeated”). The fact that the identical deceptive conduct found in the Commission's liability opinion also infected a broader range of technologies makes these fencing-in principles wholly apposite here.

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States, to foreign patents<sup>165</sup> – is to preclude Rambus from continuing to collect monopoly rents with respect to JEDEC-Compliant DRAM or Non-DRAM Products. Paragraph V requires Rambus to make available a worldwide, nonexclusive license – under the relevant U.S. patents only – to make, use, and sell JEDEC-compliant DRAM and non-DRAM products at rates that do not exceed the Maximum Allowable Royalty Rates, as defined and set forth in Paragraph I. To ensure that the Commission's efforts to restore competition are not undermined by the threat of patent infringement litigation, Paragraphs VI and VII prohibit Rambus from enforcing the royalty agreements that would be prohibited by the terms of the instant Order.

Paragraphs VIII through XI contain ancillary provisions that are designed to help the Commission oversee Rambus's compliance with this Order. Rambus is required, for example, to distribute copies of the Commission's Order, make periodic compliance reports to the Commission, and provide the Commission with access to its documents.

Finally, paragraph XII specifies that the Order will sunset in 20 years. As we noted in *Kentucky Household Goods Carriers Association*,<sup>166</sup> a 20-year sunset provision is common to most of the Commission's orders. Respondent, of course, may seek to modify or set aside the Order, pursuant to Section 2.51 of the Commission's Rules of Practice,<sup>167</sup> if at any time prior to the expiration of 20 years it is no longer in the public interest.

<sup>165</sup> The global nature of the DRAM industry requires that our remedy reach Rambus's enforcement of foreign patent rights with respect to imports and exports to and from the United States. DRAMs often are manufactured abroad, *see, e.g.*, Bechtelsheim, Tr. 5886; Appleton, Tr. 6267; CX 2107 at 15-16, 18-20 (Oh FTC Dep.) (*in camera*), and even when manufacturing occurs in the United States, some steps in the processing frequently take place abroad. *See* Appleton, Tr. 6268-70; CX 2107 at 19-20 (Oh FTC Dep.) (*in camera*). Moreover, major DRAM customers often incorporate DRAM chips into their products at foreign manufacturing facilities. *See* Bechtelsheim, Tr. 5886; Appleton, Tr. 6273-74. Because of the geographically dispersed nature of these activities, Rambus could use its foreign patents to collect royalties that would undermine a remedy confined to U.S. patents. *See* McAfee, Tr. 7521.

Although Rambus argues that the Commission lacks authority to extend its remedy to foreign patent rights, it cites no relevant support. RB at 133. For example, *Western Electric Co. v. Milgo Electronic Corp.*, 450 F. Supp. 835, 837 (S.D. Fla. 1978), actually ruled that the court possessed "the power to enjoin a party over whom it ha[d] personal jurisdiction from pursuing [patent] litigation before a foreign tribunal." The Commission's remedy similarly would constrain the patent enforcement efforts of a party over which it has personal jurisdiction. *Medtronic, Inc. v. Catalyst Research Corp.*, 518 F. Supp. 946, 955 (D. Minn. 1981), *aff'd*, 664 F.2d 660 (8th Cir. 1981), supports the proposition that because U.S. and foreign patents confer distinct rights, parties cannot obtain injunctions against foreign claims on the basis of validity and infringement rulings regarding U.S. patents. The Commission's remedy, however does not affect determinations of validity or infringement. Like the *Medtronic* court, which went on to preliminarily enjoin the defendant from pursuing patent enforcement activities abroad, 518 F. Supp. at 956, the Commission's remedy governs only the actions of Rambus.

<sup>166</sup> 139 F.T.C. 420, 434 (2005), available at <http://www.ftc.gov/os/decisions/docs/volume139.pdf> (June 21, 2005).

<sup>167</sup> 16 C.F.R. § 2.51.

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C.

We do not believe that the Commission's remedy should extend to Rambus's patents used in products that are compliant with JEDEC's DDR2 SDRAM or succeeding generations of JEDEC standards. There is no doubt that some relationship exists between Rambus's deceptive conduct and its position in the DDR2 SDRAM market. Nevertheless, in our liability decision, we concluded that Complaint Counsel had not proved a sufficient causal link between Rambus's deceptive course of conduct and the DDR2 standard and, indeed, between the issuance of the SDRAM and DDR SDRAM standards and the DDR2 standard (because there was insufficient evidence of lock in).<sup>168</sup> Absent a sufficient causal link, extending our remedy to cover DDR2 SDRAM would not restore competition lost because of Rambus's deceptive conduct. Nor do we believe that "fencing in" justifies extending our remedy to the DDR2 standard (or subsequent generations of JEDEC DRAM standards) under these circumstances. Indeed, absent the necessary causal links, applying our remedy to DDR2 SDRAM could conflict with the warnings in *Jacob Siegel, National Lead*, and *Ruberoid*, discussed above, that the Commission cannot issue an order that is not sufficiently related to the violation.

Commissioner Harbour's dissent emphasizes that the relief ordered – confined to products compliant with JEDEC's SDRAM and DDR SDRAM standards but not reaching products compliant with JEDEC's DDR2 SDRAM standard – will have declining impact as the market progressively shifts to DDR2. This follows not from any policy choice, but rather from the timing of underlying events. Rambus revealed its patents well before the DDR2 SDRAM standard was set, and we were unable to conclude in our liability opinion that in the relevant time frame lock in conferred durable monopoly power over DDR2.<sup>169</sup> Had the evidence demonstrated a sufficient causal link between Rambus's deceptive conduct and JEDEC's standardization of Rambus technologies in DDR2 SDRAM, our relief would have covered products compliant with that standard. The evidence, however, does not carry us that far, and we limit our order accordingly.

<sup>168</sup> Op. at 110, 114.

<sup>169</sup> Op. at 110-14.

## United States Court of Appeals for the Federal Circuit

Miscellaneous Docket No. 830

IN RE SEAGATE TECHNOLOGY, LLC,

Petitioner.

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On Petition for Writ of Mandamus to the United States District Court for the Southern District of New York

Judge George B. Daniels

## United States Court of Appeals for the Federal Circuit

Miscellaneous Docket No. 830

IN RE SEAGATE TECHNOLOGY, LLC,

Petitioner.

DECIDED: August 20, 2007

Before NEWMAN, MAYER, LOURIE, RADER, SCHALL, BRYSON, GAJARSA, LINN, DYK, and PROST, Circuit Judges.

Opinion for the court filed by Circuit Judge MAYER, in which Circuit Judges NEWMAN, LOURIE, RADER, SCHALL, BRYSON, GAJARSA, LINN, DYK, and PROST join. Concurring opinion filed by Circuit Judge GAJARSA, in which Circuit Judge NEWMAN joins. Concurring opinion filed by Circuit Judge NEWMAN.

MAYER, Circuit Judge.

Seagate Technology, LLC ("Seagate") petitions for a writ of mandamus directing the United States District Court for the Southern District of New York to vacate its orders compelling disclosure of materials and testimony that Seagate claims is covered by the attorney-client privilege and work product protection. We ordered en banc review, and now grant the petition. We overrule Underwater Devices Inc. v. Morrison-Knudsen Co., 717 F.2d 1380 (1983), and we clarify the scope of the waiver of attorney-client privilege

Chief Judge Michel and Circuit Judge Moore took no part in the consideration of the merits of this case.

and work product protection that results when an accused patent infringer asserts an advice of counsel defense to a charge of willful infringement.

#### **Background**

Convolve, Inc. and the Massachusetts Institute of Technology (collectively "Convolve") sued Seagate on July 13, 2000, alleging infringement of U.S. Patent Nos. 4,916,635 ("the '635 patent") and 5,638,267 ("the '267 patent"). Subsequently, U.S. Patent No. 6,314,473 ("the '473 patent") issued on November 6, 2001, and Convolve amended its complaint on January 25, 2002, to assert infringement of the '473 patent. Convolve also alleged that Seagate willfully infringed the patents.

