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Reconsidering the Scope of the Inequitable Conduct Doctrine in View of Supreme Court Precedent and Patent Policy*

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Introduction

In 1988, the United States Court of Appeals for the Federal Circuit characterized "the habit of charging inequitable conduct in almost every major patent case" as an "absolute plague." Judge Rader, in his dissent in *Aventis Pharma S.A. v. Amphastar Pharmaceuticals, Inc.*, stated that the court, later in 1988, reviewed *Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.* "to reduce abuse of inequitable conduct." While the elements of inequitable conduct today remain a material misrepresentation coupled with an intent to deceive, yet the Federal Circuit's inequitable conduct decisions have since resulted in a steady widening of the circumstances in which patents are rendered unenforceable. As to materiality, the Federal Circuit has extended the boundaries to the withholding of information that is not important or relevant to the merits of patentability. Notwithstanding the *Kingsdown* decision, the Federal Circuit has accepted negligence as an adequate basis for intent to deceive. Thus, an act can be sufficient to constitute inequitable conduct if

^{*} A version of this paper was presented at the AIPLA Spring 2008 meeting. Thanks are owed to the other authors of the petition for certiorari in *Ferring B. V. v. Barr Laboratories, Inc.*, 437 F.3d 1181 (Fed. Cir. 2006), *cert. denied*, 127 S. Ct. 515 (2006), on which portions of the earlier sections of this paper are based, including to Aaron Stiefel and Prof. John F. Duffy.

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¹ Burlington Indus., Inc. v. Payco Corp., 849 F.2d 1418, 1422 (Fed. Cir. 1988).

² 525 F.3d 1334 (Fed. Cir. 2008).

³ 863 F.2d 867 (Fed. Cir. 1988) (en banc).

⁴ Aventis, 525 F.3d at 1350 (Rader, J., dissenting).

⁵ See, e.g., Nilssen v. Osram Sylvania, Inc., 504 F.3d 1223, 1231–32 (Fed. Cir. 2007), cert. denied, 128 S. Ct. 2983 (2008).

⁶ See Ferring B.V. v. Barr Labs., Inc., 437 F.3d 1181, 1188–89 (Fed. Cir. 2006).

⁷ See Aventis, 525 F.3d at 1336, 1339.

the applicant "should have known" of the materiality of an omitted prior art reference.8

Given the Supreme Court's recent propensity to reverse Federal Circuit precedent in light of Supreme Court authority in cases such as Quanta Computer, Inc. v. LG Electronics, Inc. (patent exhaustion), KSR International Co. v. Teleflex Inc. 10 (obviousness), eBay Inc. v. MercExchange, L.L.C. 11 (injunctions), and MedImmune, Inc. v. Genentech, Inc. 12 (declaratory judgment jurisdiction), it is interesting to compare the contours of the Federal Circuit's inequitable conduct decisions with the Supreme Court's precedent. The primary Supreme Court authority authorizing inequitable conduct as a defense against enforcement of a patent involved perjury on a matter as fundamental to patentability as falsely claiming responsibility for the invention, as well as entry into contracts to hide the perjury from the United States Patent and Trademark Office and the courts. 13

There is a gulf between an intentional, egregious falsehood about the merits of patentability which was a basis for issuance by the Patent Office or upholding the patent in litigation, as in the Supreme Court's cases, and negligent omission of information neither important nor relevant to the merits of patentability, as in the Federal Circuit's cases. The high standards that the Supreme Court applies to fraud on the Patent Office as an antitrust violation presents an instructive analogy.

I. The Supreme Court Has Refused to Enforce Patents Because of Wrongdoing Only in Extreme Circumstances

The first suggestion of a defense to patent infringement based on improper conduct before the Patent Office came in dicta in Hazel-Atlas Glass Co. v. Hartford-Empire Co.14 In Hazel, faced with "apparently insurmountable Patent Office opposition,"15 the patentee paid for the fabrication of a publication praising the subject matter of the patent and the Patent Office issued a patent. 16

⁸ See Monsanto Co. v. Bayer Bioscience N.V., 514 F.3d 1229, 1241 (Fed. Cir. 2008) (quoting Critikon, Inc. v. Becton Dickinson Vascular Access, Inc., 120 F.3d 1253, 1256 (Fed. Cir. 1997)).

⁹ 128 S. Ct. 2109 (2008).

¹⁰ 127 S. Ct. 1727, 1741 (2007).

^{11 547} U.S. 388, 393–94 (2006).

^{12 549} U.S. 118, 137 (2007).

¹³ Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co., 324 U.S. 806, 816 (1945).

¹⁴ 322 U.S. 238, 245-50 (1944).

¹⁵ Id. at 240 (quoting Hartford-Empire Co. v. Hazel-Atlas Glass Co., 137 F.2d 764, 766 (3d Cir. 1943)).

¹⁶ *Id.* at 240–43.

In succeeding patent litigation, the article was "[q]uot[ed] copiously" in the circuit court's decision holding the patent valid and infringed. ¹⁷ Years later, the infringement defendant learned the truth about the fraudulent activities and petitioned the courts for relief from the judgment of infringement. ¹⁸ The Supreme Court held that such relief was permissible because the fraud "demands the exercise of the historic power of equity to set aside fraudulently begotten judgments." ¹⁹

The Court stressed that the case presented "a deliberately planned and carefully executed scheme to defraud not only the Patent Office, but the Circuit Court of Appeals," and that the facts were appropriate for a "judicially devised remedy" permitting "[e]quitable relief against fraudulent judgments." The Court ruled that the "total effect of all this fraud, practiced both on the Patent Office and the courts, calls for nothing less than a complete denial of relief to [the patentee]." In dicta, the Court said that, "[h]ad the District Court learned of the fraud on the Patent Office at the original infringement trial, it would have been warranted in dismissing [the patentee's] case." Case."

In *Precision Instrument Manufacturing. Co. v. Automotive Maintenance Machinery. Co.*, ²⁴ decided one year later, the Supreme Court held patents, which were the subject of an interference settlement, unenforceable for "inequitable conduct" under the "unclean hands doctrine," where the settlement preserved and exploited an interfering patent that had been obtained by fraud. ²⁵ The Patent Office declared an interference between the applications being prosecuted by Precision and Automotive. ²⁶ During the interference, Automotive obtained proof that Larson's affidavit supporting his purported invention of the claimed wrench was "false." ²⁷ Rather than disclose the fraud to the Patent Office, Automotive used its knowledge of Larson's perjury to the interference. ²⁸ Under the settlement Automotive received: (1) Larson's concession of the whole interference; (2) an assignment of the remaining claims in Larson's patent application; and (3) a commitment from Larson and his firm, Preci-

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<sup>17</sup> Id. at 241.
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¹⁸ *Id.* at 243.

