

CLEAR AS MUD: AN EMPIRICAL ANALYSIS OF THE DEVELOPING LAW OF JOINT INVENTORSHIP IN THE FEDERAL CIRCUIT

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Naming the inventors on a patent is more than a formality: Doing so incorrectly may significantly hinder the patent holder's ability to enforce his rights or may render the patent invalid altogether.¹ The named inventor receives much more than recognition; he is the owner of the patent and the only one who may assert the accompanying property rights against alleged infringers.² As such, there are strict requirements in place for who qualifies as the inventor for a patent.³ When there is clearly only a single, sole inventor, these issues tend not to cause much confusion beyond priority disputes.⁴ However, when multiple people work together and produce a "joint invention," these rights and restrictions take on new significance. Courts must frequently analyze and weigh the individual contributions of the putative inventors and determine whose acts are sufficient for "inventorship" and whose acts fall short.⁵ This nuanced and often seemingly arbitrary

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1. See 35 U.S.C. §§ 102(f), 256 (2006); see also *infra* Section I.C. Except where otherwise noted, all statutory references are pre-Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) [hereinafter "America Invents Act"].

2. This assumes there is no assignment agreement to a third party. 35 U.S.C. § 261 ("[P]atents shall have the attributes of personal property."); § 262 ("In the absence of any agreement to the contrary, each of the joint owners of a patent may make, use, offer to sell, or sell the patented invention . . . without the consent of and without accounting to the other owners."); see also W. Fritz Fasse, *The Muddy Metaphysics of Joint Inventorship: Cleaning Up after the 1984 Amendments to 35 U.S.C. § 116*, 5 HARV. J.L. & TECH. 153, 156 n.19 (1992) ("[A]n invention will initially belong to the inventor(s), but there may be an immediate duty to assign to the employer which is enforceable in court." (quoting Richard C. Witte & Eric W. Guttag, *Employee Inventions*, 71 J. PAT. & TRADEMARK OFF. SOC'Y 467, 469 (1989))).

3. See, e.g., 35 U.S.C. § 101 (requiring "invention" or "discovery"), § 102(g) (requiring "conception" and "reduction to practice" of invention).

4. See, e.g., *Coleman v. Dines*, 754 F.2d 353 (Fed. Cir. 1985); *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367 (Fed. Cir. 1986).

5. See, e.g., *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223 (Fed. Cir. 1994); *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466 (Fed. Cir. 1997); *Monsanto Co. v. Kamp*, 269 F. Supp. 818 (D.D.C. 1967); *Mueller Brass Co. v. Reading Indus., Inc.*, 352 F. Supp. 1357 (E.D. Pa. 1972).

evaluation process has given the law of joint inventorship the reputation of being “one of the muddiest concepts in the muddy metaphysics of the patent law.”⁶ Nevertheless, a clear joint inventorship doctrine is critical both for institutional researchers as well as entrepreneurs seeking to structure their operations and business alliances.⁷ Because most modern research and development of patentable inventions takes place in institutional settings—where large teams of people work alongside one another—the commercial and scientific importance of a predictable joint invention doctrine is of vital importance to a multitude of modern enterprises.⁸

This Note will analyze all of the joint inventorship cases that have come before the United States Court of Appeals for the Federal Circuit since its inception in 1982⁹ and will describe the evolution of the doctrine over the past three decades. Specifically, the Note evaluates the court’s jurisprudence since the 1984 congressional amendment of § 116, which regulated the naming of multiple inventors and eased the process for listing groups working on a single patentable idea on the same patent.¹⁰ Since the 1984 amendment, the court has decided sixty-five published cases.¹¹ Predictably, in the vast majority of these cases the court evaluated whether the putative inventor had made the requisite contribution to the invention in order to qualify as a joint inventor.¹² Even well-reasoned cases, standing alone, tend to affirm the impression that the law is unclear and unhelpful for practitioners guiding researchers and institutions because of the highly case-specific nature of the analysis. However, when read as a unified body of law, the Federal Circuit’s joint inventorship jurisprudence reveals a cohesive narrative and a

6. *Mueller Brass*, 352 F. Supp. at 1372.

7. See Lawrence M. Sung, *Collegiality and Collaboration in an Age of Exclusivity*, 3 DEPAUL J. HEALTH CARE L. 411, 435–39 (2000) (arguing that the current joint inventorship jurisprudence discourages collaboration and has caused the scientific community to become overly “cautious”).

8. *Id.*; see also Joshua Matt, *Searching for an Efficacious Joint Inventorship Standard*, 44 B.C. L. REV. 245, 254 (2002) (discussing the “modern paradigm” of institutional research). Matt explains that joint inventorship claims have become “an attractive option for disgruntled scientists suing either their former research partners or former employers. Likewise, defendants accused of infringement might endeavor to find an unnamed, overlooked and minor contributor to defeat a claim of infringement.” *Id.* at 247.

9. Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25.

10. Patent Law Amendments Act of 1984, Pub. L. No. 98-622, § 104(a), 98 Stat. 3383, 3384–85 (amending 35 U.S.C. § 116); see Matt, *supra* note 8, at 246 (explaining that the revision to § 116 “lowered the bar for joint inventorship status”); *infra* Section I.B.

11. See *infra* Appendix.

12. See generally Aaron X. Fellmeth, *Conception and Misconception in Joint Inventorship*, 2 N.Y.U. J. INTEL. PROP. & ENT. L. 73 (2012) (describing the difference between contribution to an individual claim versus the invention as a whole).

set of guiding principles. Ultimately, despite the doctrine's "muddy" reputation, this Note describes that a predictable and coherent joint inventorship doctrine exists in patent law.

Part I of this Note presents an overview of the current state of the law of joint inventorship with an emphasis on the major doctrinal developments over the preceding thirty years.¹³ This Part offers a brief but encyclopedic grounding in the rules that currently govern § 116 and § 256.¹⁴ Part II presents the results of the empirical analysis.¹⁵ This Part describes the historical development of joint inventorship jurisprudence¹⁶ and comes to three conclusions: in recent years the Federal Circuit (1) has raised the standard for requisite inventive contribution,¹⁷ (2) has increasingly relied on the presumption of validity of an issued patent,¹⁸ and (3) has acknowledged the unfairness of applying pre-1984 ownership rules to the liberalized joint inventorship standards.¹⁹ Part III concludes with some recommendations for practitioners based on the results of this Note's study.²⁰

I. BACKGROUND

The doctrine of joint inventorship, "one of the muddiest concepts in . . . patent law,"²¹ is widely considered to be arbitrary and lacking coherent standards. This view in part derives from the fact that joint inventorship law attempts to apply the vague standard requirements of inventorship to the expansive variety of collaborative scenarios in which multiple parties are involved in the inventive process.²² Before unraveling the thorny doctrine of joint inventorship law, it is helpful to first have an understanding of the underlying requirements for traditional single-party inventorship.

13. *See infra* Part I.

14. *Id.*; *see* 35 U.S.C. §§ 116, 256.

15. *See infra* Part II.

16. *See infra* Section II.A.

17. *See infra* Section II.B.1.

18. *See infra* Section II.B.2.

19. *See infra* Section II.B.3.

20. *See infra* Part III.

21. *Mueller Brass Co. v. Reading Indus., Inc.*, 352 F. Supp. 1357, 1372 (E.D. Pa. 1972).

22. *See, e.g.*, Fasse, *supra* note 2, at 161 ("The focus on joint conception makes the inquiry difficult in practice and impossible in theory. Can two people really jointly conceive a single complete idea?"); Matt, *supra* note 8, at 245–46 ("[T]he law of joint inventorship has always had vague guidelines, attaching legal significance to an abstract event, adhering to a metaphysical standard that deems an inventor's 'moment of conception' the badge of inventorship.").

A. CONCEPTION IN THE SOLE INVENTOR CONTEXT

Inventorship requires two elements: (1) conception and (2) reduction to practice.²³ However, conception is the more determinative of the two criteria when evaluating inventorship disputes.²⁴ Conception involves the assembly of a mental concept or image of the specific invention: “the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.”²⁵ The Federal Circuit, recognizing the ambiguity of this definition, has acknowledged that there is no specific, bright-line point at which an inventor’s idea achieves the requisite conception.²⁶ Rather, the court has stated that “conception is complete . . . when the idea is so clearly defined in the inventor’s mind that only ordinary skill would be necessary to reduce the invention to practice, without extensive research or experimentation.”²⁷ The inventor must have “a specific, settled idea, a particular solution to the problem at hand, not just a general goal or research plan he hopes to pursue.”²⁸ As such, to establish conception an inventor must prove “possession of every feature” of a claimed invention.²⁹ However, the inventor need not show that the design “works” at the conception stage.³⁰ As can be seen from these requirements, conception is an abstract concept that often requires an inquiry into an inventor’s thought process.

Given that conception is a mental act, there is a real risk of inventors misremembering or falsely describing the ideas in their possession, especially when the validity of a patent application often rests on this question.³¹ As a result, courts require corroborating evidence to back up the putative inventor’s claims of conception.³² Typically, the necessary corroborating

23. 35 U.S.C. § 102(g) (2006).

24. *See* *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1227–28 (Fed. Cir. 1994) (“Conception is the touchstone of inventorship, the completion of the mental part of invention.”).

25. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed. Cir. 1986).

26. *Burroughs Wellcome*, 40 F.3d at 1228.

27. *Id.*

28. *Id.*

29. *Coleman v. Dines*, 754 F.2d 353, 359 (Fed. Cir. 1985).

30. *Burroughs Wellcome*, 40 F.3d at 1228 (citing *Applegate v. Scherer*, 332 F.2d 571, 573 (C.C.P.A. 1964)). Establishing the efficacy of the invention falls under the reduction to practice prong of inventorship. *Id.*

31. *See Hess v. Advanced Cardiovascular Sys.*, 106 F.3d 976, 981 (Fed. Cir. 1997) (“[There is a] temptation for even honest witnesses to reconstruct, in a manner favorable to their own position, what their state of mind may have been.” (citing *Amax Fly Ash Corp. v. United States*, 514 F.2d 1041, 1047 (Ct. Cl. 1975))).