Prior to the lawsuit, Seagate retained Gerald Sekimura to provide an opinion concerning Convolve's patents, and he ultimately prepared three written opinions. Seagate received the first opinion on July 24, 2000, shortly after the complaint was filed. This opinion analyzed the '635 and '267 patents and concluded that many claims were invalid and that Seagate's products did not infringe. The opinion also considered Convolve's pending International Application WO 99/45535 ("the '535 application"), which recited technology similar to that disclosed in the yet-to-be-issued '473 patent. On December 29, 2000, Sekimura provided an updated opinion to Seagate. In addition to his previous conclusions, this opinion concluded that the '267 patent was possibly unenforceable. Both opinions noted that not all of the patent claims had been reviewed, and that the '535 application required further analysis, which Sekimura recommended postponing until a U.S. patent issued. On February 21, 2003, Seagate received a third opinion concerning the validity and infringement of the by-then-issued '473 patent.

There is no dispute that Seagate's opinion counsel operated separately and independently of trial counsel at all times.

In early 2003, pursuant to the trial court's scheduling order, Seagate notified Convolve of its intent to rely on Sekimura's three opinion letters in defending against willful infringement, and it disclosed all of his work product and made him available for deposition. Convolve then moved to compel discovery of any communications and work product of Seagate's other counsel, including its trial counsel.<sup>1</sup> On May 28, 2004, the trial court concluded that Seagate waived the attorney-client privilege for all communications between it and any counsel, including its trial attorneys and in-house counsel,<sup>2</sup> concerning the subject matter of Sekimura's opinions, i.e., infringement, invalidity, and enforceability. It further determined that the waiver began when Seagate first gained knowledge of the patents and would last until the alleged infringement

1. Specifically, Convolve sought to obtain the following:

internal communications on the same subjects as the formal [Sekimura] opinions, communications between Seagate and any attorneys on the same subjects as the formal opinions, documents reflecting outside counsel's opinion as to the same subjects of the formal opinions, documents reviewed or considered, or forming the basis for outside counsel's opinion as to the subject matter of the formal opinions, and documents reflecting when oral communications concerning the subjects of the opinions occurred between Compaq and outside counsel.

Convolve, Inc. v. Compaq Comp. Corp., 224 F.R.D. 98, 101(S.D.N.Y. 2004).

2. We do not address the trial court's discovery orders pertaining to Seagate's in-house counsel. The questions presented for en banc review do not encompass this issue. See Kirkendall v. Dep't of the Army, 479 F.3d 830, 835 n.2 (Fed. Cir. 2007) (en banc) ("As a general rule, the scope of our en banc review is limited to the issues set out in the en banc order."). That is not remarkable because Seagate's petition sought relief only as to trial counsel. Moreover, the nature and role of in-house counsel in this litigation is entirely unclear on the record before us. For the same reason, we do not address the separate opinion of Judge Gajarsa, post.

ceased. Accordingly, the court ordered production of any requested documents and testimony concerning the subject matter of Sekimura's opinions. It provided for in camera review of documents relating to trial strategy, but said that any advice from trial counsel that undermined the reasonableness of relying on Sekimura's opinions would warrant disclosure. The court also determined that protection of work product communicated to Seagate was waived.

Based on these rulings, Convolv sought production of trial counsel opinions relating to infringement, invalidity, and enforceability of the patents, and also noticed depositions of Seagate's trial counsel. After the trial court denied Seagate's motion for a stay and certification of an interlocutory appeal, Seagate petitioned for a writ of mandamus. We stayed the discovery orders and, recognizing the functional relationship between our willfulness jurisprudence and the practical dilemmas faced in the areas of attorney-client privilege and work product protection, sua sponte ordered en banc review of the petition. The en banc order set out the following questions:

1. Should a party's assertion of the advice of counsel defense to willful infringement extend waiver of the attorney-client privilege to communications with that party's trial counsel? See In re EchoStar Commc'n Corp., 448 F.3d 1294 (Fed. Cir. 2006).
2. What is the effect of any such waiver on work-product immunity?
3. Given the impact of the statutory duty of care standard announced in Underwater Devices, Inc. v. Morrison-Knudsen Co., 717 F.2d 1380 (Fed. Cir. 1983), on the issue of waiver of attorney-client privilege, should this court reconsider the decision in Underwater Devices and the duty of care standard itself?

In re Seagate Tech., LLC, Misc. Docket No. 830 (Fed. Cir. Jan. 26, 2007).

### **Mandamus**

A party seeking a writ of mandamus bears the burden of proving that it has no other means of attaining the relief desired, Mallard v. U.S. Dist. Court for the S. Dist. of Iowa, 490 U.S. 296, 309 (1989), and that the right to issuance of the writ is "clear and indisputable," Allied Chem. Corp. v. Daiflon, Inc., 449 U.S. 33, 35 (1980). In appropriate cases, a writ of mandamus may issue "to prevent the wrongful exposure of privileged communications." In re Regents of the Univ. of Cal., 101 F.3d 1386, 1387 (Fed. Cir. 1996). Specifically, "mandamus review may be granted of discovery orders that turn on claims of privilege when (1) there is raised an important issue of first impression, (2) the privilege would be lost if review were denied until final judgment, and (3) immediate resolution would avoid the development of doctrine that would undermine the privilege." Id. at 1388. This case meets these criteria.

We review the trial court's determination of the scope of waiver for an abuse of discretion. In re Echostar Commc'ns. Corp., 448 F.3d 1294, 1300 (Fed. Cir. 2006); In re Pioneer Hi-Bred Int'l, Inc., 238 F.3d 1370, 1373 n.2 (Fed. Cir. 2001). Because willful infringement and the scope of waiver accompanying the advice of counsel defense invoke substantive patent law, we apply the law of this circuit. Echostar, 448 F.3d at 1298.

### **Discussion**

Because patent infringement is a strict liability offense, the nature of the offense is only relevant in determining whether enhanced damages are warranted. Although a

trial court's discretion in awarding enhanced damages has a long lineage in patent law,<sup>3</sup> the current statute, similar to its predecessors, is devoid of any standard for awarding them.<sup>4</sup> Absent a statutory guide, we have held that an award of enhanced damages requires a showing of willful infringement. Beatrice Foods Co. v. New England Printing & Lithographing Co., 923 F.2d 1576, 1578 (Fed. Cir. 1991); see also Jurgens v. CBK, Ltd., 80 F.3d 1566, 1570 (Fed. Cir. 1996) (holding that bad faith infringement, which is a type of willful infringement, is required for enhanced damages). This well-established standard accords with Supreme Court precedent. See Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 479, 508 (1961) (enhanced damages were available for

3. Trial courts have had statutory discretion to enhance damages for patent infringement since 1836. 35 U.S.C. § 284 (2000); Act of Aug. 1, 1946, 60 Stat. 778; Patent Act of 1870, ch. 230, § 59, 16 Stat. 198, 207 (1870) (providing that "the court may enter judgment thereon for any sum above the amount found by the verdict as the actual damages sustained, according to the circumstances of the case, not exceeding three times the amount of such verdict, together with the costs"); Patent Act of 1836, ch. 357, 5 Stat. 117 (1836) (stating that "it shall be in the power of the court to render judgment for any sum above the amount found by such verdict . . . not exceeding three times the amount thereof, according to the circumstances of the case").

4. The current statute, enacted in 1952 and codified at 35 U.S.C. § 284, provides:

Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.

When the damages are not found by a jury, the court shall assess them. In either event the court may increase the damages up to three times the amount found or assessed. Increased damages under this paragraph shall not apply to provisional rights under section 154(d) of this title.

The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances.

willful or bad faith infringement); see also Dowling v. United States, 473 U.S. 207, 227 n.19 (1985) (enhanced damages are available for "willful infringement"); Seymour v. McCormick, 57 U.S. 480, 489 (1853) ("wanton or malicious" injury could result in exemplary damages). But, a finding of willfulness does not require an award of enhanced damages; it merely permits it. See 35 U.S.C. § 284; Odetics, Inc. v. Storage Tech. Corp., 185 F.3d 1259, 1274 (Fed. Cir. 1999); Jurgens, 80 F.3d at 1570.