¹⁹ *Id.* at 245.

²⁰ *Id.* at 245–46.

²¹ *Id.* at 248.

²² *Id.* at 250.

²³ *Id*.

²⁴ Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co., 324 U.S. 806 (1945).

²⁵ *Id.* at 819.

²⁶ *Id.* at 809.

²⁷ *Id.* at 809–11.

²⁸ *Id.* at 813–14.

sion, never to question the validity of the subsequently issued patents.²⁹ The Patent Offices issued patents to Automotive from both its own application and the application originally filed by Larson. Automotive sued Precision for infringement of both patents and breach of contract.³⁰

The Supreme Court held that Automotive's lawsuit should be dismissed because a federal court should not assist in the enforcement of "perjury-tainted patents and contracts." The Court stated that requiring disclosure of such known fraud to the Patent Office when it is uncovered "safeguard[s] the public in the first instance against fraudulent patent monopolies." The far-reaching social and economic consequences of a patent . . . give the public a paramount interest in seeing that patent monopolies spring from backgrounds free from fraud or other inequitable conduct and that such monopolies are kept within their legitimate scope." The Court explained that:

[S]ettlements of interference proceedings are not ordinarily illegal. But where, as here, the settlement is grounded upon knowledge or reasonable belief of perjury which is not revealed to the Patent Office or to any other public representative, the settlement lacks that equitable nature which entitles it to be enforced and protected in a court of equity.³⁴

The Court stressed that Automotive's misconduct did not "conform to minimum ethical standards." ³⁵

II. The CCPA Expanded the Supreme Court's Inequitable Conduct Doctrine

Norton v. Curtiss³⁶ is the seminal decision by the United States Court of Customs and Patent Appeals. (CCPA)—the predecessor court to the Federal Circuit. In an interference proceeding, the Patent Office had rejected an applicant's argument that it should strike a competing application for fraud on the Patent Office.³⁷ Although the CCPA ultimately sustained the Patent Office's action, it elaborated on the law concerning fraud on the Patent Office

²⁹ Id.

³⁰ Auto. Maint. Mach. Co. v. Precision Instrument Mfg. Co., 143 F.2d 332, 333 (7th Cir. 1944), *rev'd*, 324 U.S. 806 (1945).

³¹ Precision, 324 U.S. at 816.

³² *Id.* at 818.

³³ *Id.* at 816.

³⁴ *Id.* at 819.

³⁵ *Id.* at 816.

³⁶ 433 F.2d 779 (C.C.P.A. 1970).

³⁷ *Id.* at 789.

and held that the agency was applying the materiality and intent elements too narrowly. 38

Norton recognized that, in the past, "materiality' ha[d] generally been interpreted to mean that if the Patent Office had been aware of the complete or true facts, the challenged claims would not have been allowed." The CCPA, however, urged a broader test than "the objective patentability of the claims at issue" that included the "subjective considerations of the examiner and the applicant." Regarding intent, "the fact of misrepresentation coupled with proof that the party making it had knowledge of its falsity is enough to warrant drawing the inference that there was a fraudulent intent." The CCPA held that the Patent Office had applied the wrong standard, "narrow[ing] the requirement almost to that of proving actual intent." According to the CCPA's view, "it may suffice to show nothing more than that the misrepresentations were made in an atmosphere of gross negligence as to their truth."

III. The Expansion of the Inequitable Conduct Doctrine

A. Standards of Materiality

In the period between the decision in *Norton* and the creation of the Federal Circuit, a split developed among the circuits.⁴⁴ The Federal Circuit reported that "courts have utilized at least three distinct orders of materiality: (1) an objective 'but for' standard; (2) a subjective 'but for' standard; and, (3) a 'but it may have' standard."⁴⁵ The objective "but for" standard is the narrowest in reach, as it requires a party asserting fraud to prove that but for the misrepresentation, the Patent Office would not have granted the patent.⁴⁶

At least three circuits applied the second test—the subjective "but for" test—which requires that a court determine whether the misrepresentation was a crucial factor or substantial cause of the granting of the patent. ⁴⁷ Other circuits embraced the third test—the "but it may have" standard—under

³⁸ *Id.* at 795–96.

³⁹ *Id.* at 794.

⁴⁰ *Id.* at 795.

⁴¹ *Id.* at 795–96 (emphasis omitted).

⁴² *Id.* at 796.

⁴³ *Id*.

⁴⁴ See, e.g., Am. Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1362 (Fed. Cir. 1984).

⁴⁵ *Id.*

⁴⁶ E.g. Plastic Container Corp. v. Cont'l Plastics of Okla.,Inc., 607 F.2d 889, 899 (10th Cir. 1979), aff'd in part, rev'd in part, 708 F.2d 1554 (10th Cir. 1983).

⁴⁷ See Skil Corp. v. Lucerne Prods., Inc., 684 F.2d 346, 350 (6th Cir. 1982); Pfizer, Inc. v. Int'l Rectifier Corp., 685 F.2d 357, 359 (9th Cir. 1982); Plastic Container, 607 F.2d at 900.

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which omissions or misrepresentations may be viewed as material if they may or might have resulted in a rejection of the patent application. ⁴⁸ In *American Hoist*, ⁴⁹ the Federal Circuit explicitly acknowledged the use of the three materiality tests, but adopted a fourth, broader test under which information is deemed material where there is "'a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent."⁵⁰

The pre-1992 version of 37 C.F.R § 1.56, or Rule 56, articulated the same standard for materiality, that is, what "a reasonable examiner would consider . . . important." In 1992, the rule was "amended to present a clearer and more objective definition of what information the Office considers material to patentability." The new rule articulates a fifth materiality standard. Information is material to patentability when it is not "cumulative" to information of record and it helps to establish "a *prima facie* case of unpatentability of a claim," or is "inconsistent" with the applicant's position on patentability. Thus, the post-1992 version of Rule 56 demonstrates that the Patent Office considers information material if it is new information that directly bears on the merits of patentability. The Federal Circuit has held that the new Patent Office rule does not "supplant" the common law tests developed to enforce the "judicially created" inequitable conduct doctrine. 55