32. *Id.*

evidence is a contemporaneous disclosure that contains sufficiently detailed information to enable one skilled in the art to make the invention.³³ Such a disclosure confirms both the fact of the design and its completeness:

The conception analysis necessarily turns on the inventor's ability to describe the invention with particularity. Until he can do so, he cannot prove possession of the complete mental picture of the invention. These rules ensure that patent rights attach only when an idea is so far developed that the inventor can point to a definite, particular invention.³⁴

Alternatively, an inventor's own reduction to practice can serve as corroborating evidence to demonstrate conception; the result of reducing an idea to practice clearly indicates the boundaries of conception and whether it fits within the claimed invention.³⁵

A conception analysis is currently critical in resolving priority disputes under the first-to-invent system of the 1952 Patent Act and § 102.³⁶ However, the America Invents Act and the switch to a first-to-file system greatly simplify priority disputes and reduce the emphasis on the question of conception.³⁷ Nonetheless, conception analysis remains an integral part of determining who the proper inventors are when research, discovery, and invention take place in a group setting.

B. JOINT INVENTORSHIP

The statutory definition of a joint invention requires that “when an invention is made by two or more persons jointly, they shall apply for a patent jointly.”³⁸ Although on its face this definition appears to provide a deferential standard for who may be included on the patent application, in fact courts impose strict criteria on who constitutes a “true inventor”—simply being a member of a research or inventing team is insufficient.³⁹ Moreover, failing to accurately name the true inventors (nonjoinder) or

33. *Burroughs Wellcome*, 40 F.3d at 1228.

34. *Id.*

35. *Id.* at 1228–29. A discussion of the timing implications associated with corroboration through reduction to practice and the changes that accompany the America Invents Act is beyond the scope of this Note. However, where the process of reducing an idea to practice yields new, unexpected results, prior conception will be deemed “incomplete.” *See id.* at 1229.

36. *See* 35 U.S.C. § 102 (2006).

37. *See* America Invents Act, Pub. L. No. 112-29, § 3(b)(1), § 102, 125 Stat. 284, 285–87 (2011).

38. 35 U.S.C. § 116.

39. *See, e.g., Univ. of Colo. Found. Inc. v. Am. Cyanamid Co.*, 105 F. Supp. 2d 1164, 1175 (D. Colo. 2000); *Agawam Co. v. Jordan*, 74 U.S. 583, 602 (1869).

naming persons who are not true inventors (misjoinder) can invalidate the patent.⁴⁰ The limitations on those who appropriately may be named on a patent stems from the underlying goals of the patent system and an awareness of the value of the exclusive rights that are granted to patent holders as reward for innovation.⁴¹ As Donald Chisum, a leading commentator on patent law, explains:

[I]t would be morally offensive to allow one to harvest what another has sown. The requirement bars a patent even if the true inventor does not complain or if the true inventor is not known, as, for example, when a person discovers and imports for the first time into the United States a device in common use in a foreign country. The originality requirement limits patent monopolies to those who actually expend inventive effort successfully.⁴²

Although it is clear that only a true inventor may be named on the patent, courts often face the challenging task of ascertaining who are the true inventors. Prior to its amendment in 1984, § 116 addressed joint inventorship⁴³ but “did little more than acknowledge the occurrence of joint invention and provide procedures for jointly applying for patent and for correcting innocent errors in naming inventors.”⁴⁴ Despite the lack of a clear statutory definition, the general rule—even before the enactment of the 1952

40. 35 U.S.C. §§ 102(f), 256. *See infra* Section I.C.

41. *See* U.S. CONST. art. I, § 8, cl. 8 (empowering Congress “to promote the Progress of Science and useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries”).

42. 1-2 DONALD CHISUM, CHISUM ON PATENTS § 2.01 (2008).

43. 35 U.S.C. § 116 (1982). The original version of § 116 provided:

When an invention is made by two or more persons jointly, they shall apply for patent jointly and each sign the application and make the required oath

If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself and the omitted inventor

Whenever through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application, and such error arose without any deceptive intention on his part, the Commissioner may permit the application to be amended accordingly, under such terms as he prescribes.

Id.

44. *See* Fasse, *supra* note 2, at 162.

Patent Act—was that, to be a joint invention, the claimed “inventors” had to (1) *work together* and (2) *jointly conceive* of the invention.⁴⁵

As discussed in Section I.A, conception is a hazy notion even in the context of a sole inventor.⁴⁶ Understandably, courts have struggled to reach a consensus as to how multiple parties may contribute to conception of a single invention.⁴⁷ In the watershed case of *Monsanto Co. v. Kamp*,⁴⁸ the district court refined the definition of joint inventorship in an interference proceeding:

A joint invention is the product of collaboration of the inventive endeavors of two or more persons working toward the same end and producing an invention by their aggregate efforts. To constitute a joint invention, it is necessary that each of the inventors work on the same subject matter and make some contribution to the inventive thought and to the final result. Each needs to perform but a part of the task if an invention emerges from all of the steps taken together. It is not necessary that the entire inventive concept should occur to each of the joint inventors, or that the two should physically work on the project together. One may take a step at one time, the other an approach at different times. One may do more of the experimental work while the other makes suggestions from time to time. The fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another, does not detract from the fact that the invention is joint, if each makes some original contribution, though partial, to the final solution of the problem.⁴⁹

In *Monsanto*, the court attempted to place some upper boundaries on the doctrine of joint inventorship and provided specific negative criteria for what was not required to constitute a joint invention.⁵⁰ Subsequently, the court in *SAB Industri AB v. Bendix Corp.* further clarified that joint inventors need not “have combined their efforts as to each claim in the patent.”⁵¹ In other

45. See 1 W. ROBINSON, THE LAW OF PATENTS FOR USEFUL INVENTIONS § 396 (1890) (“Only where the same single, unitary idea of means is the product of two or more minds, working *pari passu*, and in communication with each other, is the conception truly joint and the result a joint invention.”).

46. See *infra* Section I.A.

47. See *supra* note 22.

48. *Monsanto Co. v. Kamp*, 269 F. Supp. 818 (D.D.C. 1967).

49. *Id.* at 824.

50. *Id.*

51. *SAB Industri AB v. Bendix Corp.*, 199 U.S.P.Q. 95 (E.D. Va. 1978). This decision rebuked the “all claims rule” used by several courts to evaluate joint inventorship claims. See Fasse, *supra* note 2, at 178 (explaining that the “all claims rule” was the “biggest hindrance to team research efforts under [the original] section 116”).

words, joint inventors did not need to contribute to every aspect of the claimed invention.

In 1984, Congress made several significant amendments to the Patent Act of 1952, including the definition of joint inventorship in § 116:⁵²

When an invention is made by two or more persons jointly, they shall apply for a patent jointly and each make the required oath, except as otherwise provided in this title. Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.⁵³

This new language directly codified the doctrines adopted by *Monsanto* and *SAB Industri*.⁵⁴ However, Congress still relied on only negative criteria in defining joint inventorship, saying what was *not required* to satisfy the statute.⁵⁵ Doing so effectively “lowered the bar for joint inventorship status but did not clarify any of the inherent uncertainty in joint inventorship law.”⁵⁶ The relatively new Federal Circuit took up this task and attempted to describe (1) the requisite collaborative relationship among the joint inventors; and (2) the minimum required contributions of each inventor to the invention’s conception, in light of the amended § 116 for joint inventorship.⁵⁷

1. *Collaboration and Communication*

The analysis for joint inventorship first requires that there must be some degree of interaction between the joint inventors and that they are working toward a common goal.⁵⁸ Although § 116 states that joint inventors may exist even though “they did not physically work together or at the same time,”⁵⁹

52. Patent Law Amendments Act of 1984, Pub. L. No. 98-622, § 104(a), 98 Stat. 3383, 3384–85.

53. 35 U.S.C. § 116 (2006).

54. The legislative history for § 116 expressly named *Monsanto* and *SAB Industri* as the motivating cases behind the specific criteria. Section-by-Section Analysis, 130 Cong. Rec. 28,069, 28,071 (1984).

55. See Fasse, *supra* note 2, at 177, n.136. Fasse explains that the negative criteria of § 116 “only put upper bounds on what the courts can require of joint inventors.” *Id.* This decision to exclude positive criteria “fetter[ed] the courts less drastically” and allowed them to develop the lower bounds on their own. *Id.*

56. Matt, *supra* note 8, at 246.

57. See Fasse, *supra* note 2, at 160–61; *supra* note 45 and accompanying text.

58. See ROBINSON, *supra* note 45 (noting that that joint inventors must be “in communication” with one another).

59. 35 U.S.C. § 116 (2006).

this requirement does not obviate the collaboration requirement.⁶⁰ Rather, it acknowledges the realities of the modern research and development process that takes place in corporations, universities, or other similar institutions.⁶¹

In *Kimberly-Clark Corp. v. Procter & Gamble Distributing Co.* the Federal Circuit addressed this question of the minimum requirements of collaboration.⁶² Kimberly-Clark asserted that three of its employees were joint inventors so that its patent application for a type of diaper (which ultimately incorporated contributions from each of the employees) would benefit from an earlier filing date.⁶³ However, each employee worked independently and was unaware of the others' research.⁶⁴ Therefore, the court held that Kimberly-Clark's invention was not a joint invention because it lacked any "quantum of collaboration or connection" between the named inventors.⁶⁵ Although the contributions of each of the named inventors were ultimately compiled into the final invention, the court could not overlook that the employees operated separately from one another:

What is clear is that the statutory word "jointly" is not mere surplusage. For persons to be joint inventors under § 116, there must be some element of joint behavior, such as collaboration or working under common direction, one inventor seeing a relevant report and building upon it or hearing another's suggestion at a meeting. Here there was nothing of that nature. Individuals cannot be joint inventors if they are completely ignorant of what each other has done until years after their individual independent efforts.

60. See CHISUM, *supra* note 42, § 2.02(2)(f) ("There is no evidence Congress intended to discard the fundamental requirement that there be some form of collaboration between the joint inventors in the development of the final invention.>").