This court fashioned a standard for evaluating willful infringement in Underwater Devices Inc. v. Morrison-Knudsen Co., 717 F.2d 1380, 1389-90 (Fed. Cir. 1983): "Where . . . a potential infringer has actual notice of another's patent rights, he has an affirmative duty to exercise due care to determine whether or not he is infringing. Such an affirmative duty includes, inter alia, the duty to seek and obtain competent legal advice from counsel before the initiation of any possible infringing activity." (citations omitted). This standard was announced shortly after the creation of the court, and at a time "when widespread disregard of patent rights was undermining the national innovation incentive." Knorr-Bremse Systeme Fuer Nutzfahreuge GmbH v. Dana Corp., 383 F.3d 1337, 1343 (Fed. Cir. 2004) (en banc) (citing Advisory Committee on Industrial Innovation Final Report, Dep't of Commerce (Sep. 1979)). Indeed, in Underwater Devices, an attorney had advised the infringer that "[c]ourts, in recent years, have—in patent infringement cases—found [asserted patents] invalid in approximately 80% of the cases," and on that basis the attorney concluded that the patentee would not likely sue for infringement. 717 F.2d at 1385. Over time, our cases evolved to evaluate willfulness and its duty of due care under the totality of the circumstances, and we enumerated factors informing the inquiry. E.g., Read Corp. v. Portec, Inc., 970 F.2d



816, 826-27 (Fed. Cir. 1992); Rolls-Royce Ltd. v. GTE Valeron Corp., 800 F.2d 1101, 1110 (Fed. Cir. 1986).

In light of the duty of due care, accused willful infringers commonly assert an advice of counsel defense. Under this defense, an accused willful infringer aims to establish that due to reasonable reliance on advice from counsel, its continued accused activities were done in good faith. Typically, counsel's opinion concludes that the patent is invalid, unenforceable, and/or not infringed. Although an infringer's reliance on favorable advice of counsel, or conversely his failure to proffer any favorable advice, is not dispositive of the willfulness inquiry, it is crucial to the analysis. E.g., Electro Med. Sys., S.A. v. Cooper Life Scis., Inc., 34 F.3d 1048, 1056 (Fed. Cir. 1994) ("Possession of a favorable opinion of counsel is not essential to avoid a willfulness determination; it is only one factor to be considered, albeit an important one.").

Since Underwater Devices, we have recognized the practical concerns stemming from our willfulness doctrine, particularly as related to the attorney-client privilege and work product doctrine. For instance, Quantum Corp. v. Plus Development Corp., 940 F.2d 642, 643 (Fed. Cir. 1991), observed that "[p]roper resolution of the dilemma of an accused infringer who must choose between the lawful assertion of the attorney-client privilege and avoidance of a willfulness finding if infringement is found, is of great importance not only to the parties but to the fundamental values sought to be preserved by the attorney-client privilege." We cautioned there that an accused infringer "should not, without the trial court's careful consideration, be forced to choose between waiving the privilege in order to protect itself from a willfulness finding, in which case it may risk prejudicing itself on the question of liability, and maintaining the privilege, in which case

it may risk being found to be a willful infringer if liability is found." Id. at 643-44. We advised that in camera review and bifurcating trials in appropriate cases would alleviate these concerns. Id. However, such procedures are often considered too onerous to be regularly employed.

Recently, in Knorr-Bremse, we addressed another outgrowth of our willfulness doctrine. Over the years, we had held that an accused infringer's failure to produce advice from counsel "would warrant the conclusion that it either obtained no advice of counsel or did so and was advised that its [activities] would be an infringement of valid U.S. Patents." Knorr-Bremse, 383 F.3d at 1343 (quoting Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1580 (Fed. Cir. 1986)). Recognizing that this inference imposed "inappropriate burdens on the attorney-client relationship," id., we held that invoking the attorney-client privilege or work product protection does not give rise to an adverse inference, id. at 1344-45. We further held that an accused infringer's failure to obtain legal advice does not give rise to an adverse inference with respect to willfulness. Id. at 1345-46.

More recently, in Echostar we addressed the scope of waiver resulting from the advice of counsel defense. First, we concluded that relying on in-house counsel's advice to refute a charge of willfulness triggers waiver of the attorney-client privilege. Echostar, 448 F.3d at 1299. Second, we held that asserting the advice of counsel defense waives work product protection and the attorney-client privilege for all communications on the same subject matter, as well as any documents memorializing attorney-client communications. Id. at 1299, 1302-03. However, we held that waiver did not extend to work product that was not communicated to an accused infringer. Id.

at 1303-04. Echostar did not consider waiver of the advice of counsel defense as it relates to trial counsel.

In this case, we confront the willfulness scheme and its functional relationship to the attorney-client privilege and work product protection. In light of Supreme Court opinions since Underwater Devices and the practical concerns facing litigants under the current regime, we take this opportunity to revisit our willfulness doctrine and to address whether waiver resulting from advice of counsel and work product defenses extend to trial counsel. See Knorr-Bremse, 383 F.3d at 1343-44.

#### I. Willful Infringement

The term willful is not unique to patent law, and it has a well-established meaning in the civil context. For instance, our sister circuits have employed a recklessness standard for enhancing statutory damages for copyright infringement. Under the Copyright Act, a copyright owner can elect to receive statutory damages, and trial courts have discretion to enhance the damages, up to a statutory maximum, for willful infringement. 17 U.S.C. § 504(c). Although the statute does not define willful, it has consistently been defined as including reckless behavior. See, e.g., Yurman Design, Inc. v. PAJ, Inc., 262 F.3d 101, 112 (2d Cir. 2001) ("Willfulness in [the context of statutory damages for copyright infringement] means that the defendant 'recklessly disregarded' the possibility that 'its conduct represented infringement.'") (quoting Hamil Am., Inc. v. GFI, Inc., 193 F.3d 92, 97 (2d Cir. 1999) (additional citations omitted)); Wildlife Express Corp. v. Carol Wright Sales, 18 F.3d 502, 511-12 (7th Cir. 1994) (same); RCA/Ariola Int'l, Inc. v. Thomas & Grayston Co., 845 F.2d 773, 779 (8th Cir. 1988) (same); see also eBay Inc. v. MercExchange, L.L.C., 126 S. Ct. 1837, 1840

(2006) (noting with approval that its resolution of the permanent injunction standard in the patent context created harmony with copyright law).

Just recently, the Supreme Court addressed the meaning of willfulness as a statutory condition of civil liability for punitive damages. Safeco Ins. Co. of Am. v. Burr, 551 U.S. \_\_\_, Nos. 06-84, -100, slip op. (June 4, 2007). Safeco involved the Fair Credit Reporting Act ("FCRA"), which imposes civil liability for failure to comply with its requirements. Whereas an affected consumer can recover actual damages for negligent violations of the FCRA, 15 U.S.C. § 1681o(a), he can also recover punitive damages for willful ones, 15 U.S.C. § 1681n(a). Addressing the willfulness requirement in this context, the Court concluded that the "standard civil usage" of "willful" includes reckless behavior. Id., slip op. at 7; accord McLaughlin v. Richland Shoe Co., 486 U.S. 128, 132-33 (1988) (concluding that willful violations of the Fair Labor Standards Act include reckless violations); Trans World Airlines, Inc. v. Thurston, 469 U.S. 111, 128 (1985). Significantly, the Court said that this definition comports with the common law usage, "which treated actions in 'reckless disregard' of the law as 'willful' violations." Id., slip op. at 7 (citing W. Keeton, D. Dobbs, R. Keeton, & D. Owen, Prosser and Keeton on Law of Torts § 34, p. 212 (5th ed. 1984)).

In contrast, the duty of care announced in Underwater Devices sets a lower threshold for willful infringement that is more akin to negligence. This standard fails to comport with the general understanding of willfulness in the civil context, Richland Shoe Co., 486 U.S. at 133 ("The word 'willful' . . . is generally understood to refer to conduct that is not merely negligent."), and it allows for punitive damages in a manner inconsistent with Supreme Court precedent, see, e.g., Safeco, slip op. at 6-7, 18-19, 21

n.20; Smith v Wade, 461 U.S. 30, 39-49 (1983). Accordingly, we overrule the standard set out in Underwater Devices and hold that proof of willful infringement permitting enhanced damages requires at least a showing of objective recklessness. Because we abandon the affirmative duty of due care, we also reemphasize that there is no affirmative obligation to obtain opinion of counsel.

