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THE MUDDY METAPHYSICS OF JOINT INVENTORSHIP: CLEANING UP AFTER THE 1984 AMENDMENTS TO 35 U.S.C. § 116

W. Fritz Fasse *

INTRODUCTION

The Constitution of the United States empowers Congress "to promote the Progress of Science and useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries."[1] While it is clear that "inventors" are to have exclusive patent rights in their discoveries, it has long been unclear exactly what characterizes an "inventor." Inventorship is especially difficult to define when several individuals have participated in a single invention. Both Congress and the courts have struggled to clarify what determines joint inventorship. In *Mueller Brass Co. v. Reading Industries, Inc.*,[2] one court involved in this struggle expressed its perplexity:

> The exact parameters of what constitutes joint inventorship are quite difficult to define. It is one of the muddiest concepts in the muddy metaphysics of the patent law. . . .
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> . . . 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. It is a question most often resolved as much on policy as on metaphysics.[3]

Section I of this Article lays out some of the policy considerations that inform the choice of a definition of joint inventorship. Section II focuses on the "metaphysics" that both have been applied by courts in deciding joint inventorship questions and were followed in 1984 by

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* Associate, Fish & Neave, New York, N.Y.; B.S., 1987, Electrical Engineering, Massachusetts Institute of Technology; B.S., 1988, Materials Science, Massachusetts Institute of Technology; J.D., 1991, Harvard Law School.

1. U.S. CONST. art. I, § 8, cl. 8.

2. 352 F. Supp. 1357 (E.D. Pa. 1972), *aff'd without opinion*, 487 F.2d 1395 (3d Cir. 1973).

3. *Id.* at 1372–73.

Congress in amending the pertinent statute, 35 U.S.C. § 116.[4] The analysis in Section III demonstrates that those amendments fail to clarify joint inventorship doctrine. However, the legislative history surrounding the amendments suggests that certain case precedents still apply.[5] Those precedents and their progeny are examined in Section IV. Section V contrasts the legislative and judicial development of joint inventorship doctrine with the guidelines issued by the Patent and Trademark Office ("PTO") for its patent examiners, which seem to do away with requirements of "jointness" between joint inventors, and focus instead on common ownership of the patent rights.[6]

The final section, based on the recurring themes of jointness and inventiveness that pervade the policies and the metaphysics of joint inventorship, concludes that the judicial precedent requiring jointness and inventiveness generally remains good and desirable law. The amendments merely clarify and narrow the requirements for joint inventorship. By relaxing jointness requirements, the PTO guidelines have unwisely expanded what the PTO will recognize as proper joinder of inventors. Such conflicting interpretations of the current law leave patent attorneys little clear guidance in applying the amended statute.[7] These guidelines should therefore be amended to comport with the policies and the laws that ultimately control the validity of patents.

I. POLICY CONSIDERATIONS BEHIND JOINT INVENTORSHIP

The fundamental policy behind joint inventorship issues underlies the Constitutional provision for securing patent rights to the originator of an

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4. Patent Law Amendments Act of 1984, Pub. L. No. 98–622, § 104(a), 98 Stat. 3384, 3385 (1984) (amending 35 U.S.C. § 116).

5. *See infra* notes 183–85 and accompanying text.

6. *See* Initial Guidelines Implementing Changes in 35 U.S.C. §§ 103, 116, and 120, 1050 Off'l Gazette 316 (Jan. 8, 1985), *reprinted in* 1098 TRADEMARK OFF'L GAZETTE 264 (1989) [hereinafter Initial Guidelines]. *See infra* notes 298–322 and accompanying text.

7. *See* Jeffry G. Sheldon & Danton K. Mak, *What Contributions Make You a "Joint Inventor"?*, L.A. DAILY J., Oct. 16, 1989, at 7 ("[I]t is important to properly ascertain the inventorship, preferably before the patent is filed. Unfortunately, the concept of joint inventions still remains quite muddy.") It is the patent attorney and his inventor-client who face a dilemma: If the attorney ignores a lack of collaboration among purported joint inventors, the PTO might grant a patent that the courts might later find invalid (or in need of correction) for misjoinder. However, if the attorney leaves out the names of noncollaborating inventors to meet the judicial requirements of joint inventorship, the PTO might refuse to grant a patent on the grounds of nonjoinder.

invention, rather than simply to the first patent applicant.[8] This policy underlies two general requirements for recognition of inventorship: First, only an "actual" inventor or originator of an invention is entitled to a patent, while a person who appropriates or derives the invention from another is not. Second, only the "first" actual inventor is entitled to a patent.

The requirements of actual and first inventorship are reflected in several sections of the Patent Code in Title 35: "Whoever invents or discovers any new and useful [invention] may obtain a patent therefor . . . ."[9]; "A person shall be entitled to a patent unless . . . he did not himself invent the subject matter sought to be patented . . . ."[10]; "Application for patent shall be made, or authorized to be made, by the inventor . . . ."[11]

The first requirement may be based on two distinct notions.[12] First, only an actual inventor has any natural right in his creations.[13] Second,

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8. *See* Grant v. Raymond, 31 U.S. (6 Pet.) 218, 241 (1832); A.F. Stoddard & Co. v. Dann, 564 F.2d 556, 562–63 (D.C. Cir. 1977). *See generally* 130 CONG. REC. 28,069 (1984) (comments of Rep. Kastenmeier).

9. 35 U.S.C. § 101 (1988).

10. *Id.* § 102(f).

11. *Id.* § 111.

12. See *A. F. Stoddard*, 564 F.2d at 562–64.

> The exclusive public use of an invention can justly be secured by law to no person except its inventor. To his creative faculties alone is due the new idea or means, and to him only can rightfully belong the art or instrument in which that idea is embodied. From him the public have received . . . the benefits conferred upon them by the invention, and solely to him do they therefore owe the recompense [of] the privilege conceded by a patent. This is a fundamental principle, not merely of natural justice, but of positive law.

Id. at 562 (quoting 1 WILLIAM C. ROBINSON, THE LAW OF PATENTS FOR USEFUL INVENTIONS § 362, at 521 (1890)); *see* Grant v. Raymond, 31 U.S. at 241–42.

13. An inventor may be said to have a natural right to the creations of his own thought and physical effort, or of the "sweat of his brow." Lecture by Professor Robert P. Merges, Boston University School of Law (Sept. 24, 1990). Put another way, it is seen as "morally offensive to allow one to harvest what another has sown." DONALD J. CHISUM, PATENTS § 2.01, at 2–2 (1990 Supp.). The constitutional provision for "*securing* for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries" seems to acknowledge that inventors have natural rights to their inventions, and that the grant of a letters patent is the legal medium for securing those rights to exclusion of others. (emphasis added). *But see* P. J. Federico, *Operation of the Patent Act of 1790*, 18 J. PAT. OFF. SOC'Y 237, 241–42 (1936).

> There is no natural property right in an invention, but such rights are the creation of society, as expressed in a letter [of Thomas Jefferson]:
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> "But while it is a moot question whether the origin of any kind of property is derived from nature at all, it would be singular to admit a natural . . . right to inventors . . . . It would be curious, then, if an idea, the fugitive fermentation of an indi-

the public derives a benefit from the disclosure of an actual inventor's creations, but is not benefitted by one who copies or appropriates the invention of another.[14] In the present context, a named joint inventor should be an actual inventor, a true originator of the invention. That is, he should have personally contributed to the inventive idea. This first requirement, when applied to joint inventorship situations, might be called an "inventive nature of contribution" requirement.[15]

Ownership of something invented by another is insufficient to make one an inventor. Ownership can be seen as a special category of lawful appropriation, rather than actual inventorship. An owner of an invention, for example, an employer to whom an employee assigns all patent rights,[16] is not a joint inventor by the mere fact of his appropriation or ownership.[17] While an employer-assignee might claim to have some form of natural right in the fruits of an innovation when his financing was necessary to support the inventor's creative work, he has no legal entitlements of inventorship.[18] Conversely, inventorship does not necessarily confer ownership of the invention.[19]

An inventor and an owner will often have different, or even conflicting, incentives in pursuing patent rights. Inventors, often proud of their inventions, typically seek the recognition and prestige associated

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vidual brain, could, of natural right, be claimed in exclusive and stable property."

Id. (quoting from Thomas Jefferson's letter to I. McPherson, 6 WASHINGTON ED. 180 (1814)). American patent law only indirectly recognizes a natural right of ownership in intellectual property, granting true inventors a legal entitlement through the Constitution and the patent statutes. *See* Kenneth J. Burchfiel, *Revising the "Original" Patent Clause: Pseudohistory in Constitutional Construction*, 2 HARV. J.L. & TECH. 155, 179–80 (1989).

14. The legal grant of patent rights becomes a contractual quid pro quo between the public and the inventor, who, in exchange, publicly discloses the workings of his invention. *See* Burchfiel, *supra* note 13, at 180 ("[The personal natural rights] view was supplanted by the conception of patents as contracts benefitting both the patentee and the public . . . ."); 130 CONG. REC. 28,069 (Rep. Kastenmeier: "[T]he primary object of granting the monopoly lie[s] in the general benefits derived by the public from the work of creators."); *A. F. Stoddard*, 564 F.2d at 563; Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480–81 (1974).

15. *See* text accompanying *infra* note 41.

16. *See* Richard C. Witte & Eric W. Guttag, *Employee Inventions*, 71 J. PAT. & TRADEMARK OFF. SOC'Y 467 (1989).

17. *See infra* notes 265–80 and accompanying text.

18. *See* text accompanying *infra* notes 278–80.

19. Inventorship and ownership are distinct aspects of rights in inventions; with the former controlled by federal patent law and the latter controlled by state property, contract and employment law. *See* Witte & Guttag, *supra* note 16. Federal patent law specifies that "patents shall have the attributes of personal property . . . [and] shall be assignable in law . . . ." 35 U.S.C. § 261 (1988). The rights overlap because "[i]n theory, an 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." Witte & Guttag, *supra* note 16, at 469.

with the grant of a patent.[20] Furthermore, many employers give special awards or royalties to inventors.[21] Both the prestige and the monetary reward may, however, be diluted for each inventor when an employer names several joint inventors.

Given these incentives, an inventor might feel slighted and cheated if several non-contributing team members are named as joint inventors. The employer, on the other hand, may feel pressure to spread recognition and rewards to the "many scientists and engineeers [sic] and non-technical persons carrying out their part of the total process [but not] involved in legal 'invention.'"[22] The employer-assignee might also be tempted to misidentify inventors in order to avoid prior art effects of preceding in-house inventions.[23] The policy behind the patent law supports the employee-inventor in both of these scenarios. Only the contributors involved in the "legal invention" should and must be named, for only they have a natural right in, or legal entitlement to, the invention.

An even starker conflict of interests occurs when inventors employed by different companies collaborate on a joint research project. Each inventor has an incentive to be recognized for his contribution. Each employer, however, has an incentive to name only its own employees in order to obtain full ownership through assignment.[24] Here again, the

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20. *See* Carl E. Barnes, *The Patent System from an Inventor's Point of View*, 5 PAT. TRADEMARK & COPYRIGHT J. RES. & EDUC. 64 (1961) (The actual inventor is identified as a matter of public record. This preserves the prestige value of inventorship to an employee who has assigned all ownership rights to an employer.); CHISUM, *supra* note 13, § 2.04[7], at 2–53 n.4 ("[The] court upheld a claim of non-joinder that allegedly denied the plaintiff the prestige and intellectual credit of being named officially as inventor .... The decision was reversed on the ground that the facts did not support non-joinder." (citing Misani v. Ortho Pharmaceutical Corp., 198 A.2d 791 (N.J. Super. 1964), *rev'd*, 210 A.2d 609 (N.J. 1965))).

21. Witte & Guttag, *supra* note 16, at 472–73.

22. *Id.* at 473 (discussing proposed mandatory inventor awards).

23. *See* CHISUM, *supra* note 13, § 2.04[4], at 2–41 (If A files an application on invention X, and A and B later jointly file an application on improvement Y, the later application might be rejected on the prior art of X. "This obstacle to patentability is avoided if the [later] application is filed in A's name alone. If both applications are owned by the same assignee, there is a clear temptation to shade the facts as to inventorship.") (footnote omitted). This prior art obstacle and resulting incentive have been diminished by the 1984 amendment to 35 U.S.C. § 103. *See infra* notes 77–81, 139–41 and accompanying text.

24. *See* MCV, Inc. v. King-Seeley Thermos Co., 870 F.2d 1568, 1569, 1573 (Fed. Cir. 1989) ("[C]ompany policy prohibited the naming of non-employees on company patents." The court commented: "If this was Halsey Taylor's policy, we do not endorse it; if, as Halsey Taylor says, it was customary in the industry ... we are troubled."). "In the absence of any agreement to the contrary, each of the joint owners of a patent may make, use or sell the patented invention without the consent of and without accounting to the other owners." 35 U.S.C. § 262 (1988). Thus, joint ownership in a patent is in the form of a tenancy-in-common which allows each owner to fully use, benefit from, transfer, or subdivide his undivided share of the right. *See* Robert P. Merges & Lawrence A. Locke, *Co-Ownership of Patents: A Comparative and Economic View*, 72 J. PAT. & TRADEMARK OFF. SOC'Y 586 (1990). A joint owner of even a one-percent interest can fully work the patent, to the

true inventors must be determined according to their contribution to the invention and without regard to any assignment or other contractual obligations that might affect ownership of the patent rights.[25] In this situation, as in the one discussed above, under the first requirement for inventorship, only the "actual" originators are entitled to a patent.

The second requirement for inventorship, that only the first actual inventor is entitled to a patent, also derives from the policy that only those who originate inventions should be granted patent rights. It is possible for more than one person independently and actually to invent the same invention. While each may have a natural right in his creation, only the earlier inventor has a legal patent right. Theoretically, the public derives full knowledge and benefit from the first disclosure of an innovation, and none from a subsequent disclosure by a latecomer.[26]

Two or more inventors can only be granted patent rights in one invention if neither was independently first to invent, but rather both contributed jointly to a single invention.[27] Thus, the second requirement as applied to joint inventors might be called a "joint manner of contribution" requirement.[28]

Both the "inventive nature" and "joint manner" requirements are peculiarly important in the United States. The United States is the only major industrialized country[29] to require the true inventors to apply for patent on their invention.[30] Other countries allow an inventor's

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market detriment of the 99% owner, or can block the filing of an infringement suit. *Id.* at 589–90.

25. *See In re* Certain Double-Sided Floppy Disk Drives and Components Thereof (Part 2 of 4), Investigation No. 337-TA-215, 1986 ITC LEXIS 300, U.S.I.T.C. Publication No. 1860 (U.S.I.T.C. 1986).

26. *See supra* note 14. *Cf.* Federico, *supra* note 13, at 241–42.

27. If the inventors are independent and the inventive work of one was clearly earlier than that of the other, then the later application will simply be rejected. *See, e.g.*, 35 U.S.C. §§ 102(a), (b), (e), and (g) (1988). If the priority of invention is disputed, an interference will be declared to determine who was the earlier inventor. *Id.* § 102(g). *But see* Alton D. Rollins, *PTO Practice: Ties Go to the Runner*, 69 J. PAT. & TRADEMARK OFF. SOC'Y 407 (1987) (suggesting that it is technically possible to grant two patents to two independent inventors when their priority of invention is truly tied).

28. *See* text accompanying *infra* note 40.