61. See Matt, *supra* note 8, at 254 (citing legislative history). Matt explains the context for Congress's low collaboration bar:

[R]esearch teams . . . are often large in number and develop products that may take years to mature. As a consequence, researchers may work on a particular project over a long period of time, sometimes sporadically, and each team member's quantitative contributions to the final invention may vary. With the 1984 amendments, Congress attempted to encourage team research by codifying certain rules existing in the case law and thereby preventing courts from moving in an unfavorable direction.

Id.

62. *Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co.*, 973 F.2d 911 (Fed. Cir. 1992).

63. *Id.* at 912–913.

64. *Id.* at 913.

65. *Id.* at 917.

They cannot be totally independent of each other and be joint inventors.⁶⁶

The *Kimberly-Clark* statement on the minimal requirements of collaboration represents the standard in joint inventorship case law.⁶⁷ Although it sets a low bar—only requiring some slight form of communication and awareness of the other co-inventors—*Kimberly-Clark* demonstrates that the amended § 116 did not eliminate the collaboration requirement for joint inventorship, and it illustrates the doctrine's application in a contemporary institutional research setting.⁶⁸

2. *Contribution to Conception*

Because the collaboration requirement is not often in dispute, most joint inventorship debates turn on the question of whether each contributing inventor offered enough to the conception of the invention to be deemed a joint inventor for purposes of the resulting patent.⁶⁹ Just as conception is the “touchstone of inventorship”⁷⁰ in the sole inventor context, the collaborators' individual contributions to the entire conception often determine who comprise the true inventors.⁷¹ As § 116 states, joint inventors need not contribute equally or make contributions to every claim listed in the patent.⁷² However, Federal Circuit case law suggests that joint inventors must make a material, “not insignificant” contribution to the overall conception of the invention but cautions that contribution should be evaluated using a qualitative holistic approach rather than a quantitative formulaic rubric.⁷³

66. *Id.*

67. *See, e.g.*, Fasse, *supra* note 2, at 191 (“[T]he minimum *required* collaboration is some form of communication between two joint inventors.” (emphasis added)); Matt, *supra* note 8, at 253–254 (“If two parties are wholly unaware of each other’s work . . . there can be no collaboration and no joint invention.”).

68. In *Monsanto*, the court specifically identified the collaborative relationship necessary for joint inventorship. *Monsanto*, 269 F. Supp. 818, 824 (D. D.C. 1967) (requiring “two or more persons working toward the same end and producing an invention by their aggregate efforts”). While this language is often overlooked because it was not explicitly incorporated into § 116, the reference to *Monsanto* in the legislative history suggests collaboration was intended to remain a requirement. *See supra* note 54; Fasse, *supra* note 2, at 185.

69. *See* *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1227–28 (Fed. Cir. 1994).

70. *Id.*; *see supra* Section I.A.

71. *See Burroughs Wellcome*, 40 F.3d at 1227–28.

72. 35 U.S.C. § 116 (2006) (“Inventors may apply for a patent jointly even though . . . (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.”).

73. *See* *Fina Oil & Chemical Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997) (“[A]n individual must make a contribution to the conception of the claimed invention that is not

Thus, there is no bright-line guidance as to when a putative inventor's contribution is sufficient to qualify him as a joint inventor on the claimed invention.⁷⁴ Donald Chisum compiled a brief catalog of contributions that courts have found to be insufficient to satisfy inventorship:⁷⁵

- Suggesting a desired end or result, with no suggestion of means⁷⁶
- Following the instructions of the person or persons who conceive the solution without offering any “inventive act”⁷⁷
- Acting to reduce to practice or demonstrate the efficacy of an already completely conceived invention⁷⁸
- Providing general information on design elements or the state of the art, with no knowledge of the ultimate goal or idea⁷⁹

insignificant *in quality*, when that contribution is measured against the dimension of the full invention.” (emphasis added)).

74. *See id.* at 1473 (“[T]he determination of whether a person is a joint inventor is fact specific, and no bright-line standard will suffice in every case.”).

75. *See* CHISUM, *supra* note 42, § 2.02.

76. *See, e.g.,* Ethicon, Inc. v. U.S. Surgical Corp. (*Ethicon I*), 937 F. Supp. 1015, 1035 (D. Conn. 1996), *aff'd*, 135 F.3d 1456 (Fed. Cir. 1998) (“An entrepreneur’s request to another to create a product that will fulfill a certain function is not conception—even if the entrepreneur supplies continuous input on the acceptability of offered products.”); Univ. of Cal. v. Synbiotics Corp., 29 U.S.P.Q. 2d 1463 (S.D. Cal. 1993); S.C. Johnson & Son, Inc. v. Carter-Wallace, Inc., 225 U.S.P.Q. 1022, 1038 (S.D.N.Y. 1985), *aff’d in part, vacated in part, and remanded*, 781 F.2d 198 (Fed. Cir. 1986) (“Suggestions by others that do not reveal the entire invention and how to achieve it do not negate invention by the one who carries the project forward to its successful conclusion.”).

77. *See, e.g., Fina Oil*, 123 F.3d at 1473 (“The basic exercise of the normal skill expected of one skilled in the art, without an inventive act . . . does not make one a joint inventor.”); Sewall v. Walters, 21 F.3d 411, 416 (Fed. Cir. 1994).

78. *See, e.g.,* Chirichillo v. Prasser, 30 F. Supp. 2d 1132, 1136 (E.D. Wis. 1998) (“One does not qualify as a joint inventor by merely assisting the actual inventor after conception of the claimed invention. . . . One of ordinary skill in the art who simply reduced the inventor’s idea to practice is not necessarily a joint inventor.”); Burroughs Wellcome Co. v. Barr Labs., Inc, 40 F.3d 1223, 1230 (Fed. Cir. 1994) (“[O]ne of ordinary skill in the art who simply reduced the inventor’s idea to practice is not necessarily a joint inventor, even if the specification discloses that embodiment to satisfy the best mode requirement.”). *But see* Pannu v. Iolab Corp., 155 F.3d 1344, 1351 (Fed. Cir. 1998) (“All that is required of a joint inventor is that he or she . . . contribute in some significant manner to the conception *or reduction to practice* of the invention (emphasis added)). The court in *Pannu* failed to cite any cases or discuss the apparent inconsistency with prior holdings. Presumably, the court’s statement in *Pannu* was a careless reference to instances where reduction to practice is a necessary component of conception. *See supra* Section I.A.

79. *See, e.g.,* Ethicon, Inc. v. U.S. Surgical Corp. (*Ethicon II*), 135 F.3d 1456, 1460 (Fed. Cir. 1998) (“One who simply provides the inventor with well-known principles or explains the state of the art without ever having a firm and definite idea of the claimed combination

However, given the unique factual underpinnings of each joint inventorship dispute, cases rarely fall neatly within these doctrinal shortcuts. Commentators have suggested that the practical effect of this case-specific conception inquiry is that practitioners and researchers have a difficult time planning for and predicting the outcome of joint inventorship disputes.⁸⁰ The overarching goal of this Note is to distill patterns or trends in the Federal Circuit's doctrinal reasoning and determine if the Federal Circuit's approach to joint inventorship is as unpredictable as many commentators and practitioners maintain.⁸¹

C. CHALLENGING A PATENT AND CORRECTING INVENTORSHIP

After a patent has issued, there is a heavy presumption that the inventors named in the application are the correct inventors—that is, they are true inventors, and they are the *only* true inventors.⁸² Consequently, anyone seeking to challenge the patent on inventorship grounds must establish by clear and convincing evidence that the named inventors are incorrect and must overcome a substantial evidentiary burden.⁸³ Corroborating evidence—such as “documents, contemporaneous disclosures of information, or testimony of persons other than the alleged joint inventor confirming a putative inventor’s testimony”—is required.⁸⁴

as a whole does not qualify as a joint inventor.”); *Hess v. Advanced Cardiovascular Sys.*, 106 F.3d 976, 981 (Fed. Cir. 1997) (holding that “explaining to the inventors what the then state of the art was and supplying a product to them for use in their invention” was not a sufficient contribution to conception).

80. See Andrew B. Dzeguze, *Avoiding the “Fifth Beatle” Syndrome: Practical Solutions to Minimizing Joint Inventorship Exposure*, 6 J. MARSHALL REV. INTELL. PROP. L. 645, 646 (2007) (“[T]here remains a fundamental uncertainty as to what can be an inventive contribution. . . . [T]he variety of situations that can result in co-inventorship disputes should give every patent practitioner pause.”).

81. See *infra* Part II.

82. See *Hess*, 106 F.3d at 980; *Gemstar-TV Guide Int’l, Inc. v. ITC*, 383 F.3d 1352, 1381 (Fed. Cir. 2004) (“Because a patent is presumed valid under 35 U.S.C. § 282, there follows a presumption that the named inventors on a patent are the true and only inventors.”).

83. See CHISUM, *supra* note 42, § 2.03(4). Chisum explains that the “clear and convincing evidence” standard applied to claims of patent invalidity predates the Federal Circuit. *Id.* (citing *Acme Highway Prod. Corp. v. D.S. Brown Co.*, 431 F.2d 1074 (6th Cir. 1970)). However, the Federal Circuit adopted the standard in the context of claims to correct named inventors under § 256. CHISUM, *supra* note 42, § 2.03(4).

84. See *Matt*, *supra* note 8, at 260 (“This rule [requiring corroboration] follows from the understanding that the temptation is too great for even honest witnesses to reconstruct events and their states of mind in a way favorable to themselves.” (citing *Hess*, 106 F.3d at 980)).

Typically, putative inventors and others seeking to correct the named inventors on a patent turn to § 256.⁸⁵

Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Director may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Director shall issue a certificate accordingly.⁸⁶

Under this section, putative inventors may bring claims that they should be added to a patent.⁸⁷ Further, § 256 may be used as a powerful defense to infringement.⁸⁸ Although improperly naming inventors on a patent is not fatal to the patent's validity—inventorship can be corrected—defendants can obtain retroactive licenses from the previously unnamed inventors and then seek to add the inventor through § 256, thus avoiding liability.⁸⁹ Additionally, “all co-owners [of a patent] must ordinarily consent to join as plaintiffs in an infringement suit.”⁹⁰ Because ownership stems from inventorship—in the absence of a contrary agreement⁹¹—unnamed inventors can effectively “impede the other co-owner’s ability to sue infringers by refusing to voluntarily join in such a suit.”⁹² Finally, forcing a patent holder to correct the named inventors is an additional judicial proceeding that potential infringers and putative inventors may use as leverage in negotiations.⁹³ Therefore, the

85. 35 U.S.C. § 256 (2006).