We fully recognize that “the term [reckless] is not self-defining.” Farmer v. Brennan, 511 U.S. 825, 836 (1994). However, “[t]he civil law generally calls a person reckless who acts . . . in the face of an unjustifiably high risk of harm that is either known or so obvious that it should be known.” Id. (citing Prosser and Keeton § 34, pp. 213-14; Restatement (Second) of Torts § 500 (1965)). Accordingly, to establish willful infringement, a patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent. See Safeco, slip op. at 19 (“It is [a] high risk of harm, objectively assessed, that is the essence of recklessness at common law.”). The state of mind of the accused infringer is not relevant to this objective inquiry. If this threshold objective standard is satisfied, the patentee must also demonstrate that this objectively-defined risk (determined by the record developed in the infringement proceeding) was either known or so obvious that it should have been known to the accused infringer. We leave it to future cases to further develop the application of this standard.<sup>5</sup>

Finally, we reject the argument that revisiting our willfulness doctrine is either improper or imprudent, as Convolve contends. The ultimate dispute in this case is the proper scope of discovery. While it is true that the issue of willful infringement, or even

<sup>5</sup> We would expect, as suggested by Judge Newman, post at 2, that the standards of commerce would be among the factors a court might consider.

infringement for that matter, has not been decided by the trial court, it is indisputable that the proper legal standard for willful infringement informs the relevance of evidence relating to that issue and, more importantly here, the proper scope of discovery. See United States Nat'l Bank of Or. v. Indep. Ins. Agents of Am., Inc., 508 U.S. 439, 447 (1993) (“[A] court may consider an issue ‘antecedent to . . . and ultimately dispositive of the dispute before it, even an issue the parties fail to identify and brief.” (quoting Arcadia v. Ohio Power Co., 498 U.S. 73, 77 (1990))); see also Fed. R. Civ. Pro. R. 26(b) (limiting discovery to relevant, not necessarily admissible, information); accord Singleton v. Wulff, 428 U.S. 106, 121 (1976) (“The matter of what questions may be taken up and resolved for the first time on appeal is one left primarily to the discretion of the courts of appeals, to be exercised on the facts of individual cases.”); Forshey v. Principi, 284 F.3d 1335, 1355-59 (Fed. Cir. 2002) (en banc). Accordingly, addressing willfulness is neither hypothetical nor advisory.

## II. Attorney-Client Privilege

We turn now to the appropriate scope of waiver of the attorney-client privilege resulting from an advice of counsel defense asserted in response to a charge of willful infringement. Recognizing that it is “the oldest of the privileges for confidential communications known to the common law,” we are guided by its purpose “to encourage full and frank communication between attorneys and their clients and thereby promote broader public interests in the observance of law and administration of justice.” Upjohn Co. v. United States, 449 U.S. 383, 389 (1981). The privilege also “recognizes that sound legal advice or advocacy serves public ends and that such advice or advocacy depends upon the lawyer’s being fully informed by the client.” Id.

The attorney-client privilege belongs to the client, who alone may waive it. E.g., Knorr-Bremse, 383 F.3d at 1345; Am. Standard, Inc. v. Pfizer, Inc., 828 F.2d 734, 745 (Fed. Cir. 1987). “The widely applied standard for determining the scope of a waiver . . . is that the waiver applies to all other communications relating to the same subject matter.” Fort James Corp. v Solo Cup Corp., 412 F.3d 1340, 1349 (Fed. Cir. 2005). This broad scope is grounded in principles of fairness and serves to prevent a party from simultaneously using the privilege as both a sword and a shield; that is, it prevents the inequitable result of a party disclosing favorable communications while asserting the privilege as to less favorable ones. Echostar, 448 F.3d at 1301; Fort James, 412 F.3d at 1349. Ultimately, however, “[t]here is no bright line test for determining what constitutes the subject matter of a waiver, rather courts weigh the circumstances of the disclosure, the nature of the legal advice sought and the prejudice to the parties of permitting or prohibiting further disclosures.” Fort James, 412 F.3d at 1349-50.

In considering the scope of waiver resulting from the advice of counsel defense, district courts have reached varying results with respect to trial counsel. Some decisions have extended waiver to trial counsel, e.g., Informatica Corp. v. Bus. Objects Data Integration, Inc., 454 F. Supp. 2d 957 (N.D. Cal. 2006), whereas others have declined to do so, e.g., Collaboration Props., Inc. v. Polycom, Inc., 224 F.R.D. 473, 476 (N.D. Cal. 2004); Ampex Corp. v. Eastman Kodak Co., 2006 U.S. Dist. LEXIS 48702 (D. Del. July 17, 2006). Still others have taken a middle ground and extended waiver to trial counsel only for communications contradicting or casting doubt on the opinions asserted. E.g., Intex Recreation Corp. v. Team Worldwide Corp., 439 F. Supp. 2d 46

(D.D.C. 2006); Beneficial Franchise Co., Inc. v. Bank One, N.A., 205 F.R.D. 212 (N.D. Ill. 2001); Micron Separations, Inc. v. Pall Corp., 159 F.R.D. 361 (D. Mass. 1995).

Recognizing the value of a common approach and in light of the new willfulness analysis set out above, we conclude that the significantly different functions of trial counsel and opinion counsel advise against extending waiver to trial counsel. Whereas opinion counsel serves to provide an objective assessment for making informed business decisions, trial counsel focuses on litigation strategy and evaluates the most successful manner of presenting a case to a judicial decision maker. And trial counsel is engaged in an adversarial process. We previously recognized this distinction with respect to our prior willfulness standard in Crystal Semiconductor Corp. v. TriTech Microelectronics International, Inc., 246 F.3d 1336, 1352 (Fed. Cir. 2001), which concluded that “defenses prepared [by litigation counsel] for a trial are not equivalent to the competent legal opinion of non-infringement or invalidity which qualify as ‘due care’ before undertaking any potentially infringing activity.” Because of the fundamental difference between these types of legal advice, this situation does not present the classic “sword and shield” concerns typically mandating broad subject matter waiver. Therefore, fairness counsels against disclosing trial counsel’s communications on an entire subject matter in response to an accused infringer’s reliance on opinion counsel’s opinion to refute a willfulness allegation.

Moreover, the interests weighing against extending waiver to trial counsel are compelling. The Supreme Court recognized the need to protect trial counsel’s thoughts in Hickman v. Taylor, 329 U.S. 495, 510-11 (1947):

[I]t is essential that a lawyer work with a certain degree of privacy, free from unnecessary intrusion by opposing parties

and their counsel. Proper preparation of a client's case demands that he assemble information, sift what he considers to be the relevant from the irrelevant facts, prepare his legal theories and plan his strategy without undue and needless interference. That is the historical and the necessary way in which lawyers act within the framework of our system of jurisprudence to promote justice and to protect their clients' interests.

The Court saw that allowing discovery of an attorney's thoughts would result in "[i]nefficiency, unfairness and sharp practices," that "[t]he effect on the legal profession would be demoralizing" and thus "the interests of the clients and the cause of justice would be poorly served." *Id.* at 511. Although *Hickman* concerned work product protection, the attorney-client privilege maintained with trial counsel raises the same concerns in patent litigation. In most cases, the demands of our adversarial system of justice will far outweigh any benefits of extending waiver to trial counsel. *See Jaffee v. Redmond*, 518 U.S. 1, 9 (1996) ("Exceptions from the general rule disfavoring testimonial privileges may be justified, however, by a 'public good transcending the normally predominant principle of utilizing all rational means for ascertaining the truth.'" (quoting *Trammel*, 445 U.S. 40, 50 (1980) (quoting *Elkins v. United States*, 364 U.S. 206 (1960) (Frankfurter, J., dissenting))) (additional internal quotation marks omitted).

Further outweighing any benefit of extending waiver to trial counsel is the realization that in ordinary circumstances, willfulness will depend on an infringer's prelitigation conduct. It is certainly true that patent infringement is an ongoing offense that can continue after litigation has commenced. However, when a complaint is filed, a patentee must have a good faith basis for alleging willful infringement. Fed. R. Civ. Pro. 8, 11(b). So a willfulness claim asserted in the original complaint must necessarily be grounded exclusively in the accused infringer's pre-filing conduct. By contrast, when an

accused infringer's post-filing conduct is reckless, a patentee can move for a preliminary injunction, which generally provides an adequate remedy for combating post-filing willful infringement. *See* 35 U.S.C. § 283; *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1350 (Fed. Cir. 2001). A patentee who does not attempt to stop an accused infringer's activities in this manner should not be allowed to accrue enhanced damages based solely on the infringer's post-filing conduct. Similarly, if a patentee attempts to secure injunctive relief but fails, it is likely the infringement did not rise to the level of recklessness.

We fully recognize that an accused infringer may avoid a preliminary injunction by showing only a substantial question as to invalidity, as opposed to the higher clear and convincing standard required to prevail on the merits. *Amazon.com*, 239 F.3d at 1359 ("Vulnerability is the issue at the preliminary injunction stage, while validity is the issue at trial. The showing of a substantial question as to invalidity thus requires less proof than the clear and convincing showing necessary to establish invalidity itself."). However, this lessened showing simply accords with the requirement that recklessness must be shown to recover enhanced damages. A substantial question about invalidity or infringement is likely sufficient not only to avoid a preliminary injunction, but also a charge of willfulness based on post-filing conduct.