29. *See* 2 J. W. BAXTER, WORLD PATENT LAW AND PRACTICE 36 (1975) (listing only Albania, Belize, Bermuda, Cuba, Grenada, Iraq, Jamaica, St. Vincent, and the United States as countries that primarily require the inventor to apply for patent).

30. 35 U.S.C. § 111 (1988) ("Application for patent shall be made, or authorized to be made, by the inventor . . . ."). The patent may then be granted or issued to an assignee. *Id.* § 152. In certain circumstances, an application may be made by one other than the inventor. *Id.* § 116 (other joint inventors can apply on behalf of a joint inventor who refuses to apply or who cannot be found); § 117 (legal representatives can apply on behalf of a deceased or incapacitated inventor); and § 118 (assignee can apply on behalf of an inventor who refuses to do so or who cannot be found).

representative or assignee to file the application.[31] This procedural distinction illustrates the emphasis that U.S. patent policy places on inventorship rather than ownership.[32] Thus, common employment of researchers, and therefore, common ownership of all assigned patent rights, should not be enough to make those researchers joint inventors if they did not actually work jointly toward a single invention.[33]

The "first to invent" requirement is also a special characteristic of the U.S. patent system.[34] Because the policy behind the "first to invent" system does not allow two independent inventors both to be rewarded, inventorship determinations must be closely scrutinized. Most other countries resolve priority disputes by granting a patent to the applicant who was "first to file," regardless of who made the invention and when it was made.[35] Again, it is clear that U.S. policy emphasizes the "who, what, and when" behind an actual invention.

The system of patent law having these emphases distinguishes between inventors who arrive at the same inventive destination, but do so at different times and by independent paths, even if both paths wind through the laboratories of the same employer-assignee. Only when inventors travel a common path toward a common destination will U.S. patent law accept their designation as joint investors.

A general goal of these policies is the promotion of the greatest total number of patentable inventions. Not only inventors and employer-assignees, but also the American public benefit from maximizing innovation, because new technologies tend to enhance our everyday lives.[36] Total innovation is usually increased by the sharing of knowledge and

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31. *See* 2 BAXTER, *supra* note 29; CHISUM, *supra* note 13, § 14.03 [5], at 14–46.

32. It is also informative to note that United States patents will often be referred to as "the Smith patent," while foreign patents are referred to by their publication numbers or "the patent to X Company."

33. *See infra* notes 72–74 and accompanying text.

34. The specific intricacies of interference practice for determining priority among competing alleged first inventors are beyond the scope of the present discussion. These intricacies are regulated by the provisions of 37 C.F.R. §§ 1.601–1.690 (1991).

35. *See* CHISUM, *supra* note 13, § 10.01, at 10–4.

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> [W]ithout technological and scientific developments, we could not maintain our current standard of living or hope for the diminution of unemployment caused by foreign competition ...
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> ... The patent law ... makes reward to the owner a secondary consideration .... Rather, the principal interest of the United States and the primary object of granting the monopoly lie in the general benefits derived by the public from the work of creators.

130 CONG. REC. 28,069 (1984) (remarks of Rep. Kastenmeier presenting H.R. 6286, The

ideas among members of a research team.[37] Thus, to achieve the goal of maximum innovation, the patent system should foster actual collaboration among researchers. This collaboration will lead to more joint inventive work and the development of more patentable inventions.

While relaxing legal requirements for joint inventorship might allow more persons to be named as joint inventors, it will not foster the actual teamwork among joint inventors that leads to greater innovation. Employers do not need greater flexibility in naming employees as joint inventors; they need more reasons to bring those employees together to make joint inventive contributions to inventions. This goal is served by a proper application of the metaphysics of joint inventorship.

II. THE "METAPHYSICS" OF JOINT INVENTORSHIP

While the policy defines the contours of joint inventorship doctrine, the metaphysics resolve the details within those contours. The general rule that had developed[38] under case law is that "a joint invention occurs when two or more persons, collaborating together, each contribute to the conception of the solution to a problem which constitutes the invention."[39] This definition encompasses both the *joint manner*[40] of contri-

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Patent Law Amendments Act of 1984, to the House for vote).

37. The sharing of information "among coworkers can contribute greatly to the efficacy of the research effort and its innovative results and should be encouraged as an efficiency in our national effort to advance technologically." *Hearings on H.R. 3285, H.R. 3286, and H.R. 3605 Before the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the House Comm. on the Judiciary*, 98th Cong., 2d Sess. 61 (1984) [hereinafter *House Hearings*] (testimony of Harry F. Manbeck, Jr., General Patent Counsel, General Electric Co.). "And productive research usually depends on the continuing development and communication . . . among researchers and scientists. Inventions are far less likely to arise from isolated research efforts by those . . . out of communication with others in the organization." *Hearings on S. 1535 and S. 1841 Before the Subcomm. on Patents, Copyrights and Trademarks of the Senate Comm. on the Judiciary*, 98th Cong., 2d Sess. 31 (1984) [hereinafter *Senate Hearings*] (testimony of Gerald J. Mossinghoff, Assistant Secretary and Commissioner of Patents and Trademarks).

38. *See* Sheldon & Mak, *supra* note 7, at 7.

39. CHISUM, *supra* note 13, § 2.02[2], at 2–5 (footnote omitted). This commentator's definition summarizes the judicial definitions of such cases. *See* text accompanying *infra* notes 189–92. This definition was recognized and the rationale legislatively adopted in the 1984 amendments. *See infra* notes 184–85 and accompanying text. *See also* Robert W. Harris, *Conceptual Specificity as a Factor in Determination of Inventorship*, 67 J. PAT. & TRADEMARK OFF. SOC'Y 315, 318–19 (1985) (suggesting that both the qualitative nature and the manner of making contributions need to be addressed in joint inventorship determinations, and focusing on the degree of concrete specificity of a contribution).

40. *See supra* note 28 and accompanying text for a discussion of the policy basis of this requirement.

buting ("collaborating together") and the *inventive nature*[41] of a contribution ("contribut[ing] to the conception") by a joint inventor.

While the inventive process includes the conception of a complete idea and the reduction of that idea to practice, a joint inventive contribution demands joint conception.[42]

> The sphere of [joint inventors'] joint labors and success is thus the mental part of the inventive act. That one conceives the idea and another reduces it to practice [is not joint invention]. 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.[43]

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? Because a single idea or thought cannot arise jointly and simultaneously in two minds, a "joint conception" of an invention must be an amalgam of separate ideas communicated between the inventors and fused in the mind of each.[44] Thus, the joint manner and inventive nature requirements are interrelated because some form of joint collaboration is inherent in a joint conception.

Identifying inventors' contributions and attributing them to a joint conception becomes increasingly difficult as the number of joint inventors increases. In recent years, most patents in the United States have been granted on inventions made by corporate employees and consultants.[45] Furthermore,

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41. *See* text accompanying *supra* note 15 for a discussion of the policy basis for this requirement.

42. *See, e.g.*, CHISUM, *supra* note 13, § 2.02[2], at 2–5.

43. *Id.* § 2.02[2] n.2 (citing 1 ROBINSON, *supra* note 12, § 396.

44. *See* Monsanto Co. v. Kamp, 269 F. Supp. 818, 824 (D.D.C. 1967) (quoting Vrooman v. Penhollow, 179 F. 296, 308 (6th Cir. 1910) ("It would constantly be happening in the case of joint inventions that the illuminating idea was seen by one before it was seen by the other .... The law contemplates this and gives time for it."). *See also* text accompanying *infra* notes 71, 94–100.

45. Approximately 80% of all the patents issued between 1975 and 1984 were assigned to employers. Witte & Guttag, *supra* note 16, at 479. *See also* 130 CONG. REC. 28,075 (1984) (remarks of Rep. Kastenmeier) ("[T]he percentage of patents granted to individuals has declined to about one-sixth of the total. Under current patent practice, five-sixths of all patents vest — from the moment of issuance — in a corporate assignee.").

> Most employee inventions which occur in corporate R&D departments are usually the result of the collaborative efforts of several persons, rather than one individual. Ideas leading to useful inventions often are the result of "brainstorming" sessions [in which i]t is sometimes difficult to determine . . . who contributed to the particular invention. Sometimes, one person will partially conceive what the invention should be. It is only later that someone else, through additional development work, fills in the remaining pieces to make the complete invention. Employee inventions in the corporate environment are generally team efforts.[46]

In 1984, Congress responded to the increasing complexity of joint inventorship issues. Following the expansion of corporate team research, Congress attempted to clarify the law by amending section 116 to provide guidance to the courts and the patent bar.[47]

Prior to the 1984 amendments, 35 U.S.C. § 116 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.[48] Congress perhaps intended courts to fill in the details,

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46. Witte & Guttag, *supra* note 16, at 476.

47. *See* Gregory J. Maier & Robert F. Gnuse, *Combining Applications For Filing In The U.S.*, 26 IDEA 25, 26 (1985).

> In the past, there has been no clue as to exactly what the relationship must be between two inventors for them to be considered "joint" inventors. Certainly, if the inventors work together and openly cooperate with one another in developing the invention sought to be patented, there is no doubt that the parties are joint inventors. But what are the outer limits, the minimal levels of communication required of joint inventors?
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> This question has been partially answered by an amendment to the patent statutes . . . .

Id. (footnote omitted). Maier and Gnuse briefly address the question posed, especially in the context of combinations of more than one foreign patent application on a foreign invention into a single application for filing in the U.S. *Id.*

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> 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, except as otherwise provided in this title . . . .
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> . . . 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 . . . .
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> . . . .

and patent attorneys to avoid "errors in legal judgment attributable to the vague contours of the law of joint inventorship."[49]

Errors in naming inventors can fall on either side of these "vague contours." Misjoinder refers to the erroneous naming of one who is not a joint inventor, and nonjoinder describes the practice of erroneously omitting a true joint inventor.[50] Theoretically, and according to the policy-driven requirements behind joint inventorship, both forms of defective inventorship should be treated similarly, because a patent is valid only if all true inventors are named.[51] In practice however, courts are often more critical of nonjoinder, which suspiciously excludes a person who deserves credit, than of misjoinder, which does not directly deprive anyone of recognition.[52]

While it is true that one either is or is not a joint inventor, it may be difficult to determine which is the case.[53] That determination is largely left to the inventors and their patent attorney,[54] because the PTO presumes the inventors' assertions to be correct,[55] and the courts

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> ... 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.

35 U.S.C. § 116 (1982).

49. CHISUM, *supra* note 13, § 2.04[3], at 2–40.

50. *See id.* § 2.01, at 2–2.

51. *See* Jamesbury Corp. v. United States, 518 F.2d 1384, 1395 (Ct. Cl. 1975) ("[T]he inclusion of more or less than the true inventors in a patent renders it void."); Amax Fly Ash Corp. v. United States, 514 F.2d 1041, 1050 (Ct. Cl. 1975). However, a defect in inventorship often may be corrected; it therefore is not absolutely invalidating. *See* Monsanto Co. v. Kamp, 269 F. Supp. 818, 824 (D.D.C. 1967) ("A misjoinder or nonjoinder of joint inventors, does not invalidate a patent. An error in that respect may be corrected."). *See infra* notes 110–11 and accompanying text.

52. Mueller Brass Co. v. Reading Indus., Inc., 352 F. Supp. 1357, 1372 (E.D. Pa. 1972) ("[N]onjoinder has often been treated more harshly than misjoinder . . . because of the more suspicious nature of a failure to give credit initially to one entitled to credit."), *aff'd*, 487 F.2d 1395 (3d Cir. 1973). *But cf.* Coleman v. Dines, 754 F.2d 353, 357 (Fed. Cir. 1985).

53. *See Mueller Brass*, 352 F. Supp. at 1373.

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> If several persons have been involved in developing the invention, the overall concept which finally emerges will be an amalgamation of the individual concepts of these persons .... Patent counsel must somehow draw a line among these persons, based upon assessment of these individual conceptions, in deciding whom to designate as joint inventors.

Harris, *supra* note 39, at 316.

55. *See infra* note 106.

presume the issued patent's asserted inventorship to be correct.[56]

III. STATUTORY CONSTRUCTION OF THE 1984 AMENDMENTS TO 35 U.S.C. § 116

A. The Text of Section 116

The first paragraph of section 116 now reads:

> When an invention is made by two or more persons jointly, they shall apply for 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.[57]

By including the second sentence, Congress provided three negative criteria to aid courts and attorneys faced with purported joint inventorship situations.

The first sentence[58] essentially recognizes that an invention can be "made by two or more persons jointly" and commands that in such a case "they shall apply for patent jointly."[59] A basic definition of "joint" would seem to require a combining of efforts or actions by the inventors. Such a definition addresses the joint manner, but not the inventive nature, of a joint inventor's contribution.[60]

An analogy might be drawn to literary joint works.[61] According to the 1976 Copyright Act, "[a] 'joint work' is a work prepared by two or more authors with the intention that their contributions be merged into inseparable or interdependent parts of a unitary whole."[62] This definition could apply to inventors who intend to merge their respective inter-

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56. *See infra* note 110. In fact, technical challenges to inventorship are disfavored and require clear and convincing proof of error. *Id.*

57. 35 U.S.C. § 116, para. 1 (1988) (as amended by Pub. L. No. 98–622, *supra* note 4). The second and third paragraphs of section 116 remain as quoted in *supra* note 48.

58. The first sentence was amended by dropping the requirement that each inventor must "sign the application." *See supra* note 48.

59. 35 U.S.C. § 116, para. 1 (1988).

60. *See* text accompanying *supra* notes 15, 28, and 40–41.

61. *See* CHISUM, *supra* note 13, § 2.02[2], at 2–13.

62. Pub. L. No. 94–553, 90 Stat. 2543 (1976) (codified at 17 U.S.C. § 101).

dependent contributions into a single unified invention. The focus on merger reflects the joint manner requirement, while the focus on inseparability and interdependence suggests the inventive nature requirement[63] and perhaps something more.

Does joint inventorship require that all joint inventors intend that their contributions be merged? The second paragraph of section 116 shows at least that intent or consent is not required for joint *application* for patent once an *invention* is jointly made: "If a joint inventor refuses to join in an application for patent . . . the application may be made by the other inventor on behalf of himself and the omitted inventor."[64] From this it follows that intent is not required to make the "omitted inventor" a "joint inventor" in the first place.

A further possible distinction between joint invention and joint application should also be considered. The first sentence of section 116 uses the imperative "shall apply for patent jointly," while the second sentence uses the discretionary "may apply for a patent jointly." These choices of language might indicate that Congress will allow a joint *application* even when an *invention* is not "made by two or more persons jointly" and is therefore not a traditional joint invention meeting the joint conception and collaboration requirements of the prior case law.[65] However, such an interpretation is weakened by the fact that the legislative history[66] suggests that "the amendment to Section 116 can be read as for the most part codifying prior law."[67]

Thus, the second sentence of section 116 should be read as a partial definition of joint invention through negative criteria, not as a provision

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63. *See supra* note 41 and accompanying text.

64. 35 U.S.C. § 116, para. 2 (1988).

65. *See, e.g.*, CHISUM, *supra* note 13, § 2.02[2], at 2–12; C. Bruce Hamburg & Helene J. Pines, *Important Changes in U.S. Patent Law Via the Patent Law Reform Act of 1984*, 83 PAT. & TRADEMARK REV. 126, 129 (1985). This view is supported indirectly by an earlier amendment that changed the heading of section 116 from "Joint Inventors" to "Inventors," and in the third paragraph changed "a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error" to "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." Pub. L. No. 97–247, § 6(a), 96 Stat. 320 (1982). Thus, the 1982 amendment arguably broadened the focus of section 116 by shying away from explicit references to "joint inventors."