The Federal Circuit has extended materiality to apply to failures to follow written or implied rules that are tangential or even irrelevant to the merits of patentability. In Ferring B.V. v. Barr Laboratories, Inc., the Federal Circuit affirmed inequitable conduct for a failure to disclose past relationships of some declarants with the patent's assignee, although there was no showing of any inaccuracy in the declarations at issue in the case. In response to a statement at an interview in which the Examiner "suggested that applicants"

⁴⁸ See CMI Corp. v. Barber-Greene Co., 683 F.2d 1061, 1066 (7th Cir. 1982); Timely Prods. Corp. v. Arron, 523 F.2d 288, 297–98 (2d Cir. 1975); Trio Process Corp. v. L. Goldstein's Sons, Inc., 461 F.2d 66, 73 (3d Cir. 1972); Monsanto Co. v. Rohm & Haas Co., 456 F.2d 592, 600 (3d Cir. 1972).

^{49 725} F.2d 1350 (Fed. Cir. 1984).

⁵⁰ *Id.* at 1362 (emphasis omitted) (quoting 37 C.F.R. § 1.56(a) (1983)).

⁵¹ 37 C.F.R. § 1.56(a) (1991).

⁵² Duty of Disclosure, 57 Fed. Reg. 2021, 2024 (Jan. 17, 1992) (to be codified at 37 C.F.R. pt. 1).

⁵³ 37 C.F.R. § 1.56(b) (2006).

⁵⁴ See id.

⁵⁵ Digital Control, Inc. v. Charles Mach. Works, 437 F.3d 1309, 1315–16 (Fed. Cir. 2006).

⁵⁶ See Ferring B.V. v. Barr Labs., Inc., 437 F.3d 1181 (Fed. Cir. 2006).

⁵⁷ 437 F.3d 1181 (Fed. Cir. 2006).

⁵⁸ *Id.* at 1190.

obtain evidence from a non-inventor,"⁵⁹ the applicants filed declarations from the Danish inventor and from two non-inventors supporting the inventor's position.⁶⁰ The Patent Office maintained its rejection and, after reversal by the Board of Patent Appeals and Interferences coupled with a different rejection, the applicants responded to the Board's rejection with a new declaration from the inventor and four additional non-inventor declarations.⁶¹ The Patent Office issued the patent.⁶²

The declarations did not reflect prior relationships between three of the four non-inventors and the patentee. The Federal Circuit held two of the undisclosed relationships "highly material" in view of the request for non-inventor declarations. While the Federal Circuit said "[a] witness's interest is always pertinent to his credibility and to the weight to be given to his testimony, and relevant interests are not limited to direct financial interests, "65 there is not a specific Patent Office regulation or guideline requiring disclosure of all prior connections between declarants and applicants. The Federal Circuit majority acknowledged that it is normal practice "for the inventor to recommend, and even contact, his own colleagues or people who are, or who have been, affiliated with his employer and to submit declarations from such people."

The Federal Circuit majority also noted that "examiners have broad authority to request information that they deem relevant to the issue of patentability." However, the Patent Office did not require "disinterested" declarations; did not inquire about any connections between the declarants and the patent as-

After issuance of the Ferring patent, in 1995, the MPEP was modified to further provide: "In assessing . . . an expert opinion, the examiner must consider . . . the interest of the expert in the outcome of the case." MPEP \S 716.01(c) (6th Ed. 1995).

⁵⁹ *Id.* at 1184 (emphasis omitted) (quoting Joint Appendix).

⁶⁰ Id.

⁶¹ *Id.* at 1184–85.

⁶² *Id.* at 1185.

⁶³ One non-inventor had participated in a small patentee-funded DDAVP clinical trial for which he was not compensated by the patentee; a second had worked on several projects for the patentee while at the Czech Academy of Science; a third had earlier been a research director and a paid consultant for some months for the patentee. *Id.* at 1184 & n.2, 1185.

⁶⁴ Id. at 1190.

⁶⁵ Id. at 1188.

⁶⁶ Section 716(3) of the Manual of Patent Examining Procedure (MPEP) in effect at the time the patent was issued in 1991 stated that an "affiant's or declarant's interest is a factor which may be considered." U.S. Dep't of Commerce, Patent and Trademark Office, Manual of Patent Examining Procedure, [hereinafter MPEP] § 716(3) (5th Ed. Rev. 13 1989).

⁶⁷ Ferring, 437 F.3d at 1194-95.

⁶⁸ Id. at 1187.

signee; and did not ask whether the declarants were paid for their declarations (they were not) or had an interest in the patent or assignee (they did not).⁶⁹

In dissent, Judge Newman wrote, "[t]here is no evidence that the examiner, in asking for the views of 'a non-inventor,' was asking for or expecting the views of a stranger to the applicant," or that the scientific statements made to the Patent Office were incorrect. 70 In short, the Federal Circuit declared disclosure of the past relationships "highly material" as a matter of law, at least when "non-inventor" declarations were requested—regardless of the effect on the merits of patentability.⁷¹

Nilssen v. Osram Sylvania, Inc. 72 went a step further. Here, the Federal Circuit affirmed findings of inequitable conduct after trial based, among other things, on: (1) claiming small entity status despite an obligation to license; (2) claiming small entity status with respect to a non-profit licensee; and, (3) misclaiming priorities.⁷³ The Federal Circuit opined that all of the above were material and accepted the district court's credibility conclusions, which were critical of the inventor's intent.⁷⁴ Nevertheless, the court observed that on each issue, Nilssen's positions were "not per se unreasonable." The court

A few closing comments are in order. Each of the issues on which the district court found inequitable conduct generated defenses by Nilssen that were not per se unreasonable when considered in isolation. The CFLA was not beyond an interpretation contrary to what the district court adopted. Nilssen did pay some fees that were large entity fees. Failure to cite the Motorola litigation to the PTO may have been an oversight, as perhaps failure to cite prior art might have been However, this case presents a collection of such problems, which the district court evaluated thoroughly and considered, including making credibility findings, and it concluded that the record and testimony indicated repeated attempts to avoid playing fair and square with the patent system. Mistakes do happen, but inadvertence can carry an applicant only so far. Thus, we cannot find that the court's holding of unenforceability was an abuse of discretion.

⁶⁹ See id. at 1189-90.