86. *Id.* Under the America Invents Act, § 256 was revised to remove “and such error arose without any deceptive intention.” Pub. L. 112-29, § 20(f), 125 Stat. 284, 334 (2011). Thus, under the modern statute, improper inventorship may be corrected despite the presence of “deceptive intent” or bad faith.

87. 35 U.S.C. § 256.

88. *See, e.g., Ethicon II*, 135 F.3d 1456, 1459–60 (Fed. Cir. 1998); *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1350 (Fed. Cir. 1998).

89. *See Ethicon II*, 135 F.3d at 1459–60.

90. *Id.* at 1468.

91. *Id.* at 1466 (“[A] joint inventor as to even one claim enjoys a presumption of ownership in the entire patent.”).

92. *Id.* at 1468 (citing *Schering Corp. & Roussel-Uclaf S.A. v. Zeneca, Inc.*, 104 F.3d 341, 345 (Fed. Cir. 1997)).

93. *See Pannu*, 155 F.3d at 1350 (“[A] patent with improper inventorship does not avoid invalidation simply because it *might* be corrected under section 256. Rather, the patentee

opportunity for patent holders to correct errors in the named inventors does not prevent potential infringers from avoiding liability; thus, challenging inventorship has become a commonplace defensive tactic in patent litigation.⁹⁴

II. EMPIRICAL STUDY OF JOINT INVENTORSHIP CASES AT THE FEDERAL CIRCUIT

This Part presents the findings of the empirical study, but it is important first to describe briefly how the results were obtained.⁹⁵ An original dataset was created which compiled each of the Federal Circuit's published opinions on joint inventorship. These cases were located by first using a deliberately overbroad search query in Westlaw Next for all Federal Circuit cases mentioning "joint inventorship."⁹⁶ From this universe of over-inclusive samples, the dataset was culled to remove cases where joint inventorship analysis was not a significant part of the rule of decision.⁹⁷ Sixty-five cases remained and made up the final dataset.⁹⁸

In addition, because this study uses the court's jurisprudence itself as the relevant data, the sixty-five cases needed to be manually parsed and categorized in order to evaluate trends and judicial approaches to the very specific and highly technical fact patterns that comprise most of the court's holdings in this area of the law. While this method permits subjectivity in the

must claim entitlement to relief under the statute and the court must give the patentee an opportunity to correct the inventorship.”)

94. See *supra* note 8 and accompanying text. Prior to the enactment of § 256, errors in inventorship were indeed fatal to a patent's validity under § 102(f). See *Pannu*, 155 F.3d at 1349–50 (“[S]ection 102(f) . . . makes the naming of the correct inventor or inventors a condition of patentability; failure to name them renders a patent invalid.”). Section 256 serves as a “savings provision” to “ameliorat[e]” this harsh result in many cases. *Id.*

95. The foundational design for this study was drawn from previously published articles on empirical analyses involving patent law. See Christopher B. Seaman, *Willful Patent Infringement and Enhanced Damages after In Re Seagate: An Empirical Study*, 97 IOWA L. REV. 417 (2012) (empirical study of willful infringement claims in federal district courts); R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105 (2004) (empirical study of claim construction cases in the Federal Circuit).

96. These searches were overbroad to ensure no cases went uncollected. The following query was used: patent AND (joint /5 inventor!) & DA(aft 12-31-1981). The search produced a list of 122 cases.

97. For example many of the cases that were included within the original search parameter actually involved other patent rules. The most frequent categories of eliminated cases involved: claim construction (19), priority (11), and prior art (8).

98. The cases were cross-referenced against well-known sources to confirm no cases were forgotten. See CHISUM, *supra* note 42, §§ 2.01–2.04; 3 R. CARL MOY, *MOY'S WALKER ON PATENTS* § 10 (4th ed. 2010).

classification of the cases, it was the best way to understand the evolution of the law, which cannot be adequately described merely by objective WestLaw classifications or hornbook summaries.

Section II.A presents a historical overview of the evolution of the joint inventorship jurisprudence. Section II.B presents data from the empirical analysis quantifying the court's shifting approach.

A. TIMELINE OF FEDERAL CIRCUIT JOINT INVENTORSHIP CASES

A review of all the relevant cases reveals that the development of the joint inventorship doctrine occurred in three stages: (1) an early period from just prior to the 1984 amendments up until 1994, with the foundational case of *Burroughs Wellcome Co. v. Barr Laboratories, Inc.*;⁹⁹ (2) a developmental period from approximately 1997 to 2003; and (3) a refining period from 2003 to the present. These stages can be understood as a pendulum-like series of responses (or corrections) to the inequitable application of rules of decision that might withhold credit from true inventors or reward perceived free riders.

1. *Early Period: Pre-1984 Amendments and the Early Years of the Federal Circuit*

Originally, the Patent Act's joint inventorship requirements did not offer any help for figuring out those who qualified as joint inventors.¹⁰⁰ The 1952 Act simply stated that "when an invention is made by two or more persons jointly, they shall apply for a patent jointly and each sign the application and make the required oath, except as otherwise provided in this title."¹⁰¹ The earliest applications of joint inventorship rules were vague:

The exact parameters of what constitutes joint inventorship are quite difficult to define Perhaps one need not be able to point to a specific component as one's sole idea, but one must be able to say that without his contribution to the final conception it would have been less—less efficient, less simple, less economical, less something of benefit. . . . This situation does make it difficult to say . . . with real certainty, whether or not a given person is a joint inventor in a given case.¹⁰²

99. *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994).

100. *See Fasse, supra* note 2, at 162.

101. 35 U.S.C. § 116 (1952).

102. *Mueller Brass Co. v. Reading Indus., Inc.*, 352 F. Supp. 1357, 1272–73 (E.D. Pa. 1972).

Or,

The conception of the entire device may be due to one, but if the other makes suggestions of practical value, which assisted in working out the main idea and making it operative, or contributes an independent part the entire invention, which is united with the parts produced by the other and creates the whole, he is a joint inventor, even though his contribution be of comparatively minor importance and merely the application of an old idea.¹⁰³

This historically nebulous case law, combined with the “all claims rule,” created an almost impossible environment for institutional research.¹⁰⁴

The facts of *Eli Lilly & Co. v. Premo Pharmaceutical Laboratories, Inc.*¹⁰⁵ illustrate the problems with the joint inventorship definition prior to the 1984 amendments. In that case two scientists synthesized a compound hoping “it would be an effective oral antibiotic.”¹⁰⁶ A third scientist tested the compound and found that it was effective for different reasons than the original two scientists had hypothesized, but the patent listed only the original two researchers.¹⁰⁷ When an accused infringer challenged the patent for nonjoinder, the Third Circuit held that the third scientist was not a joint

103. *De Laski & Thropp Circular Woven Tire Co. v. William R. Thropp & Sons Co.*, 218 F. 458, 464 (D. N.J. 1914).

104. In many cases the federal courts denied joint inventors the right to file a single patent with multiple claims if all the inventors did not contribute to each and every claim. *See AMP, Inc. v. Fujitsu Microelects.*, 853 F. Supp. 808, 817 (M.D. Pa. 1994); *see also supra* note 51 and accompanying text. Fasse explains:

[The all claims] rule required named joint inventors to have contributed jointly to every aspect of an invention and every claim of a resulting patent. . . .

Complying with this requirement is sometimes difficult and at times impossible.

Scientists or researchers in an organization often work on a particular aspect or embodiment of the invention, or on only a portion of the invention, while others work on different aspects, embodiments or portions. Scientists are continually added to a research team, while other scientists leave the team. Concepts and development plans generated through brainstorming cannot always be accurately attributed.

Fasse, *supra* note 2, at 178 (quoting *Hearings on S. 1535 and S. 1841 Before the Subcomm. on Patents, Copyrights and Trademarks of the S. Comm. on the Judiciary*, 98th Cong., 2d Sess. 28 (1984) (testimony of Gerald J. Mossinghoff, Assistant Secretary and Comm’r of Patents and Trademark)).

105. *Eli Lilly & Co. v. Premo Pharm. Labs., Inc.*, 630 F.2d 120 (3rd Cir. 1980).

106. *Id.* at 122–23.

107. *Id.*

inventor even though he discovered the compound's previously unknown traits.¹⁰⁸ The court said:

It is without question that the named inventors . . . were the only persons who performed the synthesis that created the patented product. In the words of [Section 116, the drug] was “made by” the two named inventors, not by the biochemist who first noted that the organic chemists’ predictions had been realized.¹⁰⁹

Thus, the third inventor, who had actually discovered the key attributes of the claimed invention, was left off of the patent. This result seems wrong, and after the 1984 amendment of § 116, it is no longer good law.¹¹⁰

After the passage of the 1984 amendments, the Federal Circuit did not address the issue of joint inventorship directly until 1993 with *Kimberly-Clark*, where it interpreted the minimum degree of collaboration required of joint inventions.¹¹¹ In 1994, however, the Federal Circuit took an important step with *Burroughs Wellcome* and defined the requisite contributions for joint inventors by merging joint inventorship doctrine with traditional conception analysis.¹¹² Burroughs Wellcome Co.’s (“BW”) research focused on developing a treatment for HIV.¹¹³ Tests performed at BW’s facilities indicated that a compound, AZT, was a promising antiviral, and BW drafted a patent application to use AZT to treat HIV patients.¹¹⁴ Before submitting the application, BW sent an AZT sample to the National Institutes of Health (“NIH”), where scientists had developed a test to measure the effectiveness of drugs against active HIV.¹¹⁵ When the NIH informed BW that AZT was

108. *Id.* at 135.