66. *See, e.g.*, Section-By-Section Analysis of H.R. 6286, Patent Law Amendments Act of 1984, 130 CONG. REC. 28,069, 28,071 (1984) [hereinafter Section Analysis] ("Items (i) and (ii) adopt the rationale of decisions such as Monsanto v. Kamp, 269 F. Supp. 818 (D.D.C. 1967). Item (iii) adopts the rationale of cases such as SAB Industri AB v. Bendix Corp., 199 U.S.P.Q. (BNA) 95 (E.D. Va. 1978)."); *infra* notes 183–185 and accompanying text.

67. CHISUM, *supra* note 13, § 2.02[2], at 2–14.

that expands joint applicants beyond joint inventors.[68] These negative criteria address only what is not required for joint invention, and offer only a partial clarification at that. The first criterion suggests a weakening or limitation of the joint manner requirement.[69] The second criterion suggests a weakening of the inventive or conceptive nature requirement.[70] The third, "non-all claims" criterion acknowledges the reality that a unitary conception cannot truly be made jointly, but that joint inventorship will be recognized in a merging of sub-concepts.[71]

Does amended Section 116 actually weaken the joint manner and inventive nature requirements? Donald Chisum suggests that, "[t]here is no evidence that Congress intended to discard the fundamental requirement tht [sic] there be some form of collaboration between the joint inventors."[72] In any event, the traditional requirements cannot be completely eviscerated if any reasonable meaning is to be given to the statutory language, which recognizes joint inventorship only "[w]hen an invention is made by two or more persons *jointly* . . . ."[73]

The statutory language does not call for joint inventorship "when an invention is made by two or more persons" or even "when an invention is made by two or more persons under an obligation of assignment to a

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68. Congress expressed no intention to make a distinction between joint applicants and joint inventors, nor to expand the scope of the former beyond that of the latter. To the contrary, many passages of the legislative history express the understanding that joint inventorship was being defined. *See, e.g., Senate Hearings, supra* note 37, at 33 (written statement of Mossinghoff, Commissioner of Patents and Trademarks) ("*inventors would also be regarded as joint inventors* whether or not they physically worked together . . . [and] joint inventorship would not require that each inventor make the same type or amount of contribution . . . .") (emphasis added); *Id.* at 67 (written statement of Bernarr Pravel, President, American Intellectual Property Law Association) ("The amendments . . . should have a two-fold purpose: (1) [to abrogate the "all claims rule"], and (2) to clarify the criteria for joint inventorship.").

69. *See supra* note 40 and accompanying text. This requirement is now limited because the necessary collaboration need not include physically or temporally joint work.

70. *See supra* note 41 and accompanying text. The amendments weaken the requirement, because they allow joint inventors to make different types of contributions, throwing into question whether a non-conceptive contribution may be an acceptable "type." *But see* Harris, *supra* note 39, at 318–19 (amended text of section 116 only addresses the collaboration requirement and does not "formulate a test as to the qualitative nature of the putative joint inventor's contribution.").

71. *See supra* note 44 and *infra* notes 94–100 and accompanying text. Donald Chisum states that the third criterion "appears to be directed at the 'all claims' doctrine and not a definition of joint invention at all." CHISUM, *supra* note 13, § 2.02[2], at 2–14. The "all claims rule" was a rule adopted by some courts, pertaining more to the procedures of joint application than to the definition of joint inventorship. The rule required that each named inventor have contributed to the inventive concept of each claim of the patent. *See infra* notes 144–48, 214–23 and accompanying text.

72. *See* CHISUM, *supra* note 13, § 2.02[2], at 2–13.

73. 35 U.S.C. § 116, para. 1 (1988) (emphasis added).

common assignee." The restriction to inventions made "*jointly*" must be reasonably construed.[74] Moreover, other code sections and PTO regulations apply when an invention is made by two or more persons "independently."[75]

While giving limited guidance on what is not required, amended section 116 fails to establish positive criteria for what *is* required for joint inventorship. However, the text and legislative history of amendments to related code sections may aid in this determination.

B. Other Sections of Title 35

Code sections other than section 116 indirectly affect joint inventorship issues. The package of amendments enacted in 1984 "eliminates unwarranted technicalities in the patent law that threaten the validity of patents for inventions arising from corporate research teams."[76]

A research project will often produce a series of related inventions that represent successive improvements or variations on an original invention. Before the 1984 amendments, courts often found inventions by research team members to be obvious and thus, unpatentable, in light of the prior art of earlier inventions of their co-reserachers.[77] Even earlier inventions that were kept secret from all but the research team were classified as prior art under 35 U.S.C. §§ 102(f) and (g), barring the patenting of the later invention under 35 U.S.C. § 103.[78]

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74. *See supra* notes 59–60 and accompanying text.

75. *See, e.g.*, 35 U.S.C. § 102(e) (1988) (prior application by another); *id.* § 102(g) (lack of novelty, and interferences); *id.* § 135 (interferences); 37 C.F.R. § 1.78(d) (1991) (double patenting rejections). *Cf.* Rollins, *supra* note 27 (advancing arguments that "two or more valid patents [can] be issued to different independent inventors for the same invention" when they simultaneously, independently make the invention); *but cf. In re* Longi, 759 F.2d 887, 893 (Fed. Cir. 1985) (rejecting argument that "each inventor in a research department should be entitled to separate patents for his or her own independent contribution" and upholding double patenting rejection of application that was merely an obvious extension of invention of prior commonly owned applications).

76. President's Statement on Signing H.R. 6268 into Law, 20 WEEKLY COMP. PRES. DOC. 1818 (Nov. 9, 1984).

77. *See, e.g., In re* Bass, 474 F.2d 1276 (C.C.P.A. 1973); *In re* Clemens, 622 F.2d 1029 (C.C.P.A. 1980).

78. Subsections 102(f) and (g) specify that a person will not be granted a patent if "he did not himself invent the subject matter" or if "before the applicant's invention thereof the invention was made in this country by another . . . ." Even if an invention is not "anticipated" by prior art under § 102, it is unpatentable under § 103 if it is obvious in light of the prior art. 35 U.S.C. § 103, para. 1 (1988) ("A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains . . . .").

To alleviate this problem,[79] Congress added a second paragraph to section 103:

> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.[80]

By restricting the prior art effect of earlier, commonly owned inventions by co-researchers, the amendment fosters communication among research team members.[81] Such enhanced communication is desirable because it leads to increased efficiency and productivity of research efforts.[82] In contrast, the earlier law actually penalized collaboration and information-sharing.[83]

Favoring communication among co-researchers in this manner suggests a congressional intent to retain a requirement of communicative

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79. Rep. Kastenmeier described the problem and the solution, stating:

> [The Amendment] changes a complex body of caselaw which discourages communication among members of research teams working in corporations, universities or other organizations . . . .
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> . . . New technology often is developed by using background scientific or technical information known within an organization but unknown to the public. The bill, by disqualifying such background information from prior art [for limited purposes], will encourage communication among members of research teams, and patenting, and consequently public dissemination, of the results of "team research."

Section Analysis, *supra* note 66, at 28,071.

80. Pub. L. No. 98–622, § 104, 98 Stat. 3384 (1984) (amending 35 U.S.C. § 103, para. 2).

81. *See supra* notes 36–37 and 79.

82. *See supra* notes 36–37 and accompanying text; *infra* notes 141, 149–57 and accompanying text.

83. *See House Hearings*, *supra* note 37, at 62 ("[N]o patent may be available due to legal technicalities arising out of the fact that one employee built on information received from another employee, rather than doing everything himself. This is clearly bad, for it militates against, really penalizes, the use of team research to solve problems.") (testimony of Manbeck); *Senate Hearings*, *supra* note 37, at 31 ("As a consequence, scientists or reserachers unaware of such secret organizational information have a better chance of obtaining a patent than those to whom it was known.") (written statement of Mossinghoff).

collaboration among joint inventors.[84] Alternatively, one could argue that the second paragraph of section 103 shifts the focus from collaboration to common ownership.[85] While it is true that the applicability of this new paragraph depends on common ownership of the inventions at issue, section 103 generally does not pertain to inventorship, but only to the disqualification of certain prior art. The ultimate effect of the provision is to increase communication among inventors in research teams and to reduce the number of "obviousness" rejections of patent applications submitted by those teams.[86] As a result of these two effects, inno-

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84. *See infra* notes 149–57.

85. It should be noted that Congress was considering the amendments to sections 116 and 103 simultaneously. In fact, the Section Analysis of the bill pointed out that "[s]ection 105 [amending 35 U.S.C. sections 116 and 120] complements section 104 [amending 35 U.S.C. section 103] of the bill [H.R. 6286]." Section Analysis, *supra* note 66, at 28,071. If Congress had wanted joint inventorship determinations to be based on common employment rather than on collaboration, it would have included in section 116 the language of section 103, "owned by the same person or subject to an obligation of assignment to the same person." But Congress did not include any such language. In fact, the text of an earlier bill proposing the amendment referred to the joint inventorship and the employment status of the inventor separately: "Prior art shall not include unpublished information which is developed by the applicant singly or jointly with others, or which is known to the applicant only by virtue of his or her employment." H.R. 4525 (proposing to add language to 35 U.S.C. section 103), *reprinted in House Hearings*, *supra* note 37, at 5; S. 1535 *reprinted in Senate Hearings*, *supra* note 37, at 4. Clearly, Congress recognized joint inventorship and common employment to be two separate considerations.

Furthermore, if non-collaborating inventors could be joined in a patent application, the amendment to section 103 would be redundant in many situations. For example, any time two independent in-house developments seemed to be "obviously" related (whereby one might be raised as prior art against an application on the other), the two independent developments would be included in a single application naming both non-collaborating inventors. Then no prior art problem would exist to be addressed by the new sentence of section 103. Such a combination of non-collaborative inventions would likely run into problems with the "single invention" requirement. *See infra* notes 93–102 and accompanying text.

86. *See* Donald G. Daus, *Double Patenting in the United States: More Is Not Always Better*, 6 INTELL. PROP. J. 67, 68–69 (1990). While the amendments were intended to reduce obviousness rejections, it was expected that the PTO:

> will reinstitute in appropriate circumstances the practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. This will be necessary in order to prevent an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter.

Section Analysis, *supra* note 66, at 28,071. In the long term it was expected that double patenting rejections would become less frequent, because under amended section 116, any joint inventor contributing to even one claim is to be included in a single patent rather than filing a potentially competing separate application. *See* Daus, *supra*, at 68–69. However, the number of double patenting rejections has been steadily increasing. *Id.* This statistic may suggest that situations exist in which non-collaborating researcher-employees of a common employer are not being (or cannot properly be) joined as co-inventors, and

vation is enhanced and more inventions are developed and made public through patents.[87]

Furthermore, section 120, as amended, determines the filing dates of a research team's subsequent inventions. When such inventions are the basis of successive patent applications, section 120 allows a later application to be treated as if filed on the filing date of a related earlier application if certain technical requirements are met.[88] The benefit of the earlier filing date is often important for pre-dating prior art and for beating challengers in priority interferences.

Amended section 120 allows such "relation-back" if there is any overlap between the earlier-named inventors and the later-named inventors.[89] Before the 1984 amendment, relation-back was only possible if exactly the same inventors were named on the subsequent application.[90] The old requirement became unrealistically strict in view of modern team research methods, whereby different inventors work on different aspects of a problem and join or leave the team over time.[91] The recognition that different inventors may each contribute different aspects of a single invention likely motivated Congress to abandon the "all claims" rule[92] when it amended section 116. Similarly, the recognition that the membership of a single inventive team may change over time probably

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examiners have not been suggesting (or allowing) such inappropriate joinder to get around the double-patenting rejection.

87. *See supra* notes 36–37 and accompanying text; *infra* notes 149–57 and accompanying text.

88. 35 U.S.C. § 120 (1988) (as amended by Pub. L. No. 98–622 § 104(b), 98 Stat. 3385 (1984)).

> An application for patent for an invention disclosed . . . in an application previously filed in the United States . . . which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment . . . of the first application . . . and if it contains . . . a specific reference to the earlier filed application.

Id.

Benefit of an earlier filing date might be used when inventive subject matter had been disclosed in an earlier application, but had not been specifically claimed because the inventive value had not yet been realized. The earlier filing date might also be used if the Examiner recognizes "two or more distinct inventions [being] claimed in one application" and requires the original application to be restricted, whereby the second invention can only be claimed in a separate second application. 35 U.S.C. § 121 (1988). *See infra* notes 93–102 and accompanying text.

89. 35 U.S.C. § 120 (1988).

90. 35 U.S.C. § 120 (1982).

91. *See, e.g.*, Witte & Guttag, *supra* note 16, at 476.

92. *See supra* note 71 and accompanying text; *infra* notes 144–48, 214–23 and accompanying text.

inspired the amendment to section 120. Both amendments acknowledge that an inventor may contribute a single aspect of an invention and then move on to other projects.

Section 121 also helps to clarify the definition of joint invention and the function of the collaboration requirement. This section specifies that "[i]f two or more independent and distinct inventions are claimed in one application, the Commissioner may require the application to be restricted to one of the inventions."[93] The requirement that a single application include claims to only one invention is related to the concept that a truly joint conception of a single, complete *idea* cannot exist.[94] A single, distinct *invention*, however, can include several sub-inventions expressed in separate claims of a patent application. By abandoning the "all claims" rule,[95] Congress recognized that different inventors may contribute the separate ideas that make up the invention. Section 121 requires all of these ideas to be fused to form a single invention.

Several conclusions, then, can be drawn about the collaboration requirement. First, abandonment of the "all claims" rule seems to allow joint inventors to conceive the ideas of separate claims relatively independently. Second, section 121 requires that the ideas be linked to form a single, independent and distinct invention: The ideas must be "connected in design, operation or effect."[96]

Separate ideas can only be linked in a joint invention if at least one of the inventors, while conceiving or perfecting his ideas, considers the other inventor's ideas.[97] Thus, the minimum required collaboration is some form of communication between two joint inventors.[98] This can occur if the inventors work serially, one building on the prior work of the other,[99] or in parallel, the two working separately and then meshing their

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93. 35 U.S.C. § 121 (1988). The Commissioner used his discretion to promulgate Rules 1.141 ("Two or more independent and distinct inventions may not be claimed in one national application . . . .") and 1.142 ("If two or more independent and distinct inventions are claimed in a single application, the examiner . . . shall require [election of that invention to which the] claim shall be restricted . . . ."). 37 C.F.R. §§ 1.141, 1.142 (1991).

94. *See supra* notes 44 and 71 and accompanying text.

95. *See supra* notes 71 and 82 and accompanying text: *infra* notes 144–48 and 214–23 and accompanying text.

96. U.S. DEP'T OF COMMERCE, MANUAL OF PAT. EXAMINING PROC. § 808.01 (5th ed., rev. 1989). *See also id.* §§ 802.01, 803, 806.04, 806.05.

97. In fact, to avoid restriction it is insufficient to merely provide a "linking claim" which links together two independent or distinct claimed inventions. The claims themselves must be inherently linked together. *See id.* § 809.

98. *See infra* notes 149–57 and accompanying text.