We also recognize that in some cases a patentee may be denied a preliminary injunction despite establishing a likelihood of success on the merits, such as when the remaining factors are considered and balanced. In that event, whether a willfulness claim based on conduct occurring solely after litigation began is sustainable will depend on the facts of each case.

Because willful infringement in the main must find its basis in prelitigation conduct, communications of trial counsel have little, if any, relevance warranting their disclosure, and this further supports generally shielding trial counsel from the waiver stemming from an advice of counsel defense to willfulness. Here, the opinions of Seagate's opinion counsel, received after suit was commenced, appear to be of similarly marginal value. Although the reasoning contained in those opinions ultimately may preclude Seagate's conduct from being considered reckless if infringement is found, reliance on the opinions after litigation was commenced will likely be of little significance.

In sum, we hold, as a general proposition, that asserting the advice of counsel defense and disclosing opinions of opinion counsel do not constitute waiver of the attorney-client privilege for communications with trial counsel. We do not purport to set out an absolute rule. Instead, trial courts remain free to exercise their discretion in unique circumstances to extend waiver to trial counsel, such as if a party or counsel engages in chicanery. We believe this view comports with Supreme Court precedent, which has made clear that rules concerning privileges are subject to review and revision, when necessary. See Jaffee, 518 U.S. at 9 (noting that federal courts are "to 'continue the evolutionary development of testimonial privileges.'" (quoting Trammel, 445 U.S. at 47)).

### III. Work Product Protection

An advice of counsel defense asserted to refute a charge of willful infringement may also implicate waiver of work product protection. Again, we are here confronted

with whether this waiver extends to trial counsel's work product. We hold that it does not, absent exceptional circumstances.

The work product doctrine is "designed to balance the needs of the adversary system: promotion of an attorney's preparation in representing a client versus society's general interest in revealing all true and material facts to the resolution of a dispute." In re Martin Marietta Corp., 856 F.2d 619, 624 (4th Cir. 1988). Unlike the attorney-client privilege, which provides absolute protection from disclosure, work product protection is qualified and may be overcome by need and undue hardship. Fed. R. Civ. Pro. 26(b)(3). However, the level of need and hardship required for discovery depends on whether the work product is factual, or the result of mental processes such as plans, strategies, tactics, and impressions, whether memorialized in writing or not. Whereas factual work product can be discovered solely upon a showing of substantial need and undue hardship, mental process work product is afforded even greater, nearly absolute, protection. See id.; Upjohn Co. v. United States, 449 U.S. 383, 400 (1981); Holmgren v. State Farm Mut. Auto. Ins., 976 F.2d 573, 577 (9th Cir. 1992) (holding that work product "may be discovered and admitted when mental impressions are at issue in a case and the need for the material is compelling"); see also Office of Thrift Supervision v. Vinson & Elkins, LLP, 124 F.3d 1304, 1307 (D.C. Cir. 1997) ("virtually undiscoverable"). But see Nat'l Union Fire Ins. Co. v. Murray Sheet Metal Co., 967 F.2d 980, 984 (4th Cir. 1992) ("absolutely' immune from discovery").

Like the attorney-client privilege, however, work product protection may be waived. United States v. Nobles, 422 U.S. 225, 239 (1975). Here, the same rationale generally limiting waiver of the attorney-client privilege with trial counsel applies with

even greater force to so limiting work product waiver because of the nature of the work product doctrine. Protecting lawyers from broad subject matter of work product disclosure "strengthens the adversary process, and . . . may ultimately and ideally further the search for the truth." Martin Marietta, 856 F.2d at 626; accord Echostar, 448 F.3d at 1301 ("[W]ork-product immunity . . . promotes a fair and efficient adversarial system . . ."); Coastal States Gas Corp. v. Dep't of Energy, 617 F.2d 854, 864 (D.C. Cir. 1980) ("The purpose of the privilege, however, is not to protect any interest of the attorney . . . but to protect the adversary trial process itself. It is believed that the integrity of our system would suffer if adversaries were entitled to probe each other's thoughts and plans concerning the case."). In addition, trial counsel's mental processes, which fall within Convolve's discovery requests, enjoy the utmost protection from disclosure; a scope of waiver commensurate with the nature of such heightened protection is appropriate. See Martin Marietta, 856 F.2d at 625-26.

The Supreme Court has approved of narrowly restricting the scope of work product waiver. In United States v. Nobles, a criminal case, an accused armed robber presented the testimony of an investigator in an attempt to discredit the two eyewitnesses. When they testified for the prosecution, the defense attorney relied on the investigator's report in cross-examining the eyewitnesses. 422 U.S. at 227. After the prosecution rested, the defense attempted to call the investigator to testify. The trial court, however, ruled that if the investigator testified, his affirmative testimony would mandate disclosure of the portions of his report relating to his testimony. Id. at 229. The Supreme Court agreed that the investigator's affirmative testimony waived work product protection, but it approvingly noted the "quite limited" scope of waiver imposed

by the trial court and its refusal to allow a general "fishing expedition" into the defense files or even the investigator's report. Id. at 239-40. Similarly, Convolve has been granted access to the materials relating to Seagate's opinion counsel's opinion, and he was made available for deposition. The extent of this waiver accords with the principles and spirit of Nobles.

Accordingly, we hold that, as a general proposition, relying on opinion counsel's work product does not waive work product immunity with respect to trial counsel. Again, we leave open the possibility that situations may arise in which waiver may be extended to trial counsel, such as if a patentee or his counsel engages in chicanery. And, of course, the general principles of work product protection remain in force, so that a party may obtain discovery of work product absent waiver upon a sufficient showing of need and hardship, bearing in mind that a higher burden must be met to obtain that pertaining to mental processes. See Fed. R. Civ. Pro. 26(b)(3).

Finally, the work product doctrine was partially codified in Rule 26(b)(3) of the Federal Rules of Civil Procedure, which applies work product protection to "documents and tangible things." Courts continue to apply Hickman v. Taylor, 329 U.S. 495, to "nontangible" work product. See, e.g., In re Cendant Corp. Sec. Litig., 343 F.3d 658, 662-63 (3d Cir. 2003); United States v. One Tract of Real Property, 95 F.3d 422, 428 n.10 (6th Cir. 1996). This is relevant here because Convolve sought to depose Seagate's trial counsel. We agree that work product protection remains available to "nontangible" work product under Hickman. Otherwise, attorneys' files would be protected from discovery, but attorneys themselves would have no work product objection to depositions.

**Conclusion**

Accordingly, Seagate's petition for a writ of mandamus is granted, and the district court will reconsider its discovery orders in light of this opinion.

**United States Court of Appeals for the Federal Circuit**

Miscellaneous Docket No. 830

IN RE SEAGATE TECHNOLOGY, LLC,

Petitioner.

GAJARSA, Circuit Judge, concurring, with whom Circuit Judge NEWMAN joins.

I agree with the court's decision to grant the writ of mandamus; however, I write separately to express my belief that the court should take the opportunity to eliminate the grafting of willfulness onto section 284. As the court's opinion points out, although the enhanced damages clause of that section "is devoid of any standard for awarding [such damages]," ante at 6, this court has nevertheless read a willfulness standard into the statute, see, e.g., Beatrice Foods Co. v. New England Printing & Lithographing Co., 923 F.2d 1576, 1578 (Fed. Cir. 1991); Leesona Corp. v. United States, 599 F.2d 958, 969 (Ct. Cl. 1979). Because the language of the statute unambiguously omits any such requirement, see 35 U.S.C. § 284 ("[T]he court may increase the damages up to three times the amount found or assessed."), and because there is no principled reason for continuing to engraft a willfulness requirement onto section 284, I believe we should adhere to the plain meaning of the statute and leave the discretion to enhance damages in the capable hands of the district courts. Accordingly, I agree that Underwater Devices, Inc. v. Morrison-Knudsen Co., 717 F.2d 1380 (Fed. Cir. 1983), should be



overruled and the affirmative duty of care eliminated. I would also take the opportunity to overrule the Beatrice Foods line of cases to the extent those cases engraft willfulness onto the statute. I would vacate the district court's order and remand for the court to reconsider its ruling in light of the clear and unambiguous language of section 284.