109. *Id.*

110. The Third Circuit’s refusal to add the putative inventor was clearly influenced by its view of the putative inventor’s positional status in relation to the original inventors—the biochemist performed a test revealing something new, as opposed to synthesizing the compound. *Id.* However, as the amended § 116 confirms, the relative size or type of the contributions to the invention is not an index for joint inventorship. *See* 35 U.S.C. § 116 (2006); *see also supra* Section I.B.

111. *Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co.*, 973 F.2d 911 (Fed. Cir. 1992). *See supra* Section I.B.1. Three other cases, decided between 1984 and 1993, were essentially priority disputes, which did not materially advance the law of joint inventorship. *See Coleman v. Dines*, 754 F.2d 353 (Fed. Cir. 1985); *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367 (Fed. Cir. 1986); *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878 (Fed. Cir. 1988).

112. *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223 (Fed. Cir. 1994). *See supra* Section I.A.

113. *Id.* at 1225.

114. *Id.*

115. *Id.*

indeed effective against HIV, the company completed its registration for several patents pertaining to the use of AZT to treat patients with HIV.¹¹⁶

After BW was granted its patents, the NIH, considering itself also to be a joint inventor, extended a nonexclusive license to Barr Laboratories (“Barr”) to market its own version of AZT.¹¹⁷ BW filed a patent infringement lawsuit, and Barr challenged the validity of BW’s patents because they failed to name the NIH scientists as joint inventors.¹¹⁸ The Federal Circuit ruled that BW had fully conceived of AZT as a treatment for HIV, even before the NIH tests, and, therefore, the NIH scientists were not joint inventors as a matter of law.¹¹⁹

According to the legal definition of inventorship, the court explained, it is irrelevant that BW had no affirmative evidence of AZT’s effectiveness against HIV until it received the NIH test results.¹²⁰ Conception, the “touchstone of inventorship,”¹²¹ requires only that the inventor have “an idea that was definite and permanent enough” and that nothing but “ordinary skill” would be necessary to reduce the invention to practice, and it would not require extensive research or experimentation.¹²² Discovery that an invention actually works is part of its reduction to practice and, therefore, is not necessary for conception to be complete.¹²³ In this case, the Federal Circuit determined that the NIH’s contributions went merely to reduction to practice and not to the conception of the invention.¹²⁴

The Federal Circuit’s decision is fully consistent with the conventional legal definition of “conception” in the single-inventor context that developed in a line of cases dating back to the 1870s.¹²⁵ Thus, *Burroughs Wellcome* laid out the basic framework of the law of joint invention with the traditional conception analysis at its core.¹²⁶ This formulation is still the law and remains a crucial factor in evaluating the contributions of putative inventors,¹²⁷

116. *Id.* at 1225–26.

117. *Id.* at 1226–27.

118. *Id.*

119. *Id.* at 1230–31.

120. *Id.*

121. *Id.* at 1228.

122. *Id.*

123. *Id.*

124. *Id.* at 1230–31.

125. *See* CHISUM, *supra* note 42, § 10.04[1].

126. *See id.* § 2.02[5].

127. *See, e.g.,* *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466 (Fed. Cir. 1997) (holding that conception of a chemical compound requires knowledge of both the specific chemical structure of the compound and an operative method of making it); *Falana v. Kent State Univ.*, 669 F.3d 1349 (Fed. Cir. 2012) (finding the putative inventor who envisioned a genus

although, as Section II.A.2 illustrates, the idea was refined considerably in the following years.¹²⁸

2. *Developmental Period: Enabling Unnamed Inventors*

While *Burroughs Wellcome* was the first case to frame joint inventorship in terms of conception, it did little to specify how inventors actually contribute to conception.¹²⁹ Over the decade following *Burroughs Wellcome*, the Federal Circuit made significant strides to unify and explain the parameters of what minimum contributions to conception are required for joint inventorship.

In *Fina Oil & Chemical Co. v. Ewen*, Judge Clevenger clearly articulated these formulations, which still serve as the doctrinal basis for the court's current joint inventorship decisions.¹³⁰ The case is unusual in that it features a misjoinder problem: Dr. Abbas Razavi claimed that Dr. John Ewen was not a true inventor, even though Ewen was listed as an inventor on the patent.¹³¹ The court offered three important additions to the *Burroughs Wellcome* doctrine: (1) The qualitative value of contribution is the focal point;¹³² (2) conception is not the only test of joint inventorship;¹³³ and (3) the contestant has a heavy burden of proof to overcome the strong presumption of validity afforded by issued patents.¹³⁴

In 1998—the following year—the Federal Circuit applied its *Fina* developments to two important cases, which are responsible for much of the confusion in joint inventorship law, especially because of their continuing reference and citation. These two cases, *Ethicon, Inc. v. United States Surgical*

of compounds and contributed the method of making them had contributed to the conception of the invention).

128. See *infra* Section II.A.2.

129. In other words, *Burroughs Wellcome* did not specifically articulate what activity related to conception, as opposed to reduction to practice or mere assistance.

130. *Fina*, 123 F.3d 1466.

131. *Id.* at 1468–69. Cases of non-joinder are much more typical, as an unnamed putative inventor is often able to make a stronger case than an outside third party (like Razavi) attempting to remove an already named inventor.

132. *Id.* at 1473 (“[T]o be a joint inventor, an individual must make a contribution to the conception . . . that is not insignificant in quality, when that contribution is measured against the dimension of the full invention.”).

133. *Id.* (“Conception [alone] cannot be used . . . to show that because the first person did not conceive or reduce to practice the entire claimed invention, he or she did not at least contribute in some significant way to the ultimate conception.”).

134. *Id.* at 1474 (“Dr. Razavi did not meet his burden of establishing undisputed facts to show that Dr. Ewen made no contribution to the conception of the invention . . . or a contribution that was qualitatively insignificant.”).

*Corp.*¹³⁵ and *Pannu v. Iolab Corp.*,¹³⁶ set the high-water mark in the Federal Circuit's liberalization of joint inventorship law after the 1984 amendments.

In *Ethicon* an inventorship dispute arose in a patent infringement suit involving an endoscopic surgical tool known as a trocar.¹³⁷ The patent-in-suit listed Dr. Yoon as the sole inventor of a new trocar design with safety features.¹³⁸ As the exclusive licensee of this patent, Ethicon sued U.S. Surgical for infringement.¹³⁹ Four years into the litigation, U.S. Surgical discovered that Young Jae Choi, a technician, had worked with Yoon on several projects, including the patented trocar.¹⁴⁰ U.S. Surgical paid Choi to assist in its defense against Ethicon's infringement action, and Choi granted U.S. Surgical a retroactive license to use patented technology that he allegedly helped to invent.¹⁴¹ U.S. Surgical moved to correct the inventorship of the patent-in-suit to include Choi as a joint inventor, and the district court granted this motion after an extensive hearing.¹⁴²

The Federal Circuit affirmed the district court's ruling that Choi was a joint inventor of certain claims of the patent-in-suit based upon a "rule of reason" analysis that the record contained sufficient corroborating evidence of joint inventorship.¹⁴³ The ramifications were clear: each inventor "needs to perform only a part of the task which produces the invention."¹⁴⁴ The Federal Circuit also upheld the dismissal of the lawsuit because all patent co-owners must be joined to bring an infringement lawsuit.¹⁴⁵ In a stinging dissent, Judge Newman challenged the propriety of construing § 116 to vest a joint inventor of certain claims of a patent with full ownership, which amounts to "an undivided interest in the entire patent" carrying "an unencumbered and unfettered right to alienate an interest in the entire patent."¹⁴⁶ In particular, she noted with respect to the amendment to § 116 that:

135. *Ethicon II*, 135 F.3d 1456 (Fed. Cir. 1998).

136. *Pannu v. Iolab Corp.*, 155 F.3d 1344 (Fed. Cir. 1998).

137. *Ethicon II*, 135 F.3d at 1459.

138. *Id.*

139. *Id.*

140. *Id.*

141. *Id.*

142. *Id.* at 1459–60.

143. *Id.* at 1461 ("Under this [rule of reason] analysis, an evaluation of *all* pertinent evidence must be made so that a sound determination of the credibility of the alleged inventor's story may be reached.")

144. *Id.* at 1460.

145. *Id.* at 1468 ("Ethicon's complaint lacks the participation of a co-owner of the patent [Choi]. Accordingly, this court must order dismissal of this suit.")

146. *Id.* at 1471–72 (Newman, J. dissenting).

This amendment did not also deal with the laws of patent ownership, and did not automatically convey ownership of the entire patent to everyone who could now be named as an inventor, whatever the contribution. The amendment simply permitted persons to be named on the patent document, whether as minor contributors to a subordinate embodiment, or full partners in the creation and development of the invention. The ownership relationships among the persons who, under § 116, could now be recognized as contributors to the invention, is irrelevant to the purpose of the amendment of § 116, and to its consequences. Section 116 has nothing to do with patent ownership.¹⁴⁷

While Judge Newman objected to it, the majority simply followed *Burroughs Wellcome* and *Fina* to their logical conclusion. The result was the “*Ethicon* rule”: § 116 accords co-ownership rights in the entire patent based on joint inventorship of only one claim.¹⁴⁸

In *Pannu*, later that same year, the accused infringer claimed sole inventorship and ownership of the patent at issue.¹⁴⁹ Similar to the facts of *Ethicon*, *Pannu* featured an eye surgeon, Pannu, who invented a complex intraocular device to be inserted into human eyes after cataract removal.¹⁵⁰ Pannu took the advice of a third party, Heyer-Schulte (“HS”), in order to improve his invention.¹⁵¹ HS suggested fashioning Pannu’s particular intraocular lens as a one-piece unit to reduce the chance of the lens “snagging.”¹⁵²

An alleged infringer, Iolab, asserted that Pannu’s patent was invalid because it did not name HS on the patent.¹⁵³ Rather than merely arguing for joint inventorship for HS and Pannu, Iolab also asserted that HS was the sole inventor, claiming that Pannu’s contributions were not patentable and that HS’s one-piece design was the only novel aspect of the described invention.¹⁵⁴ The Federal Circuit held that Iolab’s claim was substantial enough to require that the matter be remanded to the trial court to determine HS’s joint inventor status; however, the court rejected Iolab’s sole

147. *Id.* at 1470 (Newman, J. dissenting).