99. This is consistent with the amended text of section 116, which states that joint applicants need not "work together . . . at the same time." 35 U.S.C. § 116 (1988).

separate works into one.[100]

The toughest test case of minimum collaboration would be the anomalous situation in which two inventors working completely independently each conceives essentially the same invention. Thereupon their common employer causes a single application to be filed including each inventor's very similar claim to that invention.[101] The forced "joint" inventors did not collaborate in any meaningful way, but the application does not contain claims to "two or more independent and distinct inventions" as discussed above. Nonetheless, one of the claims will be rejected for substantial duplication.[102]

Section 256, "Correction of named inventor," also pertains to the joint inventorship issue.[103] The first paragraph of this section substantially repeats the language of the third paragraph of section 116 which provides for amendment of the patent application to reflect proper inventorship,[104] and in addition allows for correction of misjoinder or nonjoinder in issued patents. Under either section, correction may be made at the Commissioner's discretion with the consent of all parties. If unanimous consent cannot be obtained, however, correction may be made by court order upon notice and hearing under section 256. Thus, section 256

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100. This is consistent with the amended text of section 116 which states that joint applicants need not "physically work together." 35 U.S.C. § 116 (1988). *See, e.g.*, Monsanto Co. v. Kamp, 269 F. Supp. 818, 824 (D.D.C. 1967) (quoting De Laski & Thropp Circular Woven Tire Co. v. William R. Thropp & Sons Co., 218 F. 458, 464 (D.N.J. 1914), *aff'd*, 226 F. 941 (3d Cir. 1915)): "[I]f the other ... contributes an independent part of the entire invention, which is united with the parts produced by the other and creates the whole, he is a joint inventor . . . .").

101. *Cf. infra* notes 310–13 and accompanying text.

102. "Nevertheless, when two claims in an application are duplicates, or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to reject the other as being a substantial duplicate of the allowed claim." MANUAL OF PAT. EXAMINING PROC. § 706.03(k). *But see id.* § 806.03.

103.

> 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 Commissioner 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 Commissioner shall issue a certificate accordingly.

35 U.S.C. § 256 (1988).

104. *See supra* note 48.

must be used to resolve disputes over inventorship.[105]

Correction under either of these sections is liberally allowed as long as the error occurred without deceptive intent.[106] While the possibility of correction does not directly affect the definition of joint inventorship, providing a means to correct does demonstrate that Congress recognized that mistakes in this area are understandable and therefore should not be harshly punished.[107] In fact, because of the free ability to correct innocent errors even after a patent issues, it has been said that "the patent law does not regard as crucial the question whether an invention is the product of several joint inventors, or of a sole inventor. A misjoinder or nonjoinder of joint inventors, does not invalidate a patent. An error in that respect may be corrected . . . ."[108]

However, the question does remain crucial,[109] because invalidation of the patent can only be avoided if correction is allowed by the Commissioner or ordered by the court.[110] Furthermore, correction can only be

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105. *See, e.g.*, CHISUM, *supra* note 13, § 2.04, at 2–36 to 2–39.

106. *See, e.g.*, Coleman v. Dines, 754 F.2d 353 (Fed. Cir. 1985); A. F. Stoddard & Co. v. Dann, 564 F.2d 556, 564, 566 (D.C. Cir. 1977); Edward V. Filardi & Klaus P. Stoffel, *Substantive Aspects of the Patent Law Amendments—1980–1985*, *in* 24 PAT. L. ANN. ch. 1 § 1.03, at 1–6 (1986). There is some dispute as to whose "deceptive intent" is at issue. The text of each section specifies "deceptive intention on his part," which seems to refer to the intent of the person improperly joined or omitted.

Initially, the PTO accepts joint applicants' representations that they are true joint inventors. Monsanto Co. v. Kamp, 269 F. Supp. 818, 823 (D.D.C. 1967) ("An application for a patent made by two or more persons claiming to be joint inventors is *prima facie* evidence that they are such. The Patent Office may act on such a representation."). The patent examiner will only question the inventorship designation if a dispute arises. MANUAL OF PAT. EXAMINING PROC. § 605.07 ("The examiner should not inquire of the patent applicant concerning the inventors . . . until *it becomes necessary* to do so in order to properly examine the application . . . . The examiner should assume, unless there is evidence to the contrary, that applicants are complying with their duty of disclosure.").

107. *See* CHISUM, *supra* note 13, § 2.04, at 2–33.

108. *Monsanto*, 269 F. Supp. at 824.

109. *See A. F. Stoddard*, 564 F.2d at 564 n.10 (Upon allowing correction of inventorship, the court noted: "We have no reason to suppose that counsel for applicants will mistake the result herein as providing excuse for less than the careful determination of true inventorship required prior to filing.").

110. *See supra* notes 103–05 and accompanying text. Courts are reluctant to order correction of issued patents, especially when misjoinder or nonjoinder is raised as a defense against a patent infringement claim. An issued patent is presumed to be valid. 35 U.S.C. § 282 (1988). The presumption of validity extends to the designation of joint inventors in a patent, and a challenger must prove misdesignation by clear and convincing evidence. *See, e.g.*, Jamesbury Corp. v. United States, 518 F.2d 1384, 1395 (Ct. Cl. 1975). Patents are generally presumed to be valid because of the technical expertise of the patent examiners who review the applications. U.S. Surgical Corp. v. Hospital Prods. Int'l, 701 F. Supp. 314 (D. Conn. 1988). This rationale does not hold for the inventorship designation, because the examiners do not question the applicants' assertions. Instead, the "presumption of proper inventorship is based on the strong 'temptation for honest witnesses, who have worked years with a patentee to implement his ideas, to forget whose ideas they were.'" *U.S. Surgical*, 701 F. Supp. at 340 (citing Acme Highway Prods. v. D. S. Brown Co., 431 F.2d 1074,

sought if the correct joint inventors can be determined.

If correction is not possible because deceptive intent is found, the result can be severe: The patent is invalidated due to improper inventorship designation,[111] and neither the fraudulent parties nor the true inventors obtain enforceable patent rights.[112]

C. The Legislative History of the 1984 Amendments

The adopted text of section 116 specifies that joint inventors need not have worked together physically or at the same time, nor have made the same type or amount of contribution.[113] How does that affect the "joint manner" (collaboration) and "inventive nature" (conceptive contribution) requirements?[114] The legislative history of Pub. Law No. 98–622,[115] which enacted H.R. 6286[116] as The Patent Law Amendments Act of 1984, sheds some light on the general congressional intent that motivated the amendments. Additionally, the legislative considerations found throughout this history also support the conclusions and suppositions of the above textual analysis.

H.R. 6286[117] paralleled S. 1535[118] and incorporated improvements on H.R. 4525[119] and H.R. 4527.[120] Because it aimed to streamline many

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1083 (6th Cir. 1970), *cert. denied*, 401 U.S. 956 (1971)). *See also* Amax Fly Ash Corp. v. United States, 514 F.2d 1041, 1047 (Ct. Cl. 1975).

111. *See Jamesbury*, 518 F.2d at 1395 ("[T]he inclusion of more or less than the true inventors in a patent renders it void . . . ."); *Amax Fly Ash*, 514 F.2d at 1050 ("Where more or less than the true inventors are named, the patent is void."); *see also supra* note 51 and accompanying text.

112. *See* Iron Ore Co. of Canada v. Dow Chem. Co., 177 U.S.P.Q. (BNA) 34 (D. Utah 1972), *aff'd*, 500 F.2d 189 (10th Cir. 1974). *But see* Richardson v. Suzuki Motor Co., Ltd., 868 F.2d 1226 (Fed. Cir.) (patent ordered to be assigned to plaintiff as an equitable remedy for defendant's appropriation of plaintiff's invention, regardless of jury finding that patent could have been invalidated because plaintiff and a third-party, as joint inventors, both had an equitable claim), *cert. denied*, 493 U.S. 853 (1989).

113. 35 U.S.C. § 116 (1988); *see supra* note 57 and accompanying text.

114. *See supra* notes 15, 28, 40–41 and 72–74 and accompanying text.

115. 98 Stat. 3383 (1984).

116. 98th Cong., 2d Sess. (1984).

117. *Id.*

118. 98th Cong., 1st Sess. (1983); *see Senate Hearings*, *supra* note 37.

119. 98th Cong., 1st Sess. (1983).

120. *Id.*; *see* Section Analysis, *supra* note 66. Other prior bills and other sections of H.R. 6286 are not directly relevant to the present topic of inquiry. Other sections of H.R. 6286, for example, prevent foreign production and importation of goods produced by processes protected by U.S. patent, allow a mini-patent of "statutory invention registration" to be granted for solely defensive protection, establish a National Commission on Innovation and Productivity, change various Patent and Trademark Office procedures, etc. *See id.*

patent procedures, H.R. 6286 was labeled a "housekeeping bill."[121] Representative Kastenmeier, however, had even greater expectations: "Such a banal title, however, should not disguise the importance of several sections in the bill. It is critical that we keep our patent house in order. Increased innovation, better government, a satisfied public, improved economic health of the Nation, and more jobs will be the result."[122]

The final bill included improvements suggested or approved by the PTO,[123] the American Intellectual Property Law Association ("AIPLA"),[124] Intellectual Property Owners, Inc. ("IPO"),[125] and the Ad Hoc Committee to Improve the Patent Laws (which represented twelve major U.S. corporations).[126] As such, it enjoyed widespread support.[127]

While the bill was welcomed and supported by many patent lawyers[128] as a clarification of joint inventorship doctrine, the support was not unanimous. One patent practitioner and law lecturer asserted that:

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121. 130 CONG. REC. 28,074 (1984) (remarks of Rep. Kastenmeier).

122. *Id.*; *see also* President's Statement, *supra* note 76.

123. *See, e.g., Senate Hearings*, *supra* note 37, at 18–20 (statement by Mossinghoff accompanied by Rene D. Tegtmeyer, Assistant Commissioner for Patents, suggesting adoption of language proposed by AIPLA); *House Hearings*, *supra* note 37, at 5–7.

124. *Senate Hearings*, *supra* note 37, at 55, 77, 81 (testimony and written submissions by Pravel); *House Hearings*, *supra* note 37, at 90–91 (PTO approved AIPLA draft bill provisions).

125. *Senate Hearings*, *supra* note 37, at 40, 42, 53 (testimony and written submissions of Donald W. Banner, President, IPO); *House Hearings*, *supra* note 37, at 108, 118.

126. *Senate Hearings*, *supra* note 37, at 143 (testimony of John E. Maurer on behalf of the Ad Hoc Committee to Improve the Patent Laws "composed of [13] representatives of 12 major U.S. companies that share an interest in improving the operation of the U.S. patent system [with the support of] some 70 U.S. research-oriented industries and institutions . . . ."); *House Hearings*, *supra* note 37, at 89 (membership list of the Ad Hoc Committee). Realizing that some of the proposed and enacted amendments to the patent statutes may affect the rights and power between employers and inventor-employees over their inventions, one may reasonably wonder why no Ad Hoc Committee represented the viewpoint of sole inventors or employed inventors.

127. 130 CONG. REC. 28,075 (1984). In commenting on the general support of the bill, Rep. Moorhead pointed out that "[t]his legislation has the strong support of American corporations, both large and small. It has the support of patent lawyers around the country and the [PTO]." *Id.*

While inventors are the source of "innovation," and "patent owners" might be sole inventors, it is notable that no explicit reference to the support of inventors was made. This apparent oversight may have arisen from the fact that over 80% of patents are owned by corporate assignees, *see supra* note 45, so that the interests of the employer-owner predominate and indirectly reflect the interests of the employee-inventor. *But see supra* notes 20–25 and accompanying text. Also, the amendments were proposed largely in recognition of the needs of modern team research as expressed by corporate employers. *See supra* notes 76–83 and accompanying text, *infra* notes 149–57 and accompanying text.

128. *See* 130 CONG. REC. 28,075 (statement of Rep. Moorhead).

> H.R. 4525 is an unwarranted interference with the proper development of a uniform doctrine of law in this area by the new Court of Appeals for the Federal Circuit. It attempts to render two specific decisions ... inapplicable to "team" research efforts by corporate employees. The [Federal Circuit] can deal with this issue under the patent statutes (e.g., 35 U.S.C. §§ 102, 103) as they now exist.
>
> H.R. 4527 suffers from the same problem. Title 35 U.S.C., § 116 as now written does not compel the conclusion that joint inventors must have collaborated simultaneously or contributed to each and every claim in their patent applications .... To the extent that the proper interpretation of § 116 is not well settled, any disagreement can be resolved by the new [Federal Circuit].[129]

Although the desirability of Congressional action was not unanimously agreed upon, the authority of Congress to enact the 1984 amendments could not be seriously questioned. Despite limitations that the modern Supreme Court has imposed on Congress in this area,[130] the amendments are within Congress's power, because they merely clarify prior legislation,[131] codify principles recognized in judicial precedent,[132] settle a dispute over a rule that was not uniformly accepted by all courts,[133] and nullify a judicially created rule that was deemed contrary to sound policy.[134]

The limitation on Congressional power suggests that the amendments cannot broadly liberalize the requirements of joint inventorship.[135] On the other hand, if the amendments are merely a codification and clarification of existing law, should Congress have acted at all? To the

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129. *House Hearings*, *supra* note 37, at 150, 157–58 (written statement of Herbert R. Schwartz, partner, Fish & Neave, New York, New York, and Lecturer in Law, University of Pennsylvania School of Law.)

130. Modern Supreme Court cases have found the patent clause to be "both a grant of power and a limitation." Graham v. John Deere Co., 383 U.S. 1, 5–6 (1966). Thus, Congress may control the grant of patents, but not so that they are "easily or freely given," Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp., 340 U.S. 147, 154 (1950), and only so as to "promote the Progress of Science and useful Arts." U.S. CONST. art. I, § 8, cl. 8. *But cf.* Burchfiel, *supra* note 13, at 173–78 (suggesting the recent interpretations of the patent clause to be unfounded and based on a misguided inquiry into the Framers' intent).

131. *See supra* note 129 and accompanying text.

132. *See infra* notes 183–85 and accompanying text.

133. *See infra* notes 144–47 and accompanying text.

134. *See supra* notes 77–83 and accompanying text; *infra* notes 137–41 and accompanying text.

135. *See supra* note 130.

extent that the amendments reiterate prior legislative policies, the argument that the further development of law in the field should have been left to the courts has merit.[136] However, in addition to clarifying patent policy, Congress was also adopting new policy goals.

Congress apparently intended to encourage team research by heading off a development in the case law[137] that was seen to be detrimental to joint research efforts.[138] As discussed,[139] congressional desire to encourage team research at least partially motivated the amendments to section 103, which prevent inventions from being found unpatentable for obviousness in light of prior in-house developments.[140] This change was intended to "encourage communication among members of research teams, and patenting, and consequently public dissemination, of the results of 'team research.'"[141]

The desire to encourage team research that motivated the amendment

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136. See the argument quoted in the text accompanying *supra* note 129. It should be noted that the negative criteria of joint inventorship adopted in the amendment fetter the courts less drastically than would positive criteria of the form: "Inventors must do X, Y, and Z to be joint inventors." The negative criteria only put upper bounds on what the courts can require of joint inventors.

137. *See supra* note 77.

138. "Section 104 of the bill changes a complex body of case law which discourages communication among members of research teams working in corporations, universities or other organizations." Section Analysis, *supra* note 66, at 28,071.

> If unknown to the inventor, however, the same organizational information would not be taken into account in judging nonobviousness. As a consequence, scientists or researchers unaware of such secret organizational information have a better chance of obtaining a patent than those to whom it was known.
>
> We are concerned that this body of jurisprudence will discourage the communication of technical information among scientists and researchers in an organization . . . .
>
> . . . .
>
> . . . Inventions are far less likely to arise from isolated research efforts by those unaware of available background technology and out of communication with others in the organization.