⁷⁰ *Id.* at 1199 (Newman, J., dissenting).

⁷¹ Id. at 1190; see also Nilssen v. Osram Sylvania, Inc., 504 F.3d 1223, 1227 (Fed. Cir. 2007), cert. denied, 128 S. Ct. 2938 (2008) ("[S]ubmission of two affidavits . . . in support of the patentability of claims rejected by the examiner . . . failed to disclose Fiene's [affiant's] personal and professional association with Nilssen [patentee] and Fiene's financial interest in Nilssen's patents.").

^{72 504} F.3d 1223 (Fed. Cir. 2007).

⁷³ Nilssen, 504 F.3d at 1227-28. Other grounds were failures to disclose a declarant's prior relationship to patentee and his financial interest in the patents, cite a litigation, and disclose prior art. Id.

⁷⁴ *Id.* at 1230–33.

⁷⁵ *Id.* at 1235 (emphasis added).

also recognized that perhaps some of the errors were attributable to Nilssen's representing himself during the prosecutions.⁷⁶

The claim of small entity status illustrates the reach of materiality; small entity status concerns fees rather than the merits of patentability.⁷⁷ Moreover, the claim post-dated the issuance of the patent.⁷⁸ The court acknowledged that:

While a misrepresentation of small entity status is not strictly speaking inequitable conduct in the prosecution of a patent, as the patent has already issued if maintenance fees are payable (excepting an issue fee), it is not beyond the authority of a district court to hold a patent unenforceable for inequitable conduct in misrepresenting one's status as justifying small entity maintenance payments.⁷⁹

The lack of importance to the merits of the prosecution is also reflected in the treatment of misclaimed priorities. ⁸⁰ Despite the absence of any effect on the prosecution, misclaimed priorities were the basis for inequitable conduct. ⁸¹ The court acknowledged that "[p]erhaps Nilssen did not expressly assert an unjustified earlier priority date to obviate prior art," ⁸² but "a misrepresentation that would not have immediately affected patentability is . . . material." ⁸³

B. Standards of Intent

Prior to the creation of the Federal Circuit, there existed a three-way regional circuit split on the showing of "intent" necessary to trigger an inequitable conduct holding.⁸⁴ Some circuits required scienter⁸⁵ (i.e., the patentee had

⁷⁶ *Id.* ("Mr. Nilssen, while apparently gaining considerable knowledge of the patenting process, thought he didn't need professional patent help. The result of this case, regrettably, proves that he was wrong.").

⁷⁷ See 35 U.S.C. § 41(h)(1) (2000).

⁷⁸ Nilssen, 504 F.3d at 1232.

⁷⁹ *Id.* at 1231.

⁸⁰ See id. at 1233.

⁸¹ *Id*.

⁸² *Id.* at 1235.

⁸³ *Id.* at 1233; see also Scanner Techs. Corp. v. ICOS Vision Sys. Corp., 528 F.3d 1365, 1375 (Fed. Cir. 2008) ("When the setting involves a petition to make special, as is the case here, we reaffirm that a false statement that succeeds in expediting the application is, as a matter of law, material for purposes of assessing the issues of inequitable conduct."); General Electro Music Corp. v. Samick Music Corp., 19 F.3d 1405, 1411 (Fed. Cir. 1994) (holding that false statement in a petition to make special is material when the petition achieves expedited examination).

⁸⁴ See Digital Equip. Corp. v. Diamond, 653 F.2d 701, 716 (1st Cir. 1981); DeLong Corp. v. Raymond Int'l, Inc., 622 F.2d 1135, 1146 (3rd Cir. 1980); Scott Paper Co. v. Fort Howard Paper Co., 432 F.2d 1198, 1204 (7th Cir. 1970).

⁸⁵ E.g. Scott Paper, 432 F.2d at 1204 ("Unclean hands can be asserted only if there has been a deliberate misrepresentation in the Patent Office.").

knowingly and intentionally lied), while other circuits had held that a showing of gross negligence is sufficient. ⁸⁶ The First Circuit adopted an intermediate position that embraced a sliding scale, permitting a lower showing of intent if coupled with a greater showing of materiality, and vice-versa. ⁸⁷

Following its formation in 1982, the Federal Circuit initially required evidence of intentional misconduct.⁸⁸ The Federal Circuit relaxed the intent standard shortly thereafter, however, holding that evidence of gross negligence could support an inequitable conduct finding.⁸⁹

In *Driscoll v. Cebalo*, ⁹⁰ the patent applicant, Cebalo, failed to disclose to the Patent Office a Canadian patent which was uncovered in a pre-filing search and identified in the search report as being a "principal reference[]." Instead of disclosing the Canadian patent, the applicant withdrew a claim, and in its place substituted a new claim, which itself "would have been prima facie obvious" over the reference. Patent Circuit upheld the Board of Patent Appeals' finding that failure to disclose the Canadian patent constituted "gross negligence—in the sense of neglect of duty." The court stated that "[w] here [applicant] knew, or should have known, that the withheld reference would be material to the PTO's consideration, their failure to disclose the reference is sufficient proof of the existence of an intent to mislead the PTO."

⁸⁶ E.g., DeLong, 622 F.2d at 1146 (stating that inequitable conduct requires at least a finding of "gross negligence").

⁸⁷ See Digital Equip., 653 F.2d at 716.

⁸⁸ See Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc., 707 F.2d 1376, 1383 (Fed. Cir. 1983).

⁸⁹ Driscoll v. Cebalo, 731 F.2d 878, 885 (Fed. Cir. 1984).

^{90 731} F.2d 878 (Fed. Cir. 1984).

⁹¹ *Id.* at 881.

⁹² *Id.* at 884.

 $^{^{93}}$ *Id.* at 885. The "gross negligence" language in *Driscoll* stemmed from Rule 56 at the time of the case: "No patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or *gross negligence*." 37 C.F.R. § 1.56(d) (1982) (emphasis added).

⁹⁴ Driscoll, 731 F.2d at 885. Gross negligence is equated with the "should have known" standard. FMC Corp. v. Manitowoc Co., Inc., 835 F.2d 1411, 1415 (Fed. Cir. 1987) ("[A]n applicant who knew of the art or information cannot intentionally avoid learning of its materiality through gross negligence, i.e., it may be found that the applicant 'should have known' of that materiality."); J.P. Stevens & Co. v. Lex Tex Ltd., 747 F.2d 1553, 1560 (Fed. Cir. 1984) ("Fross negligence is present when the actor, judged as a reasonable person in his position, should have known of the materiality of a withheld reference.").