148. *See, e.g.*, Dale L. Carlson & James R. Barney, *The Division of Patent Rights among Joint Inventors: Public Policy Concerns after Ethicon v. U.S. Surgical*, 39 IDEA 251, 259 (1999); Matt, *supra* note 8, at 262–65.

149. *Pannu v. Iolab Corp.*, 155 F.3d 1344 (Fed. Cir. 1998).

150. *Id.* at 1346.

151. *Id.*

152. *Id.*

153. *Id.* at 1351.

154. *Id.* *See* 35 U.S.C. § 102(b) (2006) (describing the conditions for novelty and patentability).

inventorship argument.¹⁵⁵ The interesting point is that the Federal Circuit held as a matter of law that Pannu was entitled to at least inventorship status, whereas it remanded the case to the district court to determine the status of HS.¹⁵⁶

The holding requiring the inclusion of Pannu as a matter of law demonstrates the Federal Circuit's willingness to take fairness into account in its joint inventorship decisions.¹⁵⁷ Coming so soon after *Ethicon*, *Pannu* suggests that the court was willing to pull back from *Ethicon* and will weigh the equities in cases in which a rigid application of the joint inventorship rules would yield an unfair result.¹⁵⁸

By the end of the first fifteen years of joint inventorship cases before the Federal Circuit, the standards for the addition of putative inventors had shifted considerably. From the original system—which made it nearly impossible to challenge named inventors—*Ethicon* effectively lowered the bar on contribution analysis and seemingly permitted those who deserved even some small credit to be rewarded with the full bounty of inclusion.¹⁵⁹ But, along with those new standards, the first seeds of a balancing of the equities approach had also been introduced in *Pannu*.

155. *Pannu*, 155 F.3d at 1351.

156. *Id.*

157. See Philip Konecny, *Windfall Property Rights for the Left Out Joint Inventor*, 16 SANTA CLARA COMPUTER & HIGH TECH. L.J. 141, 174 (1999)

A reasonable jury could conclude as a matter of fact that [Pannu] did not contribute significantly to the one piece construction. There [was] enough factual basis that the matter should not be decided as a matter of law. . . . In unnecessarily issuing dicta on a matter that it inadequately explored in a conclusory fashion, it is possible that the court is attempting to soften the harsh effect of the rule in *Ethicon*.

Id.

158. See *id.* at 174–75.

[I]n order to protect the patentee from the inequitable erosion of property rights that results from a successful § 256 attack, the court is changing the standard for co-inventorship. In [*Pannu*] it is attempting by dicta to ensure as a matter of law the standard for co-inventorship for the patentee is low enough that he will not be disqualified from his own invention.

Id. A year earlier, *Hess v. Advanced Cardiovascular Sys., Inc.* demonstrated an early attempt by the Federal Circuit to put the brakes on the continued liberalization of the joint inventorship doctrine. *Hess v. Advanced Cardiovascular Sys., Inc.*, 106 F.3d 976 (Fed. Cir. 1997). *Hess* held that providing information regarding the state of the art does not constitute an inventive contribution and, for essentially the first time since the 1984 amendments, expressly defined a type of contribution that did not satisfy inventorship. *Id.*

159. See *supra* note 148 and accompanying text.

3. Refining Period: Responding to Ethicon

Despite commentators' vocal critique of the holding in *Ethicon*,¹⁶⁰ it was never overruled and remains good law. However, in the years following *Ethicon*, the Federal Circuit has generated a new ameliorative framework to soften the often-harsh inequities of the *Ethicon* rule.

In 2009, almost exactly ten years after *Ethicon*, the Federal Circuit decided *Nartron Corp. v. Schukra U.S.A, Inc.*¹⁶¹ The case involved an accused infringer who defended on the grounds that an employee had been improperly excluded from the patent.¹⁶² Despite having similar facts to *Ethicon*, the Federal Circuit held that the putative inventor's contributions were insignificant.¹⁶³ The two cases are not easy to reconcile. Both turn, at least in part, on the quality of a putative inventor's contribution to at least one of the claims in the patent. The stakes in both cases are high—a third party can secure all the rights to an invention and escape an infringement claim by aligning itself with a left-out joint inventor. The different outcomes are the result of a higher standard for the “significance” of the required contribution by the Federal Circuit¹⁶⁴ and an increased awareness of the equitable positions of the parties.

The turning point can be seen in the court's reasoning in *Board of Education ex rel. Florida State University v. American BioScience, Inc.*¹⁶⁵ In that case, FSU scientists and a graduate student, Tao, were experimenting with anticancer compounds.¹⁶⁶ One of the FSU researchers—Nadizadeh—developed a unique method of synthesis for this class of compounds.¹⁶⁷ Subsequently, a pharmaceutical company hired Tao and, with his help, obtained patents on several related effective anticancer compounds.¹⁶⁸ FSU claimed that its scientists were joint inventors because of their previous collaboration with Tao and because Tao had allegedly used Nadizadeh's methodology.¹⁶⁹

160. See, e.g., Matt, *supra* note 8, at 262–65; Sung, *supra* note 7, at 436–37; Konecny, *supra* note 157, at 142–46.

161. *Nartron Corp. v. Schukra U.S.A, Inc. (Nartron II)*, 558 F.3d 1352 (Fed. Cir. 2009).

162. *Id.*

163. *Id.* at 1356.

164. This “significance” is in the sense defined by *Fina*. See *supra* Section II.A.2.

165. *Bd. of Educ. ex rel. Fla. State Univ. v. Am. BioSci., Inc.*, 333 F.3d 1330 (Fed. Cir. 2003).

166. *Id.* at 1332–37.

167. *Id.*

168. *Id.*

169. *Id.*

The court was not persuaded and discounted the FSU scientists' experimental work.¹⁷⁰ Further, the court bluntly rejected FSU's allegation that Tao used Nadizadeh's secret method:

[D]espite the fact that Nadizadeh may have developed a method of making [the compound] and other . . . derivatives, the record in the present case indicates that he did not conceive of the claimed compounds; only [Tao and his co-]inventors were in possession of both the structure of the claimed compounds and an operative method of making those compounds.¹⁷¹

The holding is unexpected in light of *Fina* and *Ethicon*. The FSU scientists should have only had to show that they contributed to the conception of the invention in some way—conception of the entire compound by any one inventor should be irrelevant as long as the team collectively conceived the claimed compound.¹⁷² Under the existing law, it would not have been a stretch for the Federal Circuit to add the FSU scientists, given that they apparently made “not insignificant” contributions.¹⁷³ The court's decision thus pulled back from the liberal rules of *Fina* and *Ethicon* and enhanced the standard for inventive contribution.

More recently, the Federal Circuit once again examined joint inventorship requirements in *Falana v. Kent State University*.¹⁷⁴ The plaintiff, Falana, was a researcher employed by Kent State.¹⁷⁵ He developed an original method of making certain compounds for use in liquid crystal displays.¹⁷⁶ After Falana left the university's employment, his former supervisor used Falana's method to synthesize a compound that he patented without naming Falana as a joint inventor.¹⁷⁷ The university interpreted *American BioScience* to dictate that, because it had not sought to patent Falana's method, and Falana

170. *Id.* at 1340 (“[G]eneral knowledge regarding the anticipated biological properties of groups of complex chemicals is insufficient to confer inventorship status with respect to claimed compounds.”).

171. *Id.* at 1342.

172. *See Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997) (“One need not alone conceive of the entire invention, for this would obviate the concept of joint inventorship. However, a joint inventor must contribute in some significant manner to the conception of the invention.”). Subsequently, the Federal Circuit clarified this point in *Vanderbilt Univ. v. ICOS Corp.*, 601 F.3d 1297 (Fed. Cir. 2010). In *Vanderbilt*, the court held “the inventors of a chemical compound need to know the structure of compound. There is no conception . . . without envisioning the structure of the compound.” *Id.* at 1299.

173. *See id.*; *Ethicon II*, 135 F.3d 1456, 1460 (Fed. Cir. 1998).

174. *Falana v. Kent State Univ.*, 669 F.3d 1349 (Fed. Cir. 2012).

175. *Id.*

176. *Id.*

177. *Id.* at 1353.

had never conceived the patented compounds, he was not a joint inventor of any compound resulting from the use of his method.¹⁷⁸

The Federal Circuit disagreed with this understanding of *American BioScience*.¹⁷⁹ But Kent State's reading of the case was not unreasonable; the *American BioScience* opinion was plainly dismissive of a researcher who had contributed a method of making the patented compound without conceiving of the specific compound itself.¹⁸⁰ To get past *American BioScience* without reversing itself, the court had to somehow reconcile its own holding with the fact that Falana, like Nadizadeh in *American BioScience*, had never made or seen the university's patented compounds. To do this, the court resorted to the tactic of distinguishing the cases on the facts.¹⁸¹ But almost certainly fairness and an unwillingness to strip Falana of all credit may well have played a significant role in the decision.¹⁸²

In the years since *Fina* and *Ethicon*, the Federal Circuit has refined its joint inventorship criteria and raised the standards for addition of an inventor through increased scrutiny of the conception requirement.¹⁸³ This trend followed the previous period of liberalization attributable to the 1984 amendments. Considered individually, the cases examine highly technical inventions and the idiosyncratic contributions of the team members. However, collectively, a pattern of shifting judicial scrutiny emerges. Section II.B attempts to quantify and validate these observations.

B. EMPIRICAL RESULTS

This study makes three claims based on the holdings of the sixty-five cases that have been decided by the Federal Circuit since 1984 involving joint inventorship. The first is that the court has created a more rigorous requirement for individuals seeking inventorship status in federal court. This

178. *Id.* at 1357–58.

179. *Id.*

180. Bd. of Educ. ex rel. Fla. State Univ. v. Am. BioSci., 333 F.3d 1330, 1342 (Fed. Cir. 2003); see *supra* note 171 and accompanying quote. See also Fellmeth, *supra* note 12, at 134–36 (criticizing the Federal Circuit's "focus on the 'claimed compounds' and discounting of the (unclaimed) method of making them").