House Hearings, *supra* note 37, at 5 (testimony of Mossinghoff); *see also Senate Hearings*, *supra* note 37, at 31–32 ("This is clearly bad, for it militates against, really penalizes, the use of team reserach to solve problems."); *House Hearings*, *supra* note 37, at 62 (testimony of Manbeck); *Senate Hearings*, *supra* note 37, at 66–67 (written statement of Pravel).

139. *See supra* notes 77–81 and accompanying text.

140. Pub. L. No. 98–622, 98 Stat. 3383 (1984) (amending 35 U.S.C. § 103, para. 2).

141. Section Analysis, *supra* note 66, at 28,071. "The availability and use of this confidential corporate information among coworkers can contribute greatly to the efficacy of the research effort and its innovative results and should be encouraged as an efficiency in our national effort to advance technologically." *House Hearings*, *supra* note 37, at 61 (testimony of Manbeck).

to section 103 was also largely responsible for the amendment to section 116.[142] The biggest hindrance to team research efforts under prior section 116[143] was the "all claims rule"[144] imposed by some courts.[145] This rule required named joint inventors to have contributed jointly to every aspect of an invention and every claim of a resulting patent. In the House Subcommittee Hearings on Innovation and Patent Law Reform, Gerald J. Mossinghoff, Commissioner of Patents and Trademarks, testified:

> 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.
>
> The preparation of patent applications . . . nevertheless requires the attorney to determine the inventorship of each claim . . . . Adequate protection for an invention may require the filing of several applications to cover the separate contributions to all of its aspects.[146]

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142. "The amendments to section 6 [of the bill, amending 35 U.S.C. § 116] are complimentary [sic] to the amendments to section 103, and recognize the realities of team research in a modern organizational environment." *Senate Hearings*, *supra* note 37, at 68 (written testimony of Pravel).

143. *See supra* note 48.

144. *See supra* notes 92, 95 and accompanying text; *infra* notes 214–23 and accompanying text.

145. *See Senate Hearings*, *supra* note 37, at 68 (citing Worden v. Fisher, 11 F. 505 (C.C.E.D. Mich. 1882), Stewart v. Tenk, 32 F. 665 (C.C.S.D. Ill. 1887), and *In re* Sarett, 327 F.2d 1005 (C.C.P.A. 1964) for the "all claims rule," but citing SAB Industri A.B. v. Bendix Corp., 199 U.S.P.Q. (BNA) 95 (E.D. Va. 1978) against the "all claims rule" as being unsupported by statute or any PTO rule); *see also House Hearings*, *supra* note 37, at 157–58 (written statement of Schwartz, citing Rival Mfg. Co. v. Dazey Prods. Co., 358 F. Supp. 91, 101 (W.D. Mo. 1973) for the rule, and Vekamaf Holland B.V. v. Pipe Benders, Inc., 211 U.S.P.Q. (BNA) 955, 966 (D. Minn. 1981) (against the rule).

146. *House Hearings*, *supra* note 37, at 28 (written statement of Mossinghoff); *Id.* at 6–7 (testimony of Mossinghoff); *Senate Hearings*, *supra* note 37, at 32–33; *see also id.* at 48 (written statement of Banner: "It is often difficult or impossible to draft the claims of the patent so that each co-inventor has his contribution recited in each of the claims."); *House Hearings*, *supra* note 37, at 62 (testimony of Manbeck: "In team research, however, new scientists may join the team part way through the development so that although they may make important contributions, they cannot truthfully say that they were joint inventors of everything claimed in the patent application covering the development.").

Thus, the main focus of attention in the amendment to section 116 was the abandonment of the "all claims" rule.[147] In fact, the originally proposed amended text clearly abrogated the rule, but did nothing to guide determinations of joint inventorship.[148]

Congress's relaxation of the strict "all claims" rule does not show an intent to abrogate the collaboration, or joint manner, requirement.[149] Such an intent would be inconsistent with Congress's goal of encouraging communication. The legislative history[150] is replete with references to co-researchers working together by "brainstorming"[151] through "disclosure and cooperation,"[152] which "lead[s] inevitably to intermingling of ideas from people to achieve a desired result."[153] In fact, it was suggested that efficient, productive research depends on interaction among

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147. *See, e.g.*, 130 CONG. REC. 28,073 (1984). In his remarks on H.R. 6286, Rep. Kastenmeier summarized the effect of the amendment to 35 U.S.C. § 116 as follows: "Section 105 of the bill provides that two or more inventors may obtain a patent jointly even though each inventor has not contributed to each and every claim found in the patent application." He made no mention of the other aspects of the amendment that expressed negative criteria for defining joint inventorship. *Id.*

148. S. 1535 as introduced would have amended section 116 to read:

> When two or more persons have made inventive contributions to the subject matter claimed in an application, they shall apply for patent jointly and each shall sign the application and make the required oath, except as otherwise provided in this title. Joint inventors need not have made an inventive contribution to each claim of the application.

Senate Hearings, *supra* note 37, at 4–5. Bernarr Pravel, President of the AIPLA asserted that:

> The amendments to Section 116 of Title 35 should have a twofold purpose: (1) to permit inventors to be joined in a single patent application, even though they may not have contributed to every claim in the application, and (2) to clarify the criteria for joint inventorship. The Section as currently drafted achieves only the first purpose.

Id. at 67, 69.

149. *See* CHISUM, *supra* note 13, § 2.02[2], at 2–13 ("There is no evidence that Congress intended to discard the fundamental requirement tht [sic] there be some form of collaboration between the joint inventors in the development of the final invention."); *supra* notes 72 and 84 and accompanying text.

150. *See supra* Section III.

151. *Senate Hearings*, *supra* note 37, at 33 ("[c]oncepts and development plans generated through brainstorming . . .").

152. *Id.* at 67 ("the amendment . . . remov[es] statutory obstacles to disclosure and cooperation between co-employees").

153. *Id.* at 144; *see id.* at 156 ("Team research, and the benefits of the free flow of information within a research organization, add inevitably to the intermingling of ideas from various people to achieve a desired result.").

co-workers.[154] Thus, it is apparent that Congress envisioned a level of collaboration including at least some communication among joint inventors. Such collaboration is clearly possible "even though . . . they did not physically work together or at the same time."[155]

The legislative references to "brainstorming"[156] and "intermingling of ideas . . . to achieve a desired result"[157] further indicate that Congress accepted the conceptive contribution, or "inventive nature," requirement.[158] Congress's tacit approval of this requirement is reflected in the text of the originally proposed amendment to section 116: "When two or more persons have made inventive contributions to the subject matter claimed in an application. they shall apply for patent jointly . . . ."[159] However, the proposed use of "inventive contribution" as a criterion for joint inventorship did little to clarify the issue, so the undefined phrase was dropped.[160]

In any event, it is clear from the legislative history that every joint inventor named in an application must be a true inventor under the traditional requirements of inventorship.[161] Thus, each named inventor must

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154. "And productive research usually depends on the continuing development and communication . . . among researcher and scientists. Inventions are far less likely to arise from isolated research efforts by those . . . out of communication with others in the organization." *Id.* at 31–32 (testimony of Mossinghoff on the amendment to section 103).

155. 35 U.S.C. § 116 (1988).

156. *Supra* note 151 and accompanying text.

157. *Supra* note 153 and accompanying text.

158. *Supra* notes 15 and 41–43, *infra* note 190 and accompanying text.

159. S. 1535, 98th Cong., 1st Sess. (1983).

160. "[T]he originally proposed wording . . . does not state specific criteria for joint inventorship. The original wording merely substitutes a new, undefined term, i.e., that each have made 'an inventive contribution.' The amendment to Section 116 we recommended follows . . . : [the text as finally adopted]." *Senate Hearings*, *supra* note 37, at 69–70 (written statement of Pravel). However, the immediately preceding passage in the *Senate Hearings* might be taken to suggest that the "inventive contribution" requirement was to be relaxed or ignored:

> In addition to clarifying this "muddy" concept of the patent law, the suggested amendment also serves to insure that the patent specification provide a more complete disclosure relative to the requirements of enablement and best mode, by making clear that persons who have made contributions can be included as inventors, even when a question exists as to whether their contribution is an "inventive contribution."

Id. at 69. In context though, it seems this sentence merely refers to inventorship questions that might arise due to the lack of a clear definition of the term "inventive contribution." Furthermore, the passage refers to developing case precedents, which continue to require that joint contributions be of an "inventive nature." *See, e.g.*, Section IV.A.

161. "[The Amendment] is not intended to permit anyone other than the inventor to be named in a patent application or patent. Also, the Amendment is not intended to enable appropriation of the invention of another." Section Analysis, *supra* note 66, at 28,071.

have made some inventive contribution to the invention, and not, for example, merely have been a member of the team that developed it.

A further limitation imposed by Congress on joint inventorship is that each purported joint inventor must have made his contribution to only one invention. Each patent application remains subject to a restriction requirement under section 121[162] if it includes more than one independent and distinct invention.[163] Thus, merely combining ideas representing separate inventions is insufficient to constitute joint invention.

Another limitation gives an incentive for all true joint inventors in a research team to be joined in a single application. This is the reinstitution of "double patenting" rejections[164] for successive, commonly owned applications on the same invention or obvious variants of an invention, even when invented by different inventors.[165] Thus, what Congress gave in the amendment to section 103,[166] it partially took back by authorizing double patenting rejections.[167]

The otherwise clear Congressional intent is unfortunately muddied by some passages in the legislative history. For example, in a prepared statement, Commissioner of Patents Gerald Mossinghoff expressed a concern that the old all claims rule "requirements seem especially hypertechnical when in most cases a single organization owns patent rights from all the contributors to the invention."[168] This seems to imply that joint inventorship determinations could be based on the common employment of joint inventors and the resultant common ownership[169] of

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162. 35 U.S.C. § 121 (1988); *supra* notes 93–96 and accompanying text.

163. Section Analysis, *supra* note 66, at 28,071. *See also Senate Hearings*, *supra* note 37, at 33–34; *House Hearings*, *supra* note 37, at 29.

164. Double patenting rejections are intended to prevent an organization from effectively extending the term of exclusive patent rights on an invention by filing successive applications on subject matter which is essentially the same invention. Such a scheme would have been facilitated by the exclusion of "in house" prior art under the amendment to section 103. *See supra* note 86 and accompanying text.

165. Section Analysis, *supra* note 66, at 28,071. However, it should be noted that a double patenting rejection in some circumstances may be overcome by a "terminal disclaimer," which effectively terminates the later patent on the date on which the earlier patent expires. *Id.*; *see also Senate Hearings*, *supra* note 37, at 81 (pointing out that double patenting rejections and the use of "terminal disclaimers" have been judicially authorized).

166. *See supra* notes 78–87 and accompanying text.

167. *See, e.g.*, Daus, *supra* note 86, at 67; Donald G. Daus, *New and Unobvious Changes to the U.S. Patent Law*, 3 INTELL. PROP. J. 71 (1987).

168. *Senate Hearings*, *supra* note 37, at 33; *House Hearings*, *supra* note 37, at 7, 28.

169. *See generally* Witte & Guttag, *supra* note 16 (describing common employment contract practices that control the ownership of rights to inventions made by employees).

patent rights to their inventions, rather than on their joint contribution to the invention.[170]

However, this concern was raised only against the "all claims" rule, which was clearly abrogated by the amendments.[171] Furthermore, while arguing for less than complete jointness, i.e. that each joint inventor need not contribute to the invention of every claim, the Commissioner still recognized that the joint inventors must be the "contributors to the invention."

Additionally, it is clear from other passages that the Commissioner and Congress both distinguished common employment from the joint collaboration of joint invention.[172] Both recognized that there can be cases in which employees on the same research team are not joint inventors,[173] cases in which joint inventors are not employed by the same employer,[174] and cases in which joint inventors are commonly employed.[175]

In discussing another concern that had been raised, Commissioner Mossinghoff further implied that the amendments relaxed the collaboration requirement. He said some feared that the originally proposed amendment to section 116[176] "could permit patent applicants to 'buy up' information that would otherwise constitute prior art by hiring persons, for instance, whose unpublished inventive contributions could otherwise be patent defeating. Such persons would, under [the originally proposed text], be considered joint inventors with the patent applicant."[177] In such

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170. *See infra* notes 306–11 and accompanying text for the view of the PTO following this line of reasoning.

171. *See supra* notes 144–48 and accompanying text.

172. The originally proposed amendment to section 103 read: "Prior art shall not include unpublished information which is developed by the applicant singly or jointly with others, or which is known to the applicant only by virtue of his or her employment." S. 1535, § 5, 98th Cong., 1st Sess. (1983); *Senate Hearings*, *supra* note 37, at 4. Commissioner Mossinghoff agreed, in a prepared statement, that technical information should not be used as prior art if it is "developed by the patent applicant alone or in collaboration with others, or obtained by the applicant from co-researchers during the course of employment." *Id.* at 32.

173. *See, e.g.*, Consolidated Aluminum Corp. v. Foseco Int'l, Ltd., 10 U.S.P.Q.2d (BNA) 1143, 1163 (N.D. Ill. 1988), *aff'd*, 910 F.2d 804 (Fed. Cir. 1990).

174. *Cf.* MCV, Inc. v. King-Seeley Thermos Co., 870 F.2d 1568, 1569, 1573 (Fed. Cir. 1989) (court "do[es] not endorse" company policy excluding non-employees from being named as joint inventors on patents), *reh'g denied*, 1989 U.S. App. LEXIS 6921 (Fed. Cir. 1989).

175. *See, e.g.*, U.S. Surgical Corp. v. Hospital Prods. Int'l, 701 F. Supp. 314, 339–40 (D. Conn. 1988).

176. *See supra* notes 148 and 159 and accompanying text.

177. *Senate Hearings*, *supra* note 37, at 33; *House Hearings*, *supra* note 37, at 7, 29.

a case, there would be no collaboration[178] between the newly hired inventors and the prior employee inventors, yet they could be considered joint inventors.

The Commissioner called the "buy up" scheme "a potential abuse" of the originally proposed amendment.[179] It is clear that such joinder of non-collaborating inventors could not have been intended. To close the loophole, the adopted amendment to section 103 excludes from prior art only the subject matter commonly owned at the time the invention was made, not subject matter purchased thereafter.[180] Furthermore, the originally-proposed section 116 requirement of "inventive contribution," which lacked any mention of jointness of that contribution, was changed to a requirement that the "invention is made by two or more persons jointly."[181]

Any ambiguity that might appear to remain in either the text of amended section 116[182] or its legislative history is cleared up indirectly by judicial precedents cited in the legislative history. The adopted version of amended section 116 was proposed by the AIPLA, which drafted the recommendation largely to codify judicial precedents.[183] Furthermore, Commissioner Mossinghoff stated that, in the view of the PTO,

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178. A sequential communication of ideas might nonetheless exist in such a case. Namely, the employer's research team might have been working to further develop the idea originally conceived by the independent outside inventor, or further joint inventive work may have been carried out after the independent inventor was hired, in order to meld the several ideas into a single patentable invention.

179. *House Hearings*, *supra* note 37, at 7.

180. 35 U.S.C. § 103 (1988).

181. *Id.* § 116; *see* text accompanying *supra* notes 159–60. Under the narrower adopted text, outside inventors hired after the invention would no longer be "considered joint inventors with the patent applicant." *Supra* note 177 and accompanying text.

182. *See supra* notes 65–73 and accompanying text.

183.