The Federal Circuit reversed course in its en banc decision in *Kingsdown*, expressly overruling *Driscoll*. The court held that inequitable conduct required proof of intent to deceive the Patent Office, and that "a finding that particular conduct amounts to 'gross negligence' does not of itself justify an inference of intent to deceive." In *Kingsdown*, the attorney renumbered and transferred into a continuation application all claims previously allowed, but copied the wrong, rejected, version of one claim in place of an allowed claim. That error led to incorporation of a rejected claim in the patent. The Federal Circuit rejected the district court's inference of intent based on *Driscoll's* "gross negligence" standard. The fact that this was a "ministerial" task made it "more vulnerable to errors . . . from inattention," rather than "scienter."

Ferring is illustrative of the return to a negligence standard to find inequitable conduct.¹⁰¹ The Federal Circuit utilized a negligence standard as the basis for intent in granting summary judgment on inequitable conduct for failure to disclose the declarants' prior relationships with the assignee of a patent application.¹⁰² On intent to deceive, the majority stated:

[S]ummary judgment is appropriate on the issue of intent if there has been a failure to supply highly material information and if the summary judgment record establishes that (1) the applicant knew of the information; (2) the applicant knew or should have known of the materiality of the information; and (3) the applicant has not provided a credible explanation for the withholding. ¹⁰³

In finding that the inventor intended to mislead the Patent Office under this standard, the Federal Circuit stated that: (1) Barr had "established that [the inventor] knew of significant past relationships of at least two declarants," and (2) the inventor was "on notice [from the Examiner's reference to 'non-inventor' declarations] that disinterested affidavits were necessary, and knew or should have known that the [patentee] affiliations were material." While the Danish inventor was aware of the past relationships, there was no showing that the inventor knew they were important, or knew of an obligation to disclose them. Despite the governing rule requiring inferences to

⁹⁵ Kingsdown Med. Consultants, Ltd. v. Hollister, Inc., 863 F.2d 867 (Fed. Cir. 1998) (en banc).

⁹⁶ Id.

⁹⁷ *Id.* at 870–71.

⁹⁸ See id.

⁹⁹ *Id.* at 873.

¹⁰⁰ *Id.* at 875.

¹⁰¹ See Ferring B.V. v. Barr Laboratories, Inc., 437 F.3d 1181, 1190–94 (Fed. Cir. 2006).

¹⁰² See id., see also id. at 1196, 1203 (Newman, J., dissenting).

¹⁰³ *Id.* at 1191.

¹⁰⁴ *Id.* at 1191–92.

¹⁰⁵ Contra id. at 1192-93.

be drawn in favor of the non-movant, 106 the Federal Circuit upheld summary judgment on inequitable conduct.¹⁰⁷ Judge Newman's dissent criticized the majority opinion for departing from the Federal Circuit's en banc decision in Kingsdown. 108

Notwithstanding Kingsdown, the negligence-based standard, under which it is sufficient if the applicant should have known that undisclosed information was material, has returned to the Federal Circuit's formulation of the intent standard. 109 For example, this year in Monsanto Co. v. Bayer Bioscience N. V., 110 the Federal Circuit found Bayer's patent unenforceable for inequitable conduct due to Bayer's failure to disclose an employee's notes.¹¹¹ The Federal Circuit determined the employee's notes to be "highly material" because they directly contradicted arguments Bayer had made to the Patent Office in support of patentability.¹¹² While failure to disclose the "highly material" notes was said to be insufficient by itself to support a finding of inequitable conduct, "[i]ntent is easily inferred when, as here, an applicant makes arguments to the PTO that it knows, or obviously should have known, are false in light of information not before the examiner, and the applicant knowingly withholds that additional information. Monsanto relied on Critikon, Inc. v. Becton Dickinson Vascular Access¹¹³ for its "should have known" standard. 114 In Critikon, the Federal Circuit determined that, during the prosecution of its patent, Critikon withheld a prior art reference that contained a feature relevant to a point of novelty in the Critikon patent application.¹¹⁵ The examiner, on at least two occasions during the prosecution, had suggested a claim amendment to add that feature to overcome a deficiency in rejected claims. 116 Critikon also failed to disclose litigation concerning the patent during a reissue proceeding.¹¹⁷ In upholding a finding of wrongful intent,

¹⁰⁶ Id. at 1204 (Newman, J., dissenting) (citing Hunt v. Cromartie, 526 U.S. 541, 553 (1999)).

¹⁰⁷ *Id.* at 1193–94.

¹⁰⁸ Id. at 1201 (Newman, J., dissenting) ("The majority's ruling is directly contrary to Kingsdown, which held that even gross negligence may not establish deceptive intent " (citing Kingsdown Med. Consultants, Ltd. v. Hollister, Inc., 863 F.2d 867, 876 (Fed. Cir. 1998) (en banc))).

¹⁰⁹ See id. at 1191.

^{110 514} F.3d 1229 (Fed. Cir. 2008).

¹¹¹ *Id.* at 1241.

¹¹² *Id.* at 1240.

^{113 120} F.3d 1253 (Fed. Cir. 1997).

¹¹⁴ Monsanto, 514 F.3d at 1241 (citing Critikon, 120 F.3d at 1256).

¹¹⁵ Critikon, 120 F.3d at 1256.

¹¹⁶ *Id.* at 1256–57.

¹¹⁷ *Id.* at 1256.

the court stated that "intent may be inferred where a patent applicant knew, or should have known, that withheld information would be material to the PTO's consideration of the patent application." The court inferred a "relatively high degree of intent" because Critikon "should have known [the reference] was material."

The Federal Circuit's "should have known" standard is inconsistent with current Patent Office regulations. During prosecution, a patent applicant has a legal and ethical "duty to disclose to the [Patent Office] all information *known* to that individual to be material to patentability as defined in this section." According to the Patent Office, the Rule was clarified in 1992 "to indicate that the duty of an individual to disclose information is based on the knowledge of that individual that the information is material to patentability." 123

C. Sliding Scale

Prior to a holding of inequitable conduct, the Federal Circuit requires balancing the levels of materiality and intent to assess culpability; "whether the

Critikon was "intimately familiar" with the McDonald Patent because both attorneys involved in the prosecution of the Critikon patent had reviewed the McDonald patent "in detail"; one had made handwritten notes on the McDonald patent mentioning the retaining means and passed these notes on to the other attorney, who then cited the McDonald patent to the Patent Office in several other patent proceedings; and the Examiner's proposed amendment cited the retaining means, as above. *Critikon*, 120 F.3d at 1256–57.