In order to reach this conclusion that enhanced damages should not be limited by willfulness, it is appropriate to place the issue of enhanced damages in the proper historical perspective. Treble damages were first introduced into American patent law by the Act of February 21, 1793, which allowed the patentee to recover, in an action at law, "a sum, that shall be at least equal to three times the price, for which the patentee has usually sold or licensed to other persons, the use of [the invention]." Act of Feb. 21, 1793, ch. 11, § 5, 1 Stat. 318, 322. The Act of April 17, 1800, allowed the patentee to recover, also in an action at law, "a sum equal to three times the actual damage sustained by [the] patentee." Act of Apr. 17, 1800, ch. 25, § 3, 2 Stat. 37, 38. Notably, however, neither of these acts permitted the courts discretion in assessing treble damages.

Such discretion was not conferred upon the courts until the Act of July 4, 1836, which provided that "it shall be in the power of the court to render judgment for any sum above the amount found by [the] verdict as the actual damages sustained by the plaintiff, not exceeding three times the amount thereof, according to the circumstances of the case." Act of July 4, 1836, ch. 357, § 14, 5 Stat. 117, 123 (emphasis added). Nothing in the phrase "according to the circumstances of the case" implies that the district court's discretion to award enhanced damages is contingent upon a finding of willfulness. Indeed, one deficiency identified in pre-1836 patent law was the

insufficiency of damages in compensating deserving patentees. Sen. John Ruggles, S. Report Accompanying Senate Bill No. 239, at 6 (Apr. 28, 1836) (explaining that pre-1836 patent law "offer[ed] an inadequate remedy for the [infringement] injury, by giving an action of damages"). At the same time, pre-1836 patent law was criticized for its limited standards regarding the granting of patents, which led to abusive wielding of the treble-damages club by undeserving patentees. See id. at 3-4 (describing the "reprehensible" practice of patentees in possession of "patents for what has been long in public use, and what every one has therefore a right to use," who, "being armed with the apparent authority of the Government, having the sanction of its highest officers the seal of state, scour[] the country, and by threats of prosecution, compel[] those who are found using the thing patented, to pay the patent price or commutation tribute"). It would appear, then, that the 1836 Act was intended to control not only the grant of unwarranted patents, but also to restore the flexibility of remedy that is the traditional judicial province.

Moreover, due to the division of law and equity, a patentee having no basis for invoking the equitable jurisdiction of a federal court was limited to legal remedies in an action on the case. Though the court's equitable powers—such as the power to grant discovery into a defendant's affairs in order to determine damages—might still be accessible to the patentee, access to such powers was not guaranteed. See Sinclair Refining Co. v. Jenkins Petroleum Process Co., 289 U.S. 689, 696 (1933) ("To hold that the plaintiff in an action at law may have discovery of damages is not to say that the remedy will be granted as a matter of course, or that protection will not be given to his adversary against impertinent intrusion."). Even if discovery was granted in an action

on the case, the patentee had no basis for collecting the infringer's profits through an equitable action for an injunction and accounting. See Root v. Ry., 105 U.S. 189, 215-216 (1882). As such, actual damages provable at law—though not “inadequate” in the equitable sense—could nevertheless be less than sufficient to compensate the patentee. In such a case, a discretionary enhancement of damages would be appropriate for entirely remedial reasons, irrespective of the defendant's state of mind.

Apart from the difficulties created by the old law and equity division, a district court might decide to enhance a patentee's damages to overcome other obstacles. For example, assume that a substantial portion of a defendant's sales data is inadvertently but irretrievably lost prior to discovery. In such a case, a successful plaintiff, through no fault of its own, might be unable to prove the real extent of damage caused by the infringement. It would be entirely reasonable, in my judgment, for the district court to exercise its statutory discretion and enhance the damage award by some measure. Another foreseeable situation is one in which a plaintiff, having successfully secured a damage award for past infringement, moves for a permanent injunction. However, in order to avoid manifest injustice, a multiplicity of suits, etc., the district court might reasonably determine that monetary relief in the form of enhanced damages is more appropriate than an injunction. See, e.g., City of Harrisonville v. W. S. Dickey Clay Mfg. Co., 289 U.S. 334 (1933); New York City v. Pine, 185 U.S. 93 (1902); Restatement (Second) of Torts § 951 (1979); see also eBay Inc. v. MercExchange L.L.C., 547 U.S. \_\_\_, 126 S. Ct. 1837, 1839 (2006) (“The decision to grant or deny permanent injunctive relief is an act of equitable discretion by the district court, reviewable on appeal for abuse of discretion.”). Yet, by reading a willfulness requirement into the statute, we are

unnecessarily confining enhanced damages to a subset of cases where punitive awards are appropriate, and thereby restricting district courts from exercising legitimate, remedial options of the type discussed above.

In spite of our seemingly unequivocal holding in cases like Beatrice Foods, our case law has not been entirely consistent with respect to enhanced damages. We have recognized a remedial aspect of such damages in at least three precedential opinions. See King Instrs. Corp. v. Perego, 65 F.3d 941, 951 n.6 (Fed. Cir. 1995) (“The problem of inadequate compensation when damages are based on a reasonable royalty has been expressly recognized in several cases. . . . The solutions suggested include awards of treble damages, attorney fees and prejudgment interest, . . . , and discretionary awards of greater than a reasonable royalty[.] . . . Such discretionary increases may be appropriate where plaintiffs cannot prove direct and foreseeable damages in the form of lost profits.” (emphasis added)); Rite-Hite Corp. v. Kelley Co., 819 F.2d 1120, 1126 (Fed. Cir. 1987) (“Whether or not ‘willfulness’ is found, the court has authority to consider the degree of culpability of the tortfeasor. ‘The measure of damages, as indeed the assessment of attorney fees, provides an opportunity for the trial court to balance equitable concerns as it determines whether and how to recompense the successful litigant.” (quoting S.C. Johnson & Son, Inc. v. Carter-Wallace, Inc., 781 F.2d 198, 201 (Fed. Cir. 1986)) (emphasis added)); Stickle v. Heublein, Inc., 716 F.2d 1550, 1563 (Fed. Cir. 1983) (“As a final matter we would add that the trial court may award an amount of damages greater than a reasonable royalty so that the award is ‘adequate to compensate for the infringement.’ . . . Such an increase, which may be stated by the trial court either as a reasonable royalty for an

infringer (as in Panduit) or as an increase in the reasonable royalty determined by the court, is left to its sound discretion." (emphasis altered)).<sup>1</sup>

Our occasional recognition of this remedial aspect of section 284 is not surprising because it is practically dictated by the Supreme Court's reasoning in General Motors Corp. v. Devex Corp., 461 U.S. 648 (1983) ("GM" or "Devex"), which deals with the standard for awarding interest under the very same statute. Prior to 1946, the patent laws of the United States did not contain a provision relating to any interest due to a prevailing patentee in a suit for infringement; however, interest was nevertheless awarded under the common law rule—referred to as the Duplicate standard—that, in the absence of bad faith on the part of the defendant, interest did not accrue on unliquidated damages. See, e.g., Duplicate Corp. v. Triplex Safety Glass Co. of N. Am. 298 U.S. 448, 459 (1936). In 1946, however, Congress statutorily made available to

<sup>1</sup> And in one nonprecedential opinion, see Fed. Cir. R. 37.1(d), this court actually remanded a case for the district court to consider increasing damages for remedial reasons:

As to the claim for increased damages under 35 U.S.C. § 284, contrary to the district court's holding, the authority to increase damages is not restricted to exceptional circumstances. Damages should be increased where necessary to afford full compensation for infringement. See General Motors Corp. v. Devex Corp., [461 U.S. 648 (1983)]. Under the circumstances of this case and considering that there will be a trial on damages, we remand on the question of increased damages so that the district court can take the evidence at trial on damages into account in determining that question.