> Determinations of inventorship in patent law are recognized as different [sic: difficult] undertakings and the amendment seeks to clarify and, to the extent possible, to simplify such undertakings by adopting and introducing into section 116 some principles set forth in judicial precedents . . . .
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> . . . .
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> . . . The amendments to section 116 in (i) and (ii), adopt as statutory criteria the pertinent principles of *Monsanto Co. v. Kamp*. . . .
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> . . . .
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> . . . While the principle that each inventor does not have to make a contribution to every claim of the patent was recognized by the court in *SAB Industri v. Bendix Corp.*, it is appropriate that this principle be incorporated into section 116 in order to clarify the criteria for joint inventorship.

Senate Hearings, *supra* note 37, at 81–83 (prepared statement of Pravel) (citation omitted).

"the provision would incorporate the rationale in decisions such as *SAB Industri v. Bendix Corp.*, and *Monsanto Co. v. Kamp.*"[184] Finally, the Section-By-Section Analysis of H.R. 6286 states that in the first paragraph of 35 U.S.C. § 116, "[i]tems (i) and (ii) adopt the rationale of decisions such as Monsanto . . . . Item (iii) adopts the rationale of cases such as *SAB Industri* . . . ."[185]

IV. THE JUDICIAL PRECEDENTS

Because the amendments to section 116 explicitly codified developing judicial precedents, it is instructive to analyze the cited cases and their progeny in order to clarify both the policies and the elements that dictate a finding of joint inventorship.

A. The Major Precedents and Their Basic Rules

In 1967 the court in *Monsanto Co. v. Kamp*[186] announced the criteria for joint inventorship later adopted in section 116. The case came to the district court as an action to set aside an interference determination by the Patent Office.[187] One contested issue was whether defendants Kamp and Jahn were proper joint inventors.[188]

In its consideration of this issue, the court wrote an often-quoted summary of the requirements of joint inventorship:

> 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.[189]

This summary echoes the basic rule that joint inventorship requires a

184. *Senate Hearings*, *supra* note 37, at 33 (citations omitted); *House Hearings*, *supra* note 37, at 29.

185. Section Analysis, *supra* note 66, at 28,071 (citations omitted).

186. 269 F. Supp. 818 (D.D.C. 1967).

187. *Id.* at 821.

188. *Id.* at 822. Kamp and Jahn had invented a polyethylene lined plastic bottle resistant to leakage, permeation, and evaporation of liquid contents. *Id.* at 821.

189. *Id.* at 824.

joint manner (collaboration) and inventive nature (conception) of contributions by each inventor.[190] The rule further requires a common goal; the aggregate efforts of all inventors must lead to the same end result.[191]

The court also stated what is not required for joint inventorship:

> 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.[192]

These negative limiting criteria were adopted in section 116.[193] It is unclear why Congress did not explicitly integrate positive requirements of joint inventorship into the text of section 116.[194] However, positive requirements are implicitly adopted by the legislative reference[195] to the principles of *Monsanto*.[196]

A concrete application of the adopted principles is exemplified in *Monsanto*, where the facts supported a determination of joint inventorship. The court first indicated that the two inventors had not worked together physically or, presumably, at the same time, and had contributed in different amounts:

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190. *See supra* notes 15, 28 and 40–41 and accompanying text.

191. *See also* Mueller Brass Co. v. Reading Indus., Inc., 352 F. Supp. 1357 (E.D. Pa. 1972), *aff'd without opinion*, 487 F.2d 1395 (3d Cir. 1973).

> To claim inventorship is to claim at least some role in the final conception of that which is sought to be patented .... This Court has found no case in which co-inventorship status was recognized where the alleged co-inventor was not deemed in some way ... to have beneficially affected the final concept of the claimed invention ....

Id. at 1372.

192. *Monsanto*, 269 F. Supp. at 824.

193. 35 U.S.C. § 116 (1988).

194. *See supra* note 136 and accompanying text.

195. *See supra* note 185 and accompanying text.

196. *See Monsanto*, 269 F. Supp. at 818.

> The defendant Kamp was the principal proprietor of the business and actively managed it. The defendant Jahn was a chemist in the employ of the concern. Each of the two defendants had his own laboratory. Apparently most of the detailed experimental work was done by Jahn. Some of it, however, was conducted by Kamp.[197]

Nonetheless, the court found that the two were proper joint inventors because they had collaborated in sharing ideas such that both had contributed to the conception of the final invention:[198]

> The two co-workers were in frequent consultation with each other concerning various aspects of the project. Jahn reported to Kamp from time to time concerning his laboratory operations and Kamp made suggestions to him. There was an interchange of ideas between the two, until finally a consummation was reached. Each of the two gave credit to the participation of his colleague in the development of the invention.[199]

Monsanto involved aspects of "corporate team research." The changing needs of inventors and corporate assignees due to the trend toward team research methods motivated the 1984 amendments to Title 35.[200] In this context, it is noteworthy that Congress did not adopt[201] the policies enunciated in the more contemporary decision, *General Motors Corp. v. Toyota Motor Co.*,[202] which expressly dealt with joint inventorship in a research team setting.

In this case, three General Motors ("GM") employees were named as joint inventors of an efficient catalytic converter.[203] The final converter had been developed in stages by a team that included various other researchers at different times.[204] Toyota argued that the prior developmental stages were prior art, making the final invention obvious and unpatentable. GM countered that, even though the researchers did not

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197. *Id.* at 825.

198. *See supra* notes 190–91 and accompanying text.

199. *Monsanto*, 269 F. Supp. at 825. Notice that the court apparently gave some consideration to the mutual credit each inventor gave the other as a joint inventor. *See supra* note 106 and accompanying text; *infra* notes 258–60 and accompanying text for a discussion of the weight given applicants' assertions.

200. *See supra* notes 47, 76–83 and 141–42 and accompanying text.

201. *See* text accompanying *infra* notes 210–11.

202. 667 F.2d 504 (6th Cir. 1981), *cert. denied*, 456 U.S. 937 (1982).

203. *Id.* at 506.

204. *Id.*

directly collaborate at all stages, the sequence of stages represented a single joint inventive process involving all of the team members.[205] Weighing these arguments, the court noted:

> GM's argument has the virtue of realism—it provides an accurate description of the manner of the patented converter's invention. The '041 converter's creation was not at the hands of lone-eagle inventors who occasionally flocked together to exchange ideas, but was the product of a concerted effort underwritten and directed by GM.[206]

Thus, the court not only considered the corporate sponsorship and direction of the research, but also found "concerted effort" even beyond the "exchange [of] ideas."[207] The court further elaborated on the significance of the common employment of all of the researchers:

> Neither *Land* nor *Bass* [cited by Toyota] indicates that the prior inventions were in any way the product of concerted effort within a business entity. Under the facts of this case, where numerous "inventors" all worked under the aegis of one employer toward a common goal, it is appropriate to define the concept of joint invention broadly. It is not realistic to require in such circumstances that joint inventors work side-by-side, and that each step in the inventive process be taken by all the firm's collaborators.[208]

While this decision may have been "on the right track in giving a broad construction to joint invention in the context of organized research and development,"[209] from the legislative history of the amendments it is "not ... clear whether Congress meant to endorse the expansive definition of joint invention ... embraced [here]."[210] It can be presumed

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205. *Id.* The type of argument Toyota advanced was later deprived of effect in most cases by the amendment to section 103. *See supra* notes 77–82 and accompanying text. The interaction of section 116 joint inventorship principles and section 103 prior art principles is exemplified here. The court was determining the proper effect of in-house prior art, but couched its analysis in the terms of a joint inventorship determination.

206. *General Motors*, 667 F.2d at 506.

207. *Id.*

208. *Id.* at 506–07.

209. CHISUM, *supra* note 13, § 2.02[2], at 2–11.

210. *Id.* at 2–13.

that Congress did not so intend.[211] Moreover, this case has not been widely cited.[212]

Thus, while the holding and general principles behind *General Motors* are correct, the "work[ing] under the aegis of one employer" rubric is not to be given controlling importance. The controlling criteria will be considered *infra* in discussions of other judicial inventorship determinations.[213]

The "non-all claims" rule aspect of amendments to section 116 (i.e. that each joint inventor need not contribute to each claim of a patent)[214] was adopted from *SAB Industri AB v. Bendix Corp.*[215] The *SAB Industri* court stated:

> The defendants assert that . . . joint inventors must have combined their efforts as to each claim in the patent. Neither the statute nor any rule of the Patent Office . . . cited to the Court provides such a restrictive meaning of the term "joint." [The *Rival Mfg.* case] may be distinguished on its facts, [because there the omitted inventors failed to meet the collaboration requirements]. The Court will assume, however, for the purpose of this decision and because there is some evidence that it is in accordance with customary practice in the Patent Office, that the defendants' position is correct.[216]

Courts had not uniformly accepted the "all claims rule"[217] prior to the 1984 amendments.[218] The *SAB Industri* statement repudiating the rule has been accepted as controlling law ever since the 1984 amendments.[219] Therefore, the new "non-all claims" rule is not considered in detail in

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211. *See supra* notes 73–75, 171–72 and accompanying text.

212. LEXIS Shepard's Federal Citations shows only seven other citing cases to date (as of Apr. 26, 1992).

213. *See infra* notes 231–57 and accompanying text.

214. 35 U.S.C. § 116, para. 1 (1988).

215. 199 U.S.P.Q. (BNA) 97 (E.D. Va. 1978).

216. *Id.* at 104.

217. *See supra* notes 144–48 and accompanying text.

218. Smithkline Diagnostics, Inc. v. Helena Labs. Corp., 859 F.2d 878, 888 (Fed. Cir. 1988). *Compare* Rival Mfg. Co. v. Dazey Prods. Co., 358 F. Supp. 91, 101 (W.D. Mo. 1973) (applying all claims rule), *with* Vekamaf Holland B.V. v. Pipe Benders, Inc. 211 U.S.P.Q. (BNA) 955 (D. Minn. 1981) (rejecting all claims rule).

219. *See Smithkline Diagnostics*, 859 F.2d at 888–89; United States v. Telectronics Inc., 658 F. Supp. 579, 592 n.1 (D. Colo. 1987); *see also* CHISUM, *supra* note 13, § 2.03[3], at 2–28.

this Article.[220] However, as it remained ambiguous even after the 1984 amendments, the proper breadth of the "non-all claims" rule warrants mention here. Any one of three approaches could be used: 1) Require all inventors to have jointly invented the subject of at least one "mother claim"; 2) Require only a "chain of inventorship" linking all inventors through overlapping inventorship of successive claims; or 3) Require only that each inventor is a sole or joint inventor of the subject of any claim under an "unrestricted umbrella concept."[221] The PTO has taken the broadest point of view,[222] reversing its prior "customary practice."[223]

B. Further Judicial Refinement of the Requirements of Joint Inventorship

Other cases further elucidate the basic requirements of joint inventorship set forth in *Monsanto*:[224] inventors must collaborate or contribute in a joint manner, and those contributions must be inventive in nature.

1. Joint Manner

As suggested,[225] the PTO apparently requires little collaboration between purported joint inventors.[226] This practice is reflected in *Chai v. Frame*,[227] a recent decision of the Board of Patent Appeals and Interferences that resolved a priority dispute. The Board allowed additional joint inventors to be added to Chai's patent application[228] and commented:

> [W]e find no absolute requirement in the law for direct collaboration between joint inventors. In adopting this broad approach, we thereby recognize the realities of ongoing team research efforts in modern day technical organizations which are directed toward a common goal over an extended period of

220. It should be noted that this rule, or non-rule, does not itself define a criterion for joint inventorship anyway, but rather only establishes a procedural requirement for the drafting of patent claims. *See supra* notes 71 and 146.

221. *See* CHISUM, *supra* note 13, § 2.03[3], at 2–29.

222. *See, e.g.*, 37 C.F.R. § 1.45(c) (1991); CHISUM, *supra* note 13, § 2.03[3], at 2–29 n.11.1; text accompanying *infra* notes 321–22.

223. *SAB Industri*, 199 U.S.P.Q. (BNA) at 104.

224. 269 F. Supp. 818 (D.D.C. 1967).

225. *See supra* note 6 and accompanying text.

226. *See infra* notes 305–09 and accompanying text.

227. 10 U.S.P.Q.2d (BNA) 1460 (Bd. Pat. App. & Int'f 1988).

228. Correction of inventorship designations in applications is liberally allowed. *See supra* notes 106–12 and accompanying text.

> time under the aegis of a single employer. In our opinion, this approach is in accord with the realities of the actual inventive efforts undertaken at [Chai's employer] and with the legislative intent underlying the expansion of the statutory definition of joint inventorship [in the 1984 amendments to section 116].[229]

It is unclear what the PTO requires for joint inventorship, if there is "no absolute requirement . . . for direct collaboration . . . ." At least we are told by the Board that the added joint inventors "as part of the 'Delta Development Team'. . . made some contribution to the invention . . . ."[230]

The courts have generally required somewhat greater collaboration among joint inventors than has the PTO.[231] Usually, substantial teamwork underlies judicial findings of joint invention. For example, in *U.S. Surgical Corp. v. Hospital Prods. Int'l*,[232] the court held joinder of the inventors to be proper, because

> the engineers at Van Dyck worked in groups, the members of which regularly met, interacted, and exchanged ideas. The three patentees regularly interacted in this setting in an effort to solve the problem of proper staple firing and formation.

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229. *Chai*, 10 U.S.P.Q.2d (BNA) at 1462. This passage mimics the language of General Motors Corp. v. Toyota Motor Co., 667 F.2d 504 (6th Cir. 1981), without directly citing that case. The Board opines that its approach is "in accord with . . . the legislative intent," even as it follows the reasoning of *General Motors*, which apparently embraces a broader definition of joint invention, *see supra* notes 209–13 and accompanying text, than does *Monsanto*. It is the latter case, of course, which is expressly cited in the legislative history, *see supra* note 185 and accompanying text.

230. *Chai*, 10 U.S.P.Q.2d (BNA) at 1462. The finding of proper joinder of inventors was based largely on the failure of the opposing party to meet his "burden of demonstrating that the contribution of [the joint inventors] was insufficient." *Id.*

231. *Cf., e.g.*, Maier & Gnuse, *supra* note 47, at 26 ("The inventors need not work on the invention at the same time or in the same place, but they must collaborate. What is sufficient collaboration? Certainly, if there is absolutely no communication between two parties, they cannot be considered joint inventors . . . .") (footnote omitted).

As a corollary point, when inventors *have* collaborated in developing a single invention, they *must* be regarded as joint inventors. "[Some have argued that they are] entitled to separate patents for [their] own independent contribution to the basic objective of the overall research project. Such a broad proposition has been previously rejected, and it is inconsistent with both our precedents and recent legislation." *In re* Longi, 759 F.2d 887, 893 (Fed. Cir. 1985). *See also supra* notes 51–52 and accompanying text.

232. 701 F. Supp. 314, 340 (D. Conn. 1988).