181. *Falana*, 669 F.3d at 1357 ("[The university's] reading of *American BioScience* is erroneous and the facts of this case are manifestly distinct.").

182. *Id.* at 1352–54. In Judge Linn's recitation of the facts, she specifically noted that the invention was "very much a team process," that Falana appeared on a jointly authored paper with the other Kent State inventors, and that two other Kent State scientists signed a statement indicating that they "did not object" to Falana's inclusion on the patent. *Id.*

183. Misjoinder is less common but is subject to the same standards—it is equally difficult to remove named inventors as it is to add excluded ones. See *Univ. of Pittsburgh v. Hendrick*, 573 F.3d 1290 (Fed. Cir. 2009).

is true even though the black letter law since *Fina* remains largely unchanged. The second is that the Federal Circuit more frequently relies on the presumption of validity of issued patents; the court has been less likely to find that a putative inventor offered clear and convincing evidence of contribution or collaboration in recent years. Finally, the court has exhibited a growing tendency to acknowledge the unfairness of applying pre-1984 ownership rules to liberalized joint inventorship law; that is, the court is weighing the consequences of disproportionate inventive effort among the inventors.¹⁸⁴

1. *Standards of Inventive Contribution*

Of the court's joint invention cases, the vast majority involves a rigorous analysis of the inventive contribution of the party or parties seeking joinder.¹⁸⁵ These cases generally turn on a detailed investigation and evaluation of each party or team's comparative role in the inventive process. However, a closer examination reveals that in recent years, it has gotten harder to be a joint inventor: In the last ten years (2003–2012), only four of thirty-six challengers were successfully added to the patent as inventors, while in the years prior to that (1984–2002), twenty of twenty-nine putative inventors were successfully added.¹⁸⁶

A detailed look at the cases shows that the court's method of review has remained essentially unchanged since *Burroughs Wellcome*¹⁸⁷ and *Fina*¹⁸⁸ articulated the current process of ascertaining inventive contribution. Collectively, the cases continue to focus on the necessary quality of the contribution as a test that can be either passed or failed according to the evidence.¹⁸⁹ All of the cases in which an inventor has been successfully added have been classified into four categories, in which the putative inventor: (1) identified or solved an unrecognized problem within the team,¹⁹⁰ (2) solved a problem that other collaborators could not,¹⁹¹ (3) added a

184. See Carlson & Barney, *supra* note 148, at 266.

185. The rules are the same for the less common problem of misjoinder. See *supra* note 183. Throughout this Section, however, "addition" is used as shorthand for a patent challenge.

186. See Appendix, Table 1.

187. *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223 (Fed. Cir. 1994).

188. *Fina Oil and Chemical Co. v. Ewen*, 123 F.3d 1466 (Fed. Cir. 1997).

189. For example, when the result of a biological process is claimed, conception requires that the alleged inventor(s) have a "reasonable expectation" of producing the claimed invention. See *Hitzeman v. Rutter*, 243 F.3d 1345, 1358 (Fed. Cir. 2001).

190. See *Falana v. Kent State Univ.*, 669 F.3d 1349 (Fed. Cir. 2012).

191. See *Ultra-Precision Mfg., Ltd. v. Ford Motor Co.*, 411 F.3d 1369 (Fed. Cir. 2005).

nontrivial advantage to the invention that other collaborators did not contemplate,¹⁹² or (4) possessed skills that other members did not have.¹⁹³

2. *Presumption of Validity*

There is a strong presumption that a grant of a patent by the PTO is correct and valid as issued.¹⁹⁴ This presumption concerning validity impacts the final result of joint inventorship litigation in a surprisingly large majority of the Federal Circuit's decisions. For example, five cases since 1984 relied solely on this rule (without additional bases) as the rationale for refusing to add the unnamed inventor.¹⁹⁵ But more significantly, in thirty-one of the thirty-five cases in which the presumption was before the Federal Circuit, the court used the presumption as the significant factor in making close calls where the contribution analysis was not dispositive.¹⁹⁶ This finding is even more striking at the trial court level:¹⁹⁷ District courts invoked the presumption to dispose of challenges based on misjoinder or nonjoinder in 119 of the 171 times the defense was raised since 1998. In the period from 1984–1998, the defense was dispositive in twenty of the fifty-one times it was proffered.¹⁹⁸

192. See *Gemstar-TV Guide Int'l, Inc. v. ITC*, 383 F.3d 1352 (Fed. Cir. 2004).

193. See, e.g., *Rhone-Poulenc Agro, SA v. Monsanto Co.*, 445 F. Supp. 2d 531 (M.D. N.C. 2006); *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456 (Fed. Cir. 1998). See Appendix, Table 2.

194. See *supra* notes 82–83 and accompanying text. The rule acts as a particularly high hurdle in joint invention disputes since, by definition, unnamed inventors never had the opportunity to make their case before the PTO. See *Vanderbilt Univ. v. ICOS Corp.*, 601 F.3d 1297, 1305, n.3 (Fed. Cir. 2010) (rejecting putative inventor's request for a preponderance of the evidence standard); see also *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2251 (2011) (confirming that a clear and convincing standard applies to all aspects of an issued patent, regardless of whether an issue was heard by the PTO).

195. See, e.g., *Cook Biotech Inc. v. Acell, Inc.*, 460 F.3d 1365 (Fed. Cir. 2006) (affirming summary judgment because there was insufficient evidence to overcome the presumption of validity).

196. See, e.g., *Vanderbilt*, 601 F.3d at 1308 (finding that although the plaintiff's and defendant's stories were "equally plausible," the putative inventor's argument failed because it was "unable to carry its burden of proof . . . with clear and convincing evidence").

197. Trial court data was gathered to gain a historical sense of how the application of presumption of validity has changed over time. The Federal Circuit decisions were inconclusive.

198. Reviewing the literature yielded only a single source that discusses the role of presumptive rules, and its focus is on widespread reforms to patent law as a whole, rather than joint inventorship. See Kevin Casey, Jade Camara & Nancy Wright, *Standards of Appellate Review in the Federal Circuit: Substance and Semantics*, 11 FED. CIRCUIT B.J. 279 (2002); see also Kristen Dietly, *Lightening the Load: Whether the Burden of Proof for Overcoming a Patent's Presumption of Validity Should Be Lowered*, 78 FORDHAM L. REV. 2615, 2655 (2010) (discussing the unfair results of applying this strong presumption in certain cases).

3. *Equitable Considerations*

The least anticipated trend to emerge from this joint inventorship analysis of the past thirty years is the consideration of fairness and equity in the law applying to joint invention.¹⁹⁹ Although the court rarely acknowledges this concern or factor expressly,²⁰⁰ it is undoubtedly a consideration in a number of the court's joint invention cases considered in this study.²⁰¹

As discussed above, the court has relied on the presumption of validity in an increasing number of the cases before it.²⁰² But interestingly, the court applies the presumption overwhelmingly in cases that arise in what might be described as the *Ethicon* configuration.²⁰³ In the most recent period of empirical study,²⁰⁴ in the four cases where the putative inventor was added, none involved the *Ethicon* configuration.²⁰⁵ Since 1998, the court has not added a joint inventor in a case that mirrors the facts in *Ethicon*.

One possible way of rationalizing the Federal Circuit's recent approach to joint inventorship cases is that the court is implicitly considering the fairness and proportionality of the unnamed inventor's contribution, despite the fact that *Fina's* "not insignificant" contribution test remains the black letter standard.²⁰⁶ Since *Ethicon*, the court has been especially strict in its contribution analysis, refusing to add any unnamed inventors in cases in which a windfall would result or free riders would benefit from the addition.

199. Several commentators have discussed fairness in the context of joint inventorship law. See, e.g., Fellmeth, *supra* note 12, at 76, 79–80; Gregory Mandel, *Left-Brain Versus Right-Brain: Competing Conceptions of Creativity in Intellectual Property Law*, 44 U.C. DAVIS L. REV. 283, 294–95 (2010).

200. See *Shum v. Intel Corp.*, 629 F.3d 1360, 1371 (Fed. Cir. 2010) ("The Court must take into account important concerns of justice and fairness, as well as conformity with rule and precedent.").

201. See *supra* Section II.A.2.

202. See *supra* Section II.B.2.

203. In this context, the *Ethicon* configuration is when a third-party accused infringer seeks to obtain an assignment from an unnamed putative inventor as a defense to infringement. See *supra* Section II.A.2.

204. See Appendix, Table 1.

205. See *Falana v. Kent State Univ.*, 669 F.3d 1349 (Fed. Cir. 2012).

206. See *supra* note 73. Section 116 also explicitly prohibits the use of proportionality in joint inventorship analyses. 35 U.S.C. § 116 (2006) ("Inventors may apply for a patent jointly even though . . . (2) each did not make the same type or amount of contribution."). In *Nartron*, the district court held that the putative inventor's contribution to "an element of [a single claim of 41 claims] was not insignificant in quality" and added him to the patent. *Nartron Corp. v. Borg Indak, Inc. (Nartron I)*, No. 06-10683, 2008 WL896060, at *10 (2008). However, the Federal Circuit reversed, holding that the putative inventor (and the accused infringer) failed to overcome the presumption of validity of the patent and that the contribution was, as a matter of law, insignificant. 558 F.3d 1352, 1356 (Fed. Cir. 2009) (*Nartron II*).

This concern for fairness was the explicit focus of Judge Newman's dissent in *Ethicon* itself.²⁰⁷ The Federal Circuit appears unwilling to award parties with the economic benefits of patent ownership without concomitant investment in the patent.

III. CONCLUSION

This study of joint inventorship cases before the Federal Circuit tells a story in three acts. In the first stage, an overly strict and preclusive legal system resisted change to the issued patent and created nearly impossible barriers to joint invention. In the second stage, the Federal Circuit recalibrated the law, ensuring that deserving participants were credited as joint inventors even when they may not have made essential or proportionate contributions. In the third and current stage, the court is backing off overly liberal rules and reviewing joint inventorship cases more restrictively in order to ensure equitable results.