¹¹⁸ *Id.* at 1256 (citing Driscoll v. Ceballo, 731 F.2d 878, 885 (Fed. Cir. 1984), *overruled by* Kingsdown Med. Consultants, Ltd. v. Hollister, Inc., 863 F.2d 867 (Fed. Cir. 1998)).

¹¹⁹ *Id.* at 1256. "[A] patentee facing a high level of materiality and clear proof that it knew or should have known of that materiality, can expect to find it difficult to establish 'subjective good faith' sufficient to prevent the drawing of an inference of intent to mislead." *Id.* at 1257.

¹²⁰ *Id.* at 1259; *see also* Brasseler, U.S.A., I, L.P. v. Stryker Sales Corp., 267 F.3d 1370, 1380 (Fed. Cir. 2001) ("Where an applicant knows of information the materiality of which may so readily be determined, he or she cannot intentionally avoid learning of its materiality, even through gross negligence; in such cases the district court may find that the applicant should have known of the materiality of the information.").

¹²¹ Compare Critikon, 120 F.3d at 1357 ("should have known") with 37 C.F.R. § 1.56(a) (2008) ("known").

¹²² 37 C.F.R. § 1.56(a) (emphasis added).

¹²³ Duty of Disclosure, 57 Fed. Reg. 2021, 2022 (Jan. 17, 1992) (to be codified at 37 C.F.R. pt. 1). The 1982 Rules prescribed denying a patent when the duty of disclosure was violated "through bad faith or gross negligence." 37 C.F.R. § 1.56(d) (1982). The 1992 C.F.R. omitted gross negligence from section 1.56(d). Duty of Disclosure, 57 Fed. Reg. at 2024. The Patent Office commented that "the Office does not advocate any change to the *Kingsdown* ruling." *Id.*

material misrepresentations or omissions in question are sufficiently serious in the light of the evidence of intent to deceive, under all the circumstances, to warrant the severe sanction of holding the patent unenforceable." The level of materiality is also weighed in assessing whether the required wrongful intent exists. 125 As the Federal Circuit panel majority held in *Ferring*, an "intent to deceive" may be predicated upon a combination of a "high degree" of materiality coupled with a finding that the patentee "should have known" about the materiality of the omissions. 126

IV. The Federal Circuit's Standards of Materiality and Intent Are Not Supported by the Supreme Court's Patent Decisions¹²⁷

A. The Federal Circuit's Materiality Standard

Under the Federal Circuit's standard, information is material even when it is neither important nor relevant to patentability. However, the Supreme Court has not applied a materiality standard that could be triggered by the non-disclosure of information related to tangential matters. In *Precision*, for example, the patent applicant had filed a statement with the Patent Office providing "false dates as to the conception, disclosure, drawing, description, and reduction to practice of his claimed invention," 128 and also falsely claimed

¹²⁴ Hoffman-LaRoche, Inc. v. Promega Corp., 323 F.3d 1354, 1372 (Fed. Cir. 2003).

he intent necessary to establish inequitable conduct is based on a sliding scale related to materiality of the omission."); Bruno Indep. Living Aids, Inc. v. Acorn Mobility Servs., Ltd., 394 F.3d 1348, 1354 (Fed. Cir. 2005) ("[S] ufficient evidence [exists] based upon which a fair inference of deceptive intent may be drawn, in view of the high materiality [of the prior art in support of inequitable conduct]."); Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc., 326 F.3d 1226, 1234 (Fed. Cir. 2003) ("When balanced against high materiality, the showing of intent can be proportionally less."); Critikon, Inc. v. Becton Dickinson Vascular Access, 120 F.3d 1253, 1257 (Fed. Cir. 1997) ("[A] patentee facing a high level of materiality . . . can expect to find it difficult . . . to prevent the drawing of an inference of intent to mislead.").

¹²⁶ Ferring B.V. v. Barr Labs., Inc., 437 F.3d 1181, 1191 (Fed. Cir. 2006).

¹²⁷ The disparities between the Supreme Court and the Federal Circuit cases discussed in this section were recognized generally by the Federal Circuit recently (after this paper was written) in *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1366 (Fed. Cir. 2008) (reh'g denied). The court observed that the penalty for inequitable conduct was "originally applied only in cases of 'fraud on the patent office,'" citing *Hazel-Atlas* and *Precision*, discussed above, but "subsequent case law has broadened the doctrine to encompass misconduct less egregious than fraud" *Id.*

¹²⁸ Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co., 324 U.S. 806, 809 (1945).

that he was the sole inventor of the entire wrench. 129 These statements directly related to the patentability issue. 130

The Supreme Court has held that even an outright misrepresentation is not material where the misrepresentation raises a peripheral issue which does not impact the patentability of the claimed invention.¹³¹ In *Corona Cord Tire Co. v. Dovan Chemical Corp.*,¹³² the inventor submitted false affidavits to the Patent Office claiming to have used his new vulcanization process to produce rubber goods prior to a cited reference when, in fact, the inventor had produced only some test sheets.¹³³ The Court held that the misrepresentations, "though perhaps reckless, were not the basis for [the patent] or essentially material to its issue," and thus did not destroy the "reasonable presumption of validity furnished by the grant of the patent."¹³⁴ The test sheets, if properly vulcanized, were themselves a reduction to practice.¹³⁵

B. The Federal Circuit's Intent Standard

The Federal Circuit's standard of intent permits a finding of intent to deceive based only on evidence of negligent non-disclosure of information the court deems highly material; that is, a high level of materiality and a low level of intent. There is no basis in Supreme Court precedent for this latitude. The Supreme Court has applied the inequitable conduct doctrine only once—in *Precision*—when the patentee knew about the fraudulent conduct and suppressed it "in disregard of the public interest." 137

¹²⁹ *Id.* at 810.

¹³⁰ *Id.* at 816.

¹³¹ Corona Cord Tire Co. v. Dovan Chem. Corp., 276 U.S. 358, 374 (1928).

¹³² 276 U.S. 358 (1928).

¹³³ *Id.* at 373–74.