> Given this scenario . . . the anvil groove . . . was the product of the work of all three.[233]

Apparently, some form of communication and shared knowledge among the inventors is the absolute minimum sufficient collaboration.[234] That the requisite communication need not be interactive, contemporaneous or face-to-face had already been established before enactment of the 1984 amendments in *Clairol Inc. v. Save-Way Indus., Inc.*[235] In that case, the court held that "it is not essential for two or more people to engage in give-and-take discussions to produce an item of joint inventorship."[236] Citing *Monsanto*,[237] the court found sufficient collaboration when a first inventor developed a prototype and sent it to the second inventor. The two inventors had little contact while the second inventor made certain refinements.[238] The court found that "[t]he ideas of [the first inventor] were presented daily to [the second inventor] by the prototype, and the final result was a creation that exceeded the results of either inventor . . . . [It was a] synergistic result of the inextricable efforts of [the second] and [first inventors] . . . ."[239]

Thus, *Clairol* provides an example of joint inventorship when the inventors indirectly communicated ideas "even though . . . they did not

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233. *Id. See also* Amax Fly Ash Corp. v. United States, 514 F.2d 1041, 1051 (Ct. Cl. 1975), in which the court found that:

> [I]t was not until the subsequent meeting with Thomas and Jones that the process was thought through, both as a fire-control technique and as a surface-subsidence measure. [Various matters] were discussed by the three men. All of these matters are pertinent, [to how the method can be practiced] to achieve the desired results.
>
> In view of this, it cannot be found by clear and convincing evidence that Thomas and Jones contributed nothing to the final conception of the method . . . .

234. *See* Maier & Gnuse, *supra* note 47, at 26 ("[S]ome form of communication of information from one joint inventor to the other is absolutely required . . . . In the course of their collaboration, the joint inventors must share some knowledge of the general goal or end toward which they were working . . . .") (footnote omitted); Sheldon & Mak, *supra* note 7, at 7, col. 2 ("there must be some communication, direct or indirect, between the joint inventors").

235. 210 U.S.P.Q. (BNA) 459, 465 (S.D. Fla. 1980).

236. *Id.*

237. *269 F. Supp. 818 (D.D.C. 1967).*

238. *Clairol*, 210 U.S.P.Q. (BNA) at 465.

239. *Id. But see In re* Certain Double-Sided Floppy Disk Drives And Components Thereof (Part 2 of 4), Investigation No. 337-TA-215, 1986 ITC LEXIS 300, U.S.I.T.C. Publication No. 1860 (U.S.I.T.C. 1986) (Smith was not a joint inventor when he "prepared a crude model of the modified CalComp design [which] prompted Tandon . . . to adapt[ ] the single-sided drive to double-sided use, [because the] crude model did not work.")

physically work together or at the same time."[240] From this case at least it can be inferred that the "communication need not be a face-to-face, two-way dialog but can amount to one inventor simply reading the work of the other."[241]

While the contributions need not be made at the same time, the sequencing of events can nonetheless be critical. If the subject matter of a patent application was conceived before additional researchers joined the responsible research team, the latecomers cannot be joint inventors of that subject matter, even if they later worked on the project.[242]

2. Inventive Nature

Compared to the joint manner requirement, the inventive nature requirement is not a predominant feature of the 1984 amendments.[243] Courts both before and after the amendments have continued to demand that joint inventors have "at least some role in the final conception of that which is sought to be patented."[244] Conception has been defined as "the

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240. 35 U.S.C. § 116 (1988).

241. Maier & Gnuse, *supra* note 47, at 26. Even this most minimal collaboration is apparently not required by the PTO. *See infra* notes 305–12 and accompanying text.

242. *See, e.g.*, Mueller Brass Co. v. Reading Indus., Inc., 352 F. Supp. 1357, 1374 (E.D. Pa. 1972), *aff'd without opinion*, 487 F.2d 1395 (3d. Cir. 1973).

> Rader came to the project in the fall of 1960, at a point where the method claimed in the patent in suit was already fully conceived. His work upon the plug entitled him to co-inventorsh status for the plug, but not the method. The method does not depend on a pl of Rader's design .... The idea for every complete step in the method existed prior to Rader's involvement in the project. Although it would not yield an unjust result to do so, intellectual honesty prevents this court from stretching the concept of joint inventorship quite far enough to cover Rader.

Id.; Consolidated Aluminum Corp. v. Foseco Int'l, 10 U.S.P.Q.2d (BNA) 1143, 1163 (N.D. Ill. 1988) ("[T]he filter [of the patent] had been invented and reduced to practice before either Mr. Yarwood or Mr. Preuss got involved in the ... filter project. Although these gentlemen[] ... worked with the filters thereafter ... [they] were not inventors of the ... patent."); Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc., 750 F.2d 1552, 1563 (Fed. Cir. 1984) (Nyman was not a joint inventor because "Trans-World had completed and perfected its design approximately two months before Mr. Nyman showed [that company] his sketches.").

243. *See supra* notes 156–61 and accompanying text.

244. *Mueller Brass*, 352 F. Supp. at 1372; Monsanto Co. v. Kamp, 269 F. Supp. 818, 824 (D.D.C. 1967) (Each inventor must "make some contribution to the inventive thought and to the final result."); *see* Idacon Inc. v. Central Forest Prods. Inc., 3 U.S.P.Q.2d (BNA) 1079, 1088 (E.D. Okla. 1986) (Each "individual must contribute to the final conception of that which is covered by the claims ... to be considered an inventor."); *see also supra* notes 15, 41 and 190–91 and accompanying text. It should be noted that conception is a basic requirement of inventorship for sole as well as joint inventors. This Article does not consider all the nuances of conception generally, but rather focuses on the aspects that are especially pertinent to joint invention.

complete performance of the mental part of the inventive act .... It is therefore the formation, in the mind of the inventor of a *definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice*, that constitutes [a] conception[ ] ...."[245] Thus, each joint inventor must contribute to the development of the complete and operative idea behind the invention.

In order for a contribution to a conception to rise to the level of joint invention, it must be reasonably concrete and specific.[246] One commentator analyzed several cases[247] and concluded that conceptual specificity is a factor in joint inventorship determinations.[248] Contributors were found to be joint inventors when they either made very specific recommendations for improving the inventive structure,[249] or discussed details that were "pertinent, in some degree, to a perception of how [to practice an inventive method] to achieve the desired results."[250] On the other hand, the contributor of a suggestion that is "substantially less than a firm conception of the process [but rather is only] a general, vague idea [that did not delineate] the specific process steps" was not found to be a joint inventor.[251]

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245. Coleman v. Dines, 754 F.2d 353, 359 (Fed. Cir. 1985) (quoting Gunter v. Stream, 573 F.2d 77, 80 (C.C.P.A. 1978)).

246. *See* Harris, *supra* note 39, at 316. Because the 1984 Amendments to section 116 do not expressly address the inventive nature required of joint inventors' contributions, the amendments do not apparently affect the requirement of conceptual specificity. *See id.*

247. The cases analyzed include: *Mueller Brass*, 352 F. Supp. 1357; Jamesbury Corp. v. United States, 518 F.2d 1384 (Ct. Cl. 1975); Amax Fly Ash Corp. v. United States, 514 F.2d 1041 (Ct. Cl. 1975); and Morgan v. Hirsch, 728 F.2d 1449 (Fed. Cir. 1984). A part of *Morgan*'s underlying rationale has been superseded by statute, but the points of relevance here are not affected. *See* Kwon v. Perkins, 6 U.S.P.Q.2d. (BNA) 1747 (Bd. Pat. App. & Int'f 1988), *aff'd*, 886 F.2d 325 (Fed. Cir. 1989) (board now has power to decide both priority and patentability questions).

248. Harris, *supra* note 39, at 315.

249. *See, e.g.*, *Jamesbury*, 518 F.2d at 1394, in which the court found proper joinder of inventors after noting that:

> In order to overcome the seat tearing problem[,] ... Vaudreil suggested that a small part of the metal casing behind the flexible valve seat be chamfered or cut away .... Adoption of the suggestion resulted in a valve seat that was free of the tearing defect ....

250. *Amax Fly Ash*, 514 F.2d at 1051.

251. *Id.* at 1049; *see* Garrett Corp. v. United States, 422 F.2d 874, 881 (Ct. Cl. 1970):

> [T]he most that can be said on this record for Bicknell's participation in the inventive effort is that he apparently suggested the broad idea of a water ballast pocket .... [W]e infer that he had nothing to do with the further[,] ... more refined, concept of placing access ports above the water line.

See also infra notes 265–71 and accompanying text.

Conceptual specificity seems to encompass several doctrinal requirements. Various types of contribution, such as merely suggesting a desired result, having entrepreneurial involvement, or following the complete instructions of another, are not sufficiently conceptually specific to warrant a finding of joint inventorship.[252] Contributions that are sufficiently conceptually specific are those that are substantial or crucial[253] and relate to the final result of a complete invention.[254]

This commentator further concluded that:

> These decisions evince a marked judicial inclination to favor the inventorship claim of the person who has done the nitty-gritty detailed work involved in creating the operable invention, as opposed even to that person whose broad, general concept may be the most important single concept of all those involved .... [T]he type of inventive genius most deserving of the patent reward, is more often evinced by a long-haul struggle which conquers frustrating problems — in the words of Thomas Edison, "1% inspiration and 99% perspiration."[255]

However, the view that "nitty-gritty" work deserves greater reward than a "flash-of-genius" was squarely rejected by the inclusion in section 103 of the sentence: "Patentability shall not be negatived by the manner in which the invention was made."[256] Thus, conceptual specificity must not

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252. *See infra* notes 281–83 and accompanying text.

253. *See Jamesbury*, 518 F.2d at 1396, noting that:

> Vaudreuil did make a contribution of very substantial importance .... [A]s a result of Vaudreuil's contribution, tearing of the valve seat was eliminated and plaintiff eventually produced a valve that gained widespread use and substantial commercial success. The facts demonstrate that Vaudreuil's contribution was of crucial importance to Freeman and that Vaudreuil must be considered a coinventor ....

However, the mere fact that an invention would not have occurred "but for" a particular contribution is not, by itself, sufficient to make the contributor a joint inventor. *See infra* note 280 and accompanying text.

254. The contribution of each joint inventor need not be comprehensive, however, especially after the abandonment of the "all claims rule." *See supra* notes 144–48 and 214–23 and accompanying text. So, the comprehensiveness of the conception is not a factor directly affecting the evaluation of any one inventor's contribution, except to the extent that the contribution must become incorporated in the completed inventive whole. *See* Harris, *supra* note 39, at 333.

255. Harris, *supra* note 39, at 334.

256. 35 U.S.C. § 103 (1988); *see* P. J. Federico, *Commentary On The New Patent Act*, 35 U.S.C.A. 1, 23 (West 1954) ("it is immaterial whether [the invention] resulted from long toil and experimentation or from a flash of genius").

be construed so narrowly as to preclude the joinder of inventors who make substantial and specific contributions to the conception yet do not get involved in the "nitty-gritty" development.[257]

If inventorship is disputed, the conceptual contribution of any joint inventor must be proven and corroborated by evidence beyond the testimony of the joint inventors themselves.[258] This requirement is at variance with the rule that during the prosecution of patents before the PTO the "word of the inventors is normally accepted as to who are the actual inventors."[259] The 1984 amendments may have relaxed this outside corroboration requirement, because now all the inventors need not be joint as to every claim. Thus, a joint inventor might be available as a corroborating witness as to the conception of claims to which he did not contribute.[260]

3. Failure to Meet the Requirements of Joint Inventorship

Failure to meet the several requirements for joint inventorship prevents joinder. The case law provides a number of specific examples of alleged inventive contributions that do not reach the level of joint invention.

Absent the necessary collaboration of effort toward a common goal, the independent conception of essentially the same inventive idea by two inventors cannot be considered a joint invention.[261] Normally, this

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257. *See infra* notes 281–83 and accompanying text, to the effect that an inventor can employ the services of others to perfect his already conceived invention without denigrating his own inventorship nor necessarily making the assistants inventors.

258. *See* Larson v. Johenning, 17 U.S.P.Q.2d (BNA) 1610 (Bd. Pat. Apps. & Int'f. 1990); Coleman v. Dines, 754 F.2d 353, 359 (Fed. Cir. 1985); *see also* U.S. Surgical Corp. v. Hospital Prods. Int'l, 701 F. Supp. 314, 340 (D. Conn. 1988) (Testimony of one claiming sole inventorship does not control when strong evidence is to the contrary. "[I]t is clear that although Green felt the idea . . . was 'his,' it really was the product of the work of all three . . . . [There is a] 'temptation for honest witnesses, who have worked years with a patentee to implement his ideas, to forget whose ideas they were.'") (citation omitted).

259. *In re* Certain Double-Sided Floppy Disk Drives And Components Thereof (Part 2 of 4), Investigation No. 337–TA–215, 1986 ITC LEXIS 300, U.S.I.T.C. Publication No. 1860 (U.S.I.T.C. 1986) (citation omitted); *see also supra* note 199 and accompanying text.

260. Without such a relaxation of the corroboration requirement, a dilemma would result. The 1984 amendments allow broader joinder of more inventors, often all the inventors working together in a research team. However, if all the knowledgeable contributors are joined, then under a stricter corroboration requirement there would be no competent yet independent witnesses to corroborate the evidence of conceptual contribution by the potential inventors.

261. *See* Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc., 750 F.2d 1552, 1563 (Fed. Cir. 1984) (Defendant failed to prove he was a co-inventor of plaintiff's design patent when he independently conceived the rudimentary idea and only conveyed the idea to plaintiff after plaintiff's conception was already complete: "The question is not whether Nyman knew of the Trans-World design prior to September, but whether that design was perfected before Mr. Nyman showed Trans-World his sketches.").

identical independent conception triggers a priority interference,[262] but the PTO has indicated that if both inventors are under a duty to assign their patent rights to the same company, then joinder will be allowed.[263] Under the precedents reviewed here, it seems that such a casual joinder practice would not survive judicial scrutiny.

Many types of contributions seem collaborative, but fail to satisfy the inventive nature requirement. An employer will often assert that he and his employee inventors are joint inventors.[264] However, if his contributions to the inventive process are insufficient, joinder is denied. One does not become a joint inventor by merely posing a problem to be solved or suggesting a desired result to be achieved through research.[265] This is true even if the original suggestion of a general goal is a "but for" cause of the resulting inventive development.[266]

General suggestions by an employer may fail to be inventive contributions because they lack the requisite conceptual specificity.[267] In *Morgan v. Hirsch*[268] the parties each claimed inventorship of both a knitted thermal fabric and the method of producing it.[269] While Morgan requested the general type of fabric to be made and rejected successive samples, Hirsch finally succeeded in making it.[270] The court found Morgan failed to establish his joint inventorship because:

> [T]here is no evidence that he had in mind a specific stitch structure .... "Morgan did not make the invention. He only posed the problem." ... But asking someone to produce something without saying just what it is to be or how to do it is not what the patent law recognizes as inventing.[271]

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262. 37 C.F.R. §§ 1.601–.690 (1991).

263. *See infra* notes 305–11 and accompanying text.

264. *See supra* notes 243–44 and accompanying text.

265. *See* Morgan v. Hirsch, 728 F.2d 1449, 1452 (Fed. Cir. 1984); *supra* note 248. However, when an employer (or anyone else) conceives a complete inventive idea and gives others specific instructions to carry out the development, then that employer is the exclusive inventor. *See infra* notes 281–83 and accompanying text.

266. *See Morgan*, 728 F.2d at 1452; *see also In re* Certain Nonwoven Gas Filter Elements, Investigation No. 337–TA–275, 1988 ITC LEXIS 85, U.S.I.T.C. Publication No. 2129 (U.S.I.T.C. 1988); *infra* note 280 and accompanying text.

267. *See supra* notes 246–48 and accompanying text.

268. 728 F.2d 1449 (Fed. Cir. 1984).

269. *Id.* at 1451–52.