Sherman Indus., Inc. v. Proto-Vest, Inc., 732 F.2d 168 (Fed. Cir. 1984) (table) (emphasis added); see also Code-Alarm, Inc. v. Electromotive Techs. Corp., Nos. 96-1368, 96-1369, and 96-1385, 1997 U.S. App. LEXIS 13031, at \*4 (Fed. Cir. 1997) (nonprecedential) ("In cases where awarding damages based on a reasonable royalty does not adequately compensate the patentee, it is also within the district court's discretion to award damages that exceed a reasonable royalty."); Aptargroup, Inc. v. Summit Packaging Sys., Nos. 97-1475 and 97-1484, 1998 U.S. App. LEXIS 28047, at \*24-\*25 (Fed. Cir. 1998) (nonprecedential) (same).

prevailing patentees "interest, as may be fixed by the court." Act of Aug. 1, 1946, Pub. L. No. 79-587, 60 Stat. 778. In 1952, this provision underwent minor, non-substantive modification, to become today's statute, i.e., 35 U.S.C. § 284 (providing to prevailing patentees "interest . . . as fixed by the court"). Act of July 19, 1952, Pub. L. No. 82-593, 66 Stat. 792, 813. As is evident from the plain language of both the 1946 and the 1952 Acts, Congress did not answer with these enactments the question of whether the Duplicate standard should apply to interest awards under these statutory provisions.

That question was squarely presented in GM, and the Supreme Court held that no bad-faith standard should be read into section 284. Id. at 653 ("On the face of § 284, a court's authority to award interest is not restricted to exceptional circumstances, and there is no warrant for imposing such a limitation. When Congress wished to limit an element of recovery in a patent infringement action, it said so explicitly. With respect to attorney's fees, Congress expressly provided that a court could award such fees to a prevailing party only 'in exceptional cases.' 35 U. S. C. § 285. The power to award interest was not similarly restricted."). The Court also observed that "[t]he standard governing the award of prejudgment interest under § 284 should be consistent with Congress' overriding purpose of affording patent owners complete compensation." Id. at 655. Thus, because "an award of prejudgment interest is necessary to ensure that the patent owner is placed in as good a position as he would have been in had the infringer entered into a reasonable royalty agreement," id. at 655, the Court held that "prejudgment interest should be awarded under § 284 absent some justification for withholding such an award," id. at 657.

While the issue in GM was “[t]he standard governing the award of prejudgment interest under § 284,” id. at 655, the rationale underlying the GM holding applies with equal force to enhanced damages, and it is in direct dialectic tension with some of this court’s case law concerning the standard governing the award of such damages. The statutory-language argument applies with equal force to both interest and enhanced damages; just as prejudgment interest may be awarded in other than “exceptional cases” under the plain language of the statute, so too may enhanced damages. Moreover, discretionary use of enhanced damages to achieve remedial goals is likewise “consistent with Congress’ overriding purpose of affording patent owners complete compensation.” Id.

The fact that the interest provision of section 284 was previously only a creature of common law does not diminish the applicability of GM to the provision for enhanced damages. In GM, the Court explained:

There is no basis for inferring that Congress’ adoption of the provision concerning interest merely incorporated the Duplate standard. This is not a case in which Congress has reenacted statutory language that the courts had interpreted in a particular way. In such a situation, it may well be appropriate to infer that Congress intended to adopt the established judicial interpretation. See, e.g., Herman & MacLean v. Huddleston, 459 U.S. 375, 384-386 (1983); Lorillard v. Pons, 434 U.S. 575, 580-581 (1978). In this case, however, the predecessor statute did not contain any reference to interest, and the 1946 amendments specifically added a provision concerning interest in patent infringement actions. We cannot agree with petitioner that the only significance of Congress’ express provision for the award of interest was the incorporation of a common-law standard that developed in the absence of any specific provision concerning interest.

GM, 461 U.S. at 653-54. But unlike prejudgment interest, a provision for enhanced damages has been a part of nearly every patent act since 1790. Therefore, we can reasonably and logically conclude that the enhanced damages permitted by section 284

are not inherently exempt from the inference that Congress was merely reenacting consistently-interpreted statutory language with the 1952 Act.

Nevertheless, the inference is not warranted in this case because pre-1952 interpretations of the enhanced damages statutes have at times explicitly recognized a remedial aspect. See, e.g., Clark v. Wooster, 119 U.S. 322, 326 (1886) (“It is a general rule in patent causes, that established license fees are the best measure of damages that can be used. There may be damages beyond this, such as the expense and trouble the plaintiff has been put to by the defendant; and any special inconvenience he has suffered from the wrongful acts of the defendant; but these are more properly the subjects of allowance by the court, under the authority given to it to increase the damages.”); Birdsall v. Coolidge, 93 U.S. 64, 69-70 (1876) (explaining that the provision making treble damages available in equity helps ameliorate the “manifest injustice . . . done to the complainant in equity suits [under prior law], by withholding from him a just compensation for the injury he sustained by the unlawful invasion of his exclusive rights”).

It is also noted that the Supreme Court cases cited in this court’s opinion—only one of which pre-dates the 1952 Act—do not hold that a finding of willfulness is necessary to support an award of enhanced damages. See ante at 6-7. At most, those cases merely stand for the uncontroversial proposition that a finding of willfulness is sufficient to support an award of enhanced damages. See Dowling v. United States, 473 U.S. 207, 227 (1985) (“Despite its undoubted power to do so, however, Congress has not provided criminal penalties for distribution of goods infringing valid patents. . . . [n.19] Congress instead has relied on provisions affording patent owners a civil cause of

action. 35 U. S. C. §§ 281-294. Among the available remedies are treble damages for willful infringement.”); Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 508 (1964) (explaining that the patentee “could in a case of willful or bad-faith infringement recover punitive or ‘increased’ damages under the statute’s trebling provision”); Seymour v. McCormick, 57 U.S. 480, 489 (1854) (“The power to inflict vindictive or punitive damages is committed to the discretion and judgment of the court within the limit of trebling the actual damages found by the jury.”). Those cases cannot be interpreted to mean that enhanced damages are limited to a finding of willfulness.

To the extent this court relies on interpretations of other statutes to support its reading of 35 U.S.C. § 284, those statutes fail to ground the postulate. For example, the court analogizes section 284 to 17 U.S.C. § 504(c) of the Copyright Act in order to demonstrate that a showing of recklessness is required to support an award of enhanced damages. Ante at 10-11. That comparison is unconvincing, however, because section 504(c) actually uses the word “willfully” to describe the threshold state of mind necessary to justify an award of enhanced damages, whereas section 284 does not. The court draws a similar analogy between section 284 and 15 U.S.C. § 1681n(a) of the Fair Credit Reporting Act (“FCRA”), the latter having recently been interpreted by the Supreme Court to require a showing of objective recklessness to support enhanced damages. Safeco Ins. Co. of Am., Inc. v. Burr, 551 U.S. \_\_\_, 127 S. Ct. 2201 (2007). By contrasting the language of 15 U.S.C. § 1681n(a)—which uses the word “willfully” to describe the threshold state of mind necessary to justify an award of enhanced damages under the FCRA—with the language of 15 U.S.C. § 1681o(a)—which uses the word “negligent” to describe the threshold state of mind necessary to justify an award of

actual damages under the FCRA—this court concludes that the negligence-like state of mind established by Underwater Devices as necessary and generally sufficient to justify an award of enhanced damages under section 284 of the Patent Act is inconsistent with the objective recklessness standard of Safeco. Ante at 11-12. As with the copyright statute, the problem with this court’s logic is that it depends on the assumption that section 284 also uses the word “willfully,” which of course it does not. This assumption, unwarranted for several reasons already discussed, is additionally discordant with the Supreme Court’s emphasis in Safeco on adherence to statutory language. See 127 S. Ct. at 2209 (relying on the “interpretive assumption that Congress knows how we construe statutes and expects us to run true to form”); cf. eBay, Inc. v. Mercexchange, L.L.C., 547 U.S. \_\_\_, 126 S. Ct. 1837, 1839 (2006) (“Nothing in the Patent Act indicates that Congress intended . . . a departure [from the traditions of equity in granting injunctions]. To the contrary, the Patent Act expressly provides that injunctions ‘may’ issue ‘in accordance with the principles of equity.’”). We should take this opportunity to bring patent law regarding damages into the mainstream of the general law and avoid the necessity of carving a special niche for the realm of patent law.