¹³⁴ *Id.* at 374.

¹³⁵ *Id.* The *Corona* standard was used by the lower courts in developing a "but for" standard of materiality for establishing fraud on the Patent Office, i.e., a misrepresentation or omission is material only if "but for" the misrepresentation or omission, the patent would not have issued. *E.g.*, Corning Glass Works v. Anchor Hocking Glass Corp., 253 F. Supp. 461, 469 (D. Del. 1966), *affd in part, rev'd in part*, 374 F.2d 473 (3d Cir. 1967); Baldwin-Lima-Hamilton Corp. v. Tatnall Measuring Sys. Co., 169 F. Supp. 1, 24–25 (E.D. Pa. 1958), *aff'd*, 268 F.2d 395 (3d Cir. 1959).

¹³⁶ Ferring B.V. v. Barr Labs, Inc., 437 F.3d 1181, 1191 (Fed. Cir. 2006).

¹³⁷ Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co., 324 U.S. 806, 816 (1945).

C. Comparison of the Antitrust Rules Concerning Fraud on the Patent Office and the Governing Policy

The contrast between the Federal Circuit's inequitable conduct doctrine and antitrust violations based on conduct before the Patent Office is similar to the disparity between the Federal Circuit's and the Supreme Court's respective handling of inequitable conduct. Under the seminal antitrust authority on the subject, *Walker Process Equipment, Inc. v. Food Machinery & Chemical Corp.*, ¹³⁸ it must be established that the patentee "obtained the patent by knowingly and willfully misrepresenting facts to the patent office." Only then (coupled with other antitrust requirements), may a patentee be "strip[ped]... of its exemption from the antitrust laws." Justice Harlan's concurrence distinguished monopolization under a patent "knowingly... procured by deliberate fraud," as in the majority opinion, and "monopolies practiced under patents that for one reason or another may turn out to be voidable under one or more of the numerous technicalities." ¹⁴¹

The Federal Circuit's standard for an antitrust violation follows *Walker Process*. ¹⁴² "To establish culpability any omission must be of a fact material to patentability and it must be a deliberate misrepresentation, whether by omission or misstatement, that was intended to and did mislead the examiner into taking favorable action that would not otherwise have been taken." ¹⁴³ Antitrust fraud on the Patent Office is a more serious offense than inequitable conduct and requires "higher threshold showings of both intent and materiality." ¹⁴⁴ In conforming to the Court's standard, the Federal Circuit stated that "[c]onsistent with the Supreme Court's analysis in *Walker Process*, as well as Justice Harlan's concurring opinion, we have distinguished 'inequitable conduct' from *Walker Process* fraud, noting that inequitable conduct is a broader, more inclusive concept than the common law fraud needed to support a *Walker Process* counterclaim." ¹⁴⁵

As to materiality for antitrust fraud, the Federal Circuit explained:

Such a misrepresentation or omission must . . . cause the PTO to grant an invalid patent. In contrast, a conclusion of inequitable conduct may be based on evidence of a lesser misrepresentation or an omission, such as omission of a reference that would

¹³⁸ 382 U.S. 172 (1965).

¹³⁹ *Id.* at 173, 177.

¹⁴⁰ *Id*.

¹⁴¹ *Id.* at 179–80 (Harlan, J., concurring).

¹⁴² See C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1365 (Fed. Cir. 1998); Nobelpharma AB v. Implant Innovations, Inc., 141 F.3d 1059, 1069–70 (Fed. Cir. 1998).

¹⁴³ C.R. Bard, 157 F.3d at 1365.

¹⁴⁴ Nobelpharma, 141 F.3d at 1070-71.

¹⁴⁵ *Id.* at 1069.

merely have been considered important to the patentability of a claim by a reasonable examiner. 146

The Federal Circuit has also required a high standard of intent for antitrust fraud on the Patent Office: "[A]n antitrust plaintiff is first required to prove that the patentee 'obtained the patent by knowingly and willfully misrepresenting facts to the [PTO]." "The plaintiff in the patent infringement suit must also have been aware of the fraud when bringing suit." ¹⁴⁸ Moreover, "good faith" or "honest mistake" is a "complete defense."

Justice Harlan explained the rationale for the demanding standards for antitrust fraud on the Patent Office in terms of the policy of promoting innovation underlying the patent laws:

It is well also to recognize the rationale underlying this decision, aimed of course at achieving a suitable accommodation in this area between the differing policies of the patent and antitrust laws. To hold, as we do, that private suits may be instituted . . . to recover damages for Sherman Act monopolization knowingly practiced under the guise of a patent procured by deliberate fraud, cannot well be thought to impinge upon the policy of the patent laws to encourage inventions and their disclosure. Hence, as to this class of improper patent monopolies, antitrust remedies should be allowed room for full play. On the other hand, to hold, as we do not, that private antitrust suits might also reach monopolies practiced under patents that for one reason or another may turn out to be voidable under one or more of the numerous technicalities attending the issuance of a patent, might well chill the disclosure of inventions through the obtaining of a patent because of fear of the vexatious or punitive consequences of treble-damage suits. ¹⁵⁰

In view of the Supreme Court's utilization of patent policy to formulate the rule for fraud on the Patent Office under antitrust laws, it is appropriate to consider the same policy for inequitable conduct at the Patent Office. In authorizing Congress to enact patent laws "[t]o promote the Progress of

¹⁴⁶ *Id.* at 1070 (citation omitted); *see also id.* at 1069 ("[A] distinction must be maintained between patents procured by 'deliberate fraud' and those rendered invalid or unenforceable for other reasons." (citing *Walker Process*, 382 U.S. at 179–80) (Harlan, J., concurring)); *C.R. Bard*, 157 F.3d at 1364 ("[Antitrust fraud materiality] requires a . . . false misrepresentation . . . on which the examiner justifiably relied in granting the patent, and . . . but for which misrepresentation or deliberate omission the patent would not have been granted.").

¹⁴⁷ Nobelpharma, 141 F.3d at 1068–69 (quoting Walker Process, 382 U.S. at 177) (footnote omitted).

¹⁴⁸ *Id.* at 1069 (citing *Walker Process*, 382 U.S. at 177 & n.5 ("[The patentee must] maintain[] . . . knowledge of the patent's infirmity.")).