The joint inventorship jurisprudence reveals a court that is unwilling to expressly overrule its own precedents. Rather, the Federal Circuit prefers to chip away and refine the edges of its holdings in order to strengthen the predictability and fairness of the law. This Note, in reviewing the entirety of the Federal Circuit's joint inventorship jurisprudence, reveals trends that may otherwise go unnoticed by a practitioner examining the cases on an individual basis. These trends underscore practical implications: for example, the court remains receptive to unnamed inventors when there is corroborating evidence of her involvement in the invention.²⁰⁸ Conversely, the Federal Circuit is unsympathetic to alleged infringers who use an unnamed inventor as a defense to infringement.²⁰⁹

Clearly, additional empirical analysis—especially at the trial court level—would benefit practitioners and scholars seeking greater understanding of joint inventorship law. However, this Note demonstrates that a longitudinal

207. *Ethicon II*, 135 F.3d 1456, 1460, 1469–70 (Fed. Cir. 1998) (Newman, J., dissenting); see *supra* note 147 and accompanying text. Judge Newman even expressed frustration that there was so little scholarly attention afforded to this problem at the time. *Ethicon II*, 135 F.3d at 1471 (Newman, J., dissenting) (“By amending § 116 in order to remove an antiquated pitfall whereby patents were being unjustly invalidated, the legislators surely did not intend to create another inequity. . . . I have come upon no discussion of this anomaly in various scholarly articles on the amended § 116.”).

208. The type of involvement is also critical. See Appendix, Table 2. In addition, long-standing team membership, co-authorship on scholarly publication, and testimony from other team members are convincing factors. See *Falana v. Kent State Univ.*, 669 F.3d 1349 (Fed. Cir. 2012).

209. See 35 U.S.C. 102(f) (2006); *supra* Section I.C.

study of cases can elicit unexpected ideology and policy considerations. Moreover, the results of this Note demonstrate real, practical implications for patent attorneys and research institutions participating in collaborative work.

At the very least, counsel must be involved at an early stage in the research process to ascertain the role of each member of the team and the potential rights of each person with respect to inventorship claims. Pre-patent planning takes on an even more significant role in light of these considerations.²¹⁰ More significantly, the Federal Circuit's unwillingness to scrutinize most challenges without documented evidence of the significance of the purported contribution underscores the importance of developing an extensive record of the inventive process to substantiate claims on behalf of unnamed inventors. Also, since putative inventors aligned by assignment with alleged infringers are likely to face higher hurdles when challenging the patent,²¹¹ counsel should be aware that remedies to correct inventorship could depend greatly on the configuration of the parties and their respective contribution to the inventive process.

210. See Sherry L. Murphy, *Determining Patent Rights: A Practical Approach*, 13 N.C. J.L. & TECH 215, 221–24 (2012) (discussing practical considerations caused by *Ethicon*).

211. See *supra* Sections II.B.3.

APPENDIX

Table 1

<i>Trimester</i>	<i>Inventor Added</i>	<i>Total Cases</i>
1984–1992	0	3
1993–2002	20	26
2003–2012	4	36

Table 2

<i>Nature of Contribution</i>	<i>Cases Alleged</i>	<i>Successful Instances</i>
<i>Unrecognized problem or solution</i>	7	6
<i>Resolve problem</i>	19	9
<i>Addition of nontrivial advantage</i>	34	7
<i>Unique skills or expertise</i>	5	2

List of Cases

	Case Name	Date	Citation
1	Abbott Laboratories v. Brennan	27-Dec-91	952 F.2d 1346
2	Acromed Corp. v. Sofamor Danek Group, Inc.	8-Jun-01	253 F.3d 1371
3	Advanced Cardiovascular Systems, Inc. v. Scimed Life Systems, Inc.	9-Mar-93	988 F.2d 1157
4	Advanced Magnetic Closures, Inc. v. Rome Fastener Corp.	11-Jun-10	607 F.3d 817
5	Amini Innovation Corp. v. Anthony California, Inc.	8-Jan-07	211 Fed. App'x. 938
6	Applied Materials, Inc. v. Gemini Research Corp.	16-Dec-87	835 F.2d 279
7	Bard Peripheral Vascular, Inc. v. W.L. Gore & Associates, Inc.	14-Jun-12	682 F.3d 1003
8	Bard Peripheral Vascular, Inc. v. W.L. Gore & Associates, Inc.	10-Feb-12	670 F.3d 1171
9	Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.	14-Jul-86	796 F.2d 443
10	BJ Services Co. v. Halliburton Energy Services, Inc.	6-Aug-03	338 F.3d 1368
11	Board of Educ. ex rel. Bd. of Trustees of Florida State University v. American Bioscience, Inc.	23-Jun-03	333 F.3d 1330

12	Bradley v. Chiron Corp.	20-Feb-98	136 F.3d 1317
13	Brasseler, U.S.A. I, L.P. v. Stryker Sales Corp.	9-Jul-99	182 F.3d 888
14	Brasseler, U.S.A. I, L.P. v. Stryker Sales Corp.	9-Oct-01	267 F.3d 1370
15	Bruning v. Hirose	25-Nov-98	161 F.3d 681
16	Buildex Inc. v. Kason Industries, Inc.	23-Jun-88	849 F.2d 1461
17	Burroughs Wellcome Co. v. Barr Laboratories, Inc.	22-Nov-94	40 F.3d 1223
18	C.R. Bard, Inc. v. M3 Systems, Inc.	30-Sep-98	157 F.3d 1340
19	Canon Computer Systems, Inc. v. Nu-Kote Intern., Inc.	8-Jan-98	134 F.3d 1085
20	Carter v. ALK Holdings, Inc.	24-May-10	605 F.3d 1319
21	Caterpillar Inc. v. Sturman Industries, Inc.	28-Oct-04	387 F.3d 1358
22	Chou v. University of Chicago	3-Jul-01	254 F.3d 1347
23	Coleman v. Dines	8-Feb-85	754 F.2d 353
24	Cook Biotech Inc. v. Acell, Inc.	18-Aug-06	460 F.3d 1365
25	Credle v. Bond	3-Jun-94	25 F.3d 1566
26	Davis v. Loesch	9-Jul-93	998 F.2d 963
27	E.I. du Pont de Nemours & Co. v. MacDermid Printing Solutions, L.L.C.	14-May-08	525 F.3d 1353
28	Eli Lilly and Co. v. Aradigm Corp.	20-Jul-04	376 F.3d 1352
29	Engel Industries, Inc. v. Lockformer Co.	8-Oct-91	946 F.2d 1528
30	Ethicon, Inc. v. U.S. Surgical Corp.	3-Feb-98	135 F.3d 1456
31	Falana v. Kent State University	23-Jan-12	669 F.3d 1349
32	Fina Oil and Chemical Co. v. Ewen	9-Nov-94	41 F.3d 1519
33	Fina Oil and Chemical Co. v. Ewen	2-Sep-97	123 F.3d 1466
34	Franklin Pavkov Const. Co. v. Roche	28-Jan-02	279 F.3d 989
35	Gemstar-TV Guide Intern., Inc. v. International Trade Com'n	16-Sep-04	383 F.3d 1352
36	Hess v. Advanced Cardiovascular Systems, Inc.	18-Feb-97	106 F.3d 976
37	Hydril Co. v. Baker Hughes Inc.	19-Aug-97	121 F.3d 728
38	In re Bennett	28-Jun-85	766 F.2d 524
39	Israel Bio-Engineering Project v. Amgen, Inc.	29-Jan-07	475 F.3d 1256
40	Kimberly-Clark Corp. v. Procter & Gamble Distributing Co., Inc.	26-Aug-92	973 F.2d 911
41	Litton Systems, Inc. v. Whirlpool Corp.	14-Feb-84	728 F.2d 1423
42	Lucent Technologies, Inc. v. Gateway, Inc.	25-Sep-08	543 F.3d 710
43	Massachusetts Eye and Ear Infirmary v. Novartis Ophthalmics, Inc.	6-Oct-06	199 Fed.App'x. 960
44	Nartron Corp. v. Schukra U.S.A. Inc.	5-Mar-09	558 F.3d 1352
45	Ortho-McNeil Pharmaceutical, Inc. v. Teva Pharmaceuticals Industries, Ltd.	26-Aug-09	344 Fed.App'x. 595

46	Pannu v. Iolab Corp.	6-Aug-98	155 F.3d 1344
47	Pepitone v. American Standard, Inc.	17-Nov-92	983 F.2d 1087
48	PerSeptive Biosystems, Inc. v. Pharmacia Biotech, Inc.	29-Aug-00	225 F.3d 1315
49	Pro-Mold and Tool Co., Inc. v. Great Lakes Plastics, Inc.	7-Feb-96	75 F.3d 1568
50	Q.G. Products, Inc. v. Shorty, Inc.	7-May-93	992 F.2d 1211
51	Richardson v. Suzuki Motor Co., Ltd.	16-Feb-89	868 F.2d 1226
52	Sewall v. Walters	7-Apr-94	21 F.3d 411
53	Shamrock Technologies, Inc. v. Medical Sterilization, Inc.	4-May-90	903 F.2d 789
54	Shum v. Intel Corp.	24-Aug-07	499 F.3d 1272
55	Shum v. Intel Corp.	22-Dec-10	629 F.3d 1360
56	Shum v. Intel Corp.	22-Dec-10	633 F.3d 1067
57	Sign-a-Way, Inc. v. Mechtronics Corp.	5-Apr-00	232 F.3d 911
58	SmithKline Diagnostics, Inc. v. Helena Laboratories Corp.	12-Oct-88	859 F.2d 878
59	Stark v. Advanced Magnetics, Inc.	11-Jul-97	119 F.3d 1551
60	Stark v. Advanced Magnetics, Inc.	1-Jul-94	29 F.3d 1570
61	Stern v. Trustees of Columbia University in City of New York	17-Jan-06	434 F.3d 1375
62	Symantec Corp. v. Computer Associates Intern., Inc.	11-Apr-08	522 F.3d 1279
63	Trovan, Ltd. v. Irori	8-Sep-00	243 F.3d 559
64	Trovan, Ltd. v. Sokymat SA, Irori	1-Aug-02	299 F.3d 1292
65	Vanderbilt University v. ICOS Corp.	7-Apr-10	601 F.3d 1297