It is also important to note several other contexts in which enhanced damages allowed by statute have a remedial purpose. See, e.g., 15 U.S.C. § 1117(a) (discretionary award of up to three times actual damages “shall constitute compensation and not a penalty”); Cook County v. United States, 538 U.S. 119, 130 (2003) (“To begin with it is important to realize that treble damages have a compensatory side, serving remedial purposes in addition to punitive objectives. . . . While the tipping point between pay-back and punishment defies general formulation, being dependent on the

workings of a particular statute and the course of particular litigation, the facts about the FCA show that the damages multiplier has compensatory traits along with the punitive.”); Agency Holding Corp. v. Malley-Duff & Associates, Inc., 483 U.S. 143, 151 (1987) (“Both RICO and the Clayton Act are designed to remedy economic injury by providing for the recovery of treble damages, costs, and attorney’s fees.”); Am. Soc’y of Mech. Eng’rs v. Hydrolevel Corp., 456 U.S. 556, 575 (1982) (“It is true that antitrust treble damages were designed in part to punish past violations of the antitrust laws. . . . But treble damages were also designed to deter future antitrust violations. . . . Moreover, the antitrust private action was created primarily as a remedy for the victims of antitrust violations.”); Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc., 429 U.S. 477, 485-86 (1977) (“Section 4 [of the Clayton Act], in contrast, is in essence a remedial provision. It provides treble damages to ‘[a]ny person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws . . . .’ Of course, treble damages also play an important role in penalizing wrongdoers and deterring wrongdoing, as we also have frequently observed. . . . It nevertheless is true that the treble-damages provision, which makes awards available only to injured parties, and measures the awards by a multiple of the injury actually proved, is designed primarily as a remedy.”).

Simply put, interpretations of the precursors to section 284, of section 284 itself, and of any other enhanced damages statutes give rise to no inference that Congress was merely reenacting consistently-interpreted statutory language with the 1952 Act. That inconsistency seems to abound in the case law is nothing new. According to Professor Chisum, “[w]hether the purpose of an increased damage award should be

exemplary (i.e. to punish and deter flagrant acts of patent infringement) or compensatory (i.e. to compensate the patent owner for immeasurable expenses and losses) is a longstanding controversy in the law. Perhaps the best view is that increased awards combine both purposes.” 7 Donald S. Chisum, Chisum on Patents § 20.03[4][b][iii] (2002).<sup>2</sup> Thus, while some courts have held that a finding of willfulness is necessary to support an award of enhanced damages, other courts have taken a remedial view of the statute. See, e.g., Saturn Mfg., Inc. v. Williams Patent Crusher & Pulverizer Co., 713 F.2d 1347, 1358 (8th Cir. 1983) (“It appears that the district court imposed a higher standard, the exceptional circumstances standard, in denying increased damages. Although an award of increased damages is discretionary under the statute and the decided cases, nonetheless in view of the analysis in Devex that section 284 does not incorporate the exceptional circumstances standard of section 285, . . . we feel it appropriate to remand this issue to the district court for further consideration in light of Devex.”);<sup>3</sup> Trio Process Corp. v. L. Goldstein’s Sons, Inc., 638 F.2d 661, 663 (3d Cir. 1981) (“Because it is often difficult in patent litigation to measure with mathematical precision a patentee’s damages, the enhancement provision of the

<sup>2</sup> Without citation, Chisum summarily asserts that “[t]he power to increase is triggered only when the infringer’s conduct warrants an exemplary award.” 7 Chisum § 20.03[4][b][iii]. No Supreme Court case supports this proposition. I also discern no principled basis for inferring such a proposition. If Congress was concerned with ensuring that patentees are fully compensated for infringement, there would seem to be no reason to condition full compensation upon a showing of culpable conduct.

<sup>3</sup> In Saturn, the district court appears to have drawn a distinction between willfulness and “exceptional circumstances,” holding the latter to require proof of more egregious behavior. The Eighth Circuit reversed, instructing the district court that its finding of willfulness could support an award of enhanced damages. Importantly, however, the Eighth Circuit did not hold that willfulness is required to make such an award.

statute is designed to permit, inter alia, adequate compensation for an infringement where strict legal rules would not afford it.”<sup>4</sup>

To be sure, the majority rule has been that an award of enhanced damages pursuant to section 284 requires a finding of willfulness. 7 Chisum § 20.03[4][b][iii]. However, the existence of this “longstanding controversy” adequately demonstrates that Congress was not merely reenacting consistently-interpreted statutory language with the 1952 Act so as to justify the inference suggested in GM. Therefore, I am of the judgment that this court should not continue to read a willfulness requirement into section 284, to support the enhancement of damages. That said, willfulness remains a relevant consideration under section 284. Thus, to the extent Convole seeks to demonstrate that Seagate is willfully infringing its patents, I agree with the court that it is appropriate to follow the Supreme Court’s statutory interpretation in Safeco. See 127 S. Ct at 2209 (explaining that its interpretation of “willfully” adheres to “the general rule that a common law term in a statute comes with a common law meaning”). Under my reading of Safeco, which I believe is consistent with that of this court, Convole must show, by clear and convincing evidence, (1) that Seagate’s theory of noninfringement/invalidity, was not only incorrect, but was objectively unreasonable, and (2) that Seagate ran a risk of infringing Convole’s patents substantially greater than the risk associated with a theory of noninfringement/invalidity that was merely careless. See id. at 2215 (holding that a defendant “does not act in reckless disregard of [a statute] unless the action is not only a violation under a reasonable reading of the

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<sup>4</sup> These cases, while not binding on this court, are persuasive authority nonetheless.

statute’s terms, but shows that the [defendant] ran a risk of violating the law substantially greater than the risk associated with a reading that was merely careless”).

If Convole is unable to show the former, Seagate cannot be found to have willfully infringed, regardless of any evidence of its subjective beliefs. See id. at 2216 n.20 (“To the extent that [the plaintiffs] argue that evidence of subjective bad faith can support a willfulness finding even when the [defendant’s] reading of the statute is objectively reasonable, their argument is unsound.”); see also id. at 2215 (explaining that “there is no need to pinpoint the negligence/recklessness line [where the defendant’s] reading of the statute, albeit erroneous, was not objectively unreasonable”). Thus, Seagate’s subjective beliefs may become relevant only if Convole successfully makes this showing of objective unreasonableness. See id. at 2216 n.20 (leaving open the possibility that “good-faith reliance on legal advice should render [defendants] immune to claims [of willfulness]”). Because no finding of objective unreasonableness has yet been made in this case, the issues of attorney-client privilege and work product may not even need to be confronted. As such, it is premature to comment on the scope of the waiver of the attorney-client privilege and work-product protection.

## United States Court of Appeals for the Federal Circuit

Miscellaneous Docket No. 830

IN RE SEAGATE TECHNOLOGY, LLC,

Petitioner.

NEWMAN, Circuit Judge, concurring.

I join the court's holding that a voluntary waiver of the attorney-client privilege and work product protection as to patent opinion counsel is not a waiver of any privilege or protection as to litigation counsel. I also agree with the separate decision to overrule Underwater Devices, but only because that case has been misapplied, in the *extremis* of high-stakes litigation, to mean that "due care" requires more than the reasonable care that a responsible enterprise gives to the property of others. The obligation to obey the law is not diminished when the property is "intellectual." However, experience, and the exhortations of the *amici curiae*, have persuaded me that we should reduce the opportunities for abusive gamesmanship that the "due care" standard apparently has facilitated.

The thrust of Underwater Devices was that patent property should receive the same respect that the law imposes on all property. Industrial innovation would falter without the

order that patent property contributes to the complexities of investment in technologic R&D and commercialization in a competitive marketplace. The loser would be not only the public, but also the nation's economic vigor. So I am sympathetic when told of the disproportionate burdens that a rigorous reading of Underwater Devices has placed on otherwise law-abiding commercial enterprise. Thus, to the extent that Underwater Devices has been applied as a per se rule that every possibly related patent must be exhaustively studied by expensive legal talent, lest infringement presumptively incur treble damages, I agree that the standard should be modified.

Although new uncertainties are introduced by the court's evocation of "objective standards" for such inherently subjective criteria as "recklessness" and "reasonableness," I trust that judicial wisdom will come to show the way, in the common-law tradition. The standards of behavior by which a possible infringer evaluates adverse patents should be the standards of fair commerce, including reasonableness of the actions taken in the particular circumstances. It cannot be the court's intention to tolerate the intentional disregard or destruction of the value of the property of another, simply because that property is a patent; yet the standard of "recklessness" appears to ratify intentional disregard, and to reject objective standards requiring a reasonable respect for property rights.

The remedial and deterrent purposes of multiplied damages, and their measure for a particular case, are best established by the district court in light of the original purposes of 35 U.S.C. §284, as set forth in Judge Gajarsa's concurring opinion. The fundamental issue remains the reasonableness, or in turn the culpability, of commercial behavior that violates legally protected property rights.

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