¹⁴⁹ Walker Process, 382 U.S. at 177; see also C.R. Bard, 157 F.3d at 1364–65 ("[The Walker Process fraud standard requires] a deliberately planned and carefully executed scheme to defraud . . . the Patent Office" (quoting Handgards, Inc. v. Ethicon, Inc., 601 F.2d 986, 996 (9th Cir.1979)).

¹⁵⁰ Walker Process, 382 U.S. at 179–80 (Harlan, J., concurring).

Science,"151 the Constitution endorsed Congress' function of encouraging innovation.¹⁵² The patent system accomplishes this goal by providing the expectation of the exclusive right to a patented invention. Thus, the Supreme Court in Kewanee Oil Co. v. Bicron Corp., 154 focusing on the patent reward as an incentive to inventors, described the patent, "as an incentive to inventors to risk the often enormous costs in terms of time, research, and development."155 The importance of the exclusive patent right to investors has also been recognized.¹⁵⁶ The patent right "provide[s] an incentive for private enterprise to devote resources to innovative research, to make the investments required to put new inventions into practice, and to make the benefits of the invention available to a wider public." The result achieved by the patent system, according to the Supreme Court, is "a positive effect on society through the introduction of new products and processes of manufacture into the economy, and the emanations by way of increased employment and better lives for our citizens."158

Conclusion

For decades, the United States has lost large parts of its manufacturing base and accompanying jobs to lower-cost manufacturer foreign countries. 159 Further, the mineral and agricultural resources of the country can fairly be viewed as limited. 160 On the other hand, innovation, in the form of technological change, has been identified as a major source of economic growth 161

- ¹⁵¹ U.S. Const. art. I, § 8, cl. 8.
- ¹⁵² Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480 (1974).
- 154 416 U.S. 470 (1974).
- 155 *Id.* at 480.
- 156 Mannington Mills v. Congoleum Indus., Inc., 610 F.2d 1059, 1070 (3d Cir. 1979); see also Picard v. United Aircraft Corp., 128 F.2d 632, 642-43 (2d Cir. 1942) (Frank, J., concurring), cert. denied, 317 U.S. 651 (1942); SCM Corp. v. Xerox Corp., 463 F. Supp. 983, 997 n.23 (D. Conn. 1978).
 - 157 Mannington Mills, 610 F.2d at 1070.
 - 158 Kewanee, 416 U.S. at 480.
- ¹⁵⁹ See Christina Laun, Note, The Central American Free Trade Agreement and the Decline of U.S. Manufacturing, 17 Ind. Int'l & Comp. L. Rev. 431, 440-41 (2007).
- ¹⁶⁰ The contribution of the mining and agricultural industries to GDP growth in the past few years has been minimal. See Brian M. Lindberg & Justin M. Monaldo, U.S. Dep't OF COMMERCE, BUREAU OF ECONOMIC ANALYSIS, ANNUAL INDUSTRY ACCOUNTS: ADVANCE STATISTICS ON GDP BY INDUSTRY FOR 2007 40 tbl.C (2008), available at http://www.bea. gov/industry/iedguide.htm.
- ¹⁶¹ See Robert M. Solow, Technical Change and the Aggregate Production Function, 139 Rev. Econ. & Stat. 312, 316–17 (1957); Edward F. Denison, The Sources of Economic

and it is likely that the major source of future growth in the United States will be continued innovation. The only patents that are challenged in litigation are those that cover inventions of significant commercial value, namely those that are likely to have contributed to economic growth. ¹⁶² Only innovations involving such inventions warrant emulation and the expense of litigation.

The inequitable conduct doctrine destroys some of these valuable patents, and, as currently applied, even destroys patents on valid, patentable inventions. The loss of the exclusivity provided by patents is often commercially devastating to the innovator because of the availability of copies marketed by persons who have not undertaken the risk or cost of research and development. The inequitable conduct doctrine's punitive character is comparable to that of antitrust damages, which the Supreme Court declined to apply to less than intentional "but for" fraud. Given the Supreme Court's reliance on the role of patents in promoting innovation in this context, should not the balance be struck on the side of preserving valid patented inventions and, correspondingly, narrowing the inequitable conduct doctrine?" 166

GROWTH IN THE UNITED STATES AND THE ALTERNATIVES BEFORE US 271–72 (1962). Regarding the measurement of the consumer benefit or surplus which flows from innovation, see Edwin Mansfield et al., *Social and Private Rates of Return from Industrial Innovations*, 91 Q.J. Econ. 221, 239–40 (1977) and Frederic M. Scherer, Industrial Market Structure and Economic Performance 613–14 (3d ed. 1990). *See also* Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki, Co., 234 F.3d 558, 639–41 (Fed. Cir. 2000), *vacated by* 535 U.S. 722 (2002) (Newman, J., concurring in part and dissenting in part) (discussing the economic literature supporting statement that "[t]he modern industrial economy is driven by technologic innovation").

Even the limited growth in the agricultural industry, see LINDBERG & MONALDO, *supra* note 161, has been attributed to technological change. *See* Yair Mundlak, *Lessons from Two Centuries of American Agriculture*, 43 J. Econ. Lit. 989, 1018 (2005) (noting that growth in American agricultural output has been "triggered largely by new technology"); Keith O. Fuglie et al., U.S. Dep't of Agric., Econ. Brief No. 9, Productivity Growth In U.S. Agriculture 5 tbl.2 (2007) (attributing 66 percent of labor productivity growth between 1981 and 2004 in U.S. agriculture to technological change and related factors). Similarly, in the coal and petroleum industries, technological change has been a long-term offset to depletion and a major factor in improved productivity. *See* Productivity in the Natural Resource Industries: Improvement through Innovation 15, 53, 200 (R. David Simpson ed., 1999).

- ¹⁶² Kathleen A. Dorton, Comment, *Intellectual Property Tying Arrangements: Has the Market Power Presumption Reached the End of Its Rope?*, 57 DePaul L. Rev. 539, 560 & n.164 (2008).
 - ¹⁶³ E.g. Ferring B.V. v. Barr Labs, Inc., 437 F.3d 1181 (Fed. Cir. 2006).
 - ¹⁶⁴ See Mannington Mills v. Congoleum Indus., Inc., 610 F.2d 1059, 1070 (3d Cir. 1979).
- ¹⁶⁵ Walker Process Equip. Co. v. Food Mach. & Chem. Corp., 382 U.S. 172, 177–78 (1965).

¹⁶⁶ *Id.* at 1241.