270. *Id.*

271. *Id.* at 1452; *see also Certain Nonwoven Gas Filter Elements*, 1988 ITC LEXIS 85:

> While it is recognized that section 116 of the patent statute establishes that inventors need neither physically work together nor make the same amount nor type of contribution, there is no evidence that Richter or Huber made any *specific* contribution to the conception ... beyond an initiative and a *general* communication and cooperation.

More generally, employers are often deemed to have made merely entrepreneurial and managerial contributions worthy of business rewards, rather than inventive contributions to be rewarded by patent rights.[272] In *Morgan*,[273] the court commented: "In our view, . . . Mr. Morgan has confused his entrepreneurship with inventorship."[274] In a case before the International Trade Commission, two salesmen suggested the basic idea of combining certain filter elements and then helped to coordinate the development efforts.[275] The ITC found them not to be joint inventors because:

> The subsequent participation of Richter and Huber in the development process . . . can well be characterized as managerial and advisory in facilitating communication between different technical departments which did not have a cooperative structure . . . and as such Richter and Huber are shown to be only managers and entrepreneurs rather than inventors.[276]

Once again, the basic requirements of joint inventorship are controlling: A joint inventor's contribution must be joint in manner and inventive in nature.[277]

Finally, the mere ownership of patent rights, for example through an employment contract,[278] does not confer inventorship.[279] Thus, it is

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Id. at *154 (emphasis added). *But cf.* Indecor, Inc. v. Fox-Wells & Co., 642 F. Supp. 1473, 1490–91 (S.D.N.Y. 1986) (Conceptualizer of integrally knitted cubicle enclosure curtain who provided plaintiff "with detailed instructions describing the type of fabric [conceptualizer] wanted and what [plaintiff] should do in developing the fabric based on that conception" is sole inventor, notwithstanding plaintiff's role in development of invention.).

272. *See Morgan*, 728 F.2d 1449; *Certain Nonwoven Gas Filter Elements*, 1988 ITC LEXIS 85.

273. 728 F.2d 1449.

274. *Id.* at 1452.

275. *Certain Nonwoven Gas Filter Elements*, 1988 ITC LEXIS 85.

276. *Id.* at *153–54.

277. *See supra* notes 15, 28 and 40–41 and accompanying text.

278. *See generally* Witte & Guttag, *supra* note 16.

279. *See, e.g., In re* Certain Double-Sided Floppy Disk Drivers and Components Thereof, Investigation No. 337–TA–215, 1986 ITC LEXIS 300, *35, U.S.I.T.C. Publication No. 1860 (U.S.I.T.C. 1986) (Part 2 of 4):

> The facts may indicate a basis for contract dispute between [the parties] but do not show that any inventors have been omitted.
>
> In Mr. Meyer's view, the agreements between Tandon and CalComp divided the ownership of different components of the double-sided disk drive between Tandon and CalComp, and Tandon patented more than it owned . . . . This may be so, but Mr. Smith does not claim to have been one of the inventors.

clearly not inventive to provide money, facilities, materials, support staff, and the like, even though such contributions support research and development efforts that result in innovation, and even if these innovations would not have occurred "but for" the contributions.[280]

While in many situations an employer's contributions to an innovation are not inventive in nature, in other cases employee researchers are not proper joint inventors with their employer. If an employer or superior conceives of an invention, he "may use the services, ideas, and aid of others in the process of perfecting his invention without losing his right to a patent."[281]

Thus, if the employer inventor instructs an assistant or employee to carry out specific tests or developmental steps, that assistant does not become a joint inventor simply by carrying out the instructions.[282] In fact, an employee does not become a joint inventor even if he improves the concept, "unless the improvement is so significant as to amount to 'a complete invention' in and of itself."[283]

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280. *See* Witte & Guttag, *supra* note 16, at 473; *supra* note 266 and accompanying text.

281. Shatterproof Glass Corp. v. Libbey-Owens Ford Co., 758 F.2d 613, 624 (Fed. Cir. 1985) (quoting Hobbs v. U.S. Atomic Energy Comm'n, 451 F.2d 849, 864 (5th Cir. 1971)) (The court upheld a jury finding that engineers were not to be joined when they merely implemented specific structures of an invention conceived by the named inventors.).

282. *See* Mueller Brass Co. v. Reading Indus., Inc., 352 F. Supp. 1357, 1373 (E.D. Pa. 1972), *aff'd without opinion*, 487 F.2d 1395 (3d Cir. 1973) (An employee had been instructed by two superiors to test whether commercially available plugs would "hold pressure in tubing such as dry nitrogen at 5–10 psi." He did the tests, took notes and wrote a memo. The court found that "Parker appears only to have been a lab technician who carried out a certain experiment under instructions of his superiors, recorded the results, and moved on to other things. He was not a co-inventor of the claimed method."); Indecor, Inc. v. Fox-Wells & Co., 642 F. Supp. 1473, 1490–91 (S.D.N.Y. 1986) ("Mr. Weil initially conceived of the idea of [a] curtain made of inherently flame resistant yarn materials. He provided Dr. Varin with detailed instructions describing the type of fabric . . . and what Dr. Varin should do in developing the fabric . . . . Mr. Weil properly used Dr. Varin's services [in a manner such that Dr. Varin did not become an inventor]."); *In re* Katz, 687 F.2d 450, 456 (C.C.P.A. 1982) (two researchers "were acting in the capacity . . . [of] students working under the direction and supervision of appellant. From such a relationship, joint inventorship cannot be inferred . . . ."). *But see Mueller Brass*, 352 F. Supp. at 1374 (court found a second assistant properly named as a joint inventor, even though he "could point to no particular role in the conception of the method," mainly "for failure of clear proof to the contrary").

283. *Mueller Brass*, 352 F. Supp. at 1373; *see also Indecor*, 642 F. Supp. at 1490; Consolidated Aluminum Corp. v. Foseco Int'l, 10 U.S.P.Q.2d. (BNA) 1143, 1172 (N.D. Ill. 1988):

> The work, experiments, and suggestions of others in carrying out the conception of an inventor, not rising to the level of invention, do not entitle [them] to be treated as inventors [even if they were] the first to observe an effect or useful property of the invention.

Similarly, if an inventor confers with outside consultants or manufacturers to gather general ideas, those outsiders do not become joint inventors.[284] If an outside supplier selects appropriate materials or substances to meet the demands of the inventor, the supplier does not become a joint inventor.[285]

Finally, courts demand substantial proof of a joint inventive contribution,[286] especially when there is a later attempted joinder of inventors not named in a patent or application.[287] Courts reject most proxy evidence of alleged inventorship, such as contributor listings of in-house invention disclosures,[288] small payments of "inventor royalties,"[289] co-authorship of technical papers describing an inventive concept,[290] and even the inventorship asserted in foreign patent applications on the same invention.[291] Furthermore, courts will reject a claim of joint inventorship that is asserted too late. If a purported joint inventor affirmatively acquiesces

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284.

> [The inventors] investigated and studied the literature [and] visited several manufacturers of similar products, and in conferences and conversations with them, derived some useful ideas .... This evidence does not disprove the fact that the final concept and its reduction to practice, were their own invention.

Monsanto Co. v. Kamp, 269 F. Supp. 818, 825 (D.D.C. 1967).

285. Idacon Inc. v. Central Forest Prods., Inc., 3 U.S.P.Q.2d (BNA) 1079, 1088 (E.D. Okla. 1986) ("The selection of an emulsifier suitable for emulsifying the material submitted by Mr. Kirchner, in the same manner as would any supplier of emulsifiers in the ordinary course of business, does not make the supplier of emulsifiers the inventor of either claim.").

286. *See supra* notes 258–60 and accompanying text.

287. *Cf. supra* note 52 and accompanying text. Nonjoinder is sometimes viewed with greater suspicion than is misjoinder, because of the inherent deceptive appearance of shutting someone out. *Compare Mueller Brass*, 352 F. Supp. at 1372, *with* Coleman v. Dines, 754 F.2d 353, 357 (Fed. Cir. 1985).

288. *See In re* Certain Nonwoven Gas Filter Elements, Investigation No. 337–TA–275, 1988 ITC LEXIS 85, U.S.I.T.C. Publication No. 2129 (U.S.I.T.C. 1988); *In re* Certain Unitary Electromagnetic Flowmeters With Sealed Coils, Investigation No. 337–TA–230 (Part 1 of 2), 1986 ITC LEXIS 234, U.S.I.T.C. Publication No. 1924 (U.S.I.T.C. 1986).

289. *See Certain Nonwoven Gas Filter Elements*, 1988 ITC LEXIS 85.

290. *In re* Katz, 687 F.2d 450, 455 (C.C.P.A. 1982):

> [W]e hold that authorship of an article by itself does not raise a *presumption* of inventorship with respect to the subject matter disclosed in the article. Thus, coauthors may not be *presumed* to be coinventors merely from the fact of coauthorship.

However, the "content and nature" of the article can be considered as evidence. *See id.*; *see also Coleman*, 754 F.2d at 360 (finding "no authority standing for the proposition that one who *may* be a *co*-author of a document can be considered the *sole* inventor of any invention disclosed in that document, without some further proof").

291. *See* Monsanto Co. v. Kamp, 269 F. Supp. 818, 823 (D.D.C. 1967).

in his assignee's determination that he is not to be joined, the inventor may later be equitably estopped from asserting his claim if the assignee would thereby suffer prejudice and detriment.[292] Similarly, if an inventor found on the facts to be a proper joint inventor makes no claim, a court might not force him to be joined if the parties do not seek that form of relief.[293]

The requirement that a claim of joint inventorship must be asserted in a timely manner seems to be at odds with the policy and law requiring that a patent, to be valid, must name only and all the true inventors.[294] Therefore, the validity of a patent may still be challenged notwithstanding the equitable exclusion of a tardy or unasserted claim by a purported joint inventor.

As always, a valid patent must name the true joint inventors, and it is the collaborative or joint contribution to the conception of an invention that makes one a joint inventor. This is true regardless of the employment status of the alleged inventors, the common ownership of the subject matter, and even the extent of in-house commendation of contributions toward an invention.[295]

V. THE PTO'S POSITION

In light of the statute, legislative history,[296] and case law pertaining to joint inventorship determinations, the position apparently taken by the PTO on the issue seems quite remarkable, if not inexplicable. Following

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292. *See* MCV, Inc. v. King-Seeley Thermos Co., 879 F.2d 1568, 1571–73 (Fed. Cir. 1989) (Without reaching the merits of proper inventorship, alleged joint inventor is equitably estopped after acquiescing in his nonjoinder for four years for reasons of other business benefits.).

293. *See* Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1249 (Fed. Cir.), *cert. denied*, 493 U.S. 853 (1989). "The correction of inventorship is an administrative step, and is not before the court" when the court orders the equitable remedy of assignment of patents to Richardson. The jury had found Richardson and Cazort to be the true inventors of a motorcycle suspension that Suzuki had appropriated and patented. The fact that Cazort was found to be an unnamed joint inventor did not prevent the court from assigning the Suzuki patents to Richardson, who was the only party making a claim. *Id.*

294. *See supra* note 52 and accompanying text.

295. *Cf. infra* notes 305–11 and accompanying text.

296. Legislative history is particularly relevant because Gerald J. Mossinghoff, Commissioner of Patents and Trademarks, testified prominently in both the *House Hearings* and the *Senate Hearings*. *Supra* note 37. His testimony reflected all of the general legislative concerns discussed above, and particularly the intent to promote communication among commonly employed research team members in order to foster innovation. *See* text accompanying *supra* notes 138–41 and 149–57.

the enactment of the Patent Law Amendments Act of 1984,[297] the PTO "established guidelines for patent examiners to use in implementing the changes made [by the Act, and as] a service to the public . . . published [the guidelines.]"[298] The PTO also published explanatory comments when it promulgated rules under the amended statute.[299]

The PTO guidelines and comments quote the amended text of section 116, and trace relevant portions of the legislative history.[300] They also quote language from *Monsanto*[301] and other cases to help explain the partial definition of joint inventorship through negative criteria[302] adopted in section 116.[303] In these and other respects,[304] the guidelines and rules seem to parallel much of the above analysis. However, they diverge from the analysis in that they make no reference to a collaboration (joint manner) requirement, nor to a joint conception (inventive nature) requirement,[305] but instead emphasize common employment status.

On the one hand, the guidelines specifically state that "[i]nventors of subject matter not commonly owned at the time of the invention may file as joint inventors in a single application."[306] Thus, common ownership of all the subject matter is not required for joint application. On the other hand, explanatory comments and examples of proper examiner's action suggest that the traditional requirements of joint inventorship have been discarded or at least made secondary to a criterion of common employment of the inventors or common ownership of their inventions.

For example, the comments suggest that the section 102(e)[307] prior art

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297. *Supra* note 4.

298. Initial Guidelines, *supra* note 6, at 264 (statement of Tegtmeyer).

299. Final Rules For Miscellaneous Patent Provisions, 1053 Off'l Gazette 10, *reprinted in* 1098 TRADEMARK OFFICIAL GAZETTE 272 (1989) [hereinafter Final Rules].

300. Initial Guidelines, *supra* note 6, at 265; Final Rules, *supra* note 299, at 273.

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

302. *See supra* notes 68–71 and accompanying text.

303. *See* Initial Guidelines, *supra* note 6, at 265; Final Rules, *supra* note 299, at 273.

304. For example, the PTO points out that successive commonly owned applications will again be subject to a double patenting rejection, and that all joint applications will still be subject to single-invention restriction requirements. *See* Initial Guidelines, *supra* note 6, at 264–65; Final Rules, *supra* note 299, at 273; *see supra* notes 164–67 and accompanying text.

305. *See supra* notes 15, 28, 40–41 and 72–74 and accompanying text.

306. Initial Guidelines, *supra* note 6, at 264; *see also id.* at 266 ("If inventors of subject matter, not commonly owned at the time of the later invention, file a joint application, applicants have an obligation . . . to point out . . . the lack of common ownership . . . in order that the examiner may consider the applicability of § 102(f)/103 or § 102(g)/103.").

307. 35 U.S.C. § 102(e) (1988). The amendment to section 103 did not preclude use of in-house prior art under section 102(e), but only under 102(f) and (g). *See supra* notes 77–86 and accompanying text.

effect of a prior application against a commonly owned later application could be avoided by combining the two applications into a single one.[308] The collaboration or joint contribution of the inventors is not mentioned, and it appears possible that the only requirement is common ownership of the subject matter of both applications.[309]

More pertinent and perplexing are the specific examples that the PTO provides as guidance for patent examiners, and thus also for patent attorneys. In the first example, inventors A and B are both employed by E. A and B make inventions X and Y respectively, under obligation of assignment to E, and file a single application with claims to X and Y, naming A and B as joint inventors.[310] The examiner is instructed to

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308. The comments indicate that:

> If subject matter becomes potential prior art under section 102(e) because a patent application is filed on such subject matter before a commonly owned claimed invention is made the subject matter of a later application the two applications may be combined (under amended §§ 116 and 120) into a single application and such subject matter . . . would no longer constitute potential prior art under section 102(e) or section 103 . . . .

Final Rules, *supra* note 299, at 272.

309. In fact, the status of the inventors (or inventor) is not mentioned at all. Perhaps this implies that the normal requirements of joint inventorship must still be met, i.e., that this comment addresses only the prior art issue, which is more linked to common ownership than is the joint inventorship issue. *See supra* notes 73–74, 85–86 and 172 and accompanying text. Furthermore, it should be noted that any combined application would still be subject to single-invention restriction requirements. Thus if a distinct invention of a distinct inventor is required to be divided out of the application, that inventor's name must also be removed from the application. *See* 37 C.F.R. § 1.48(b) (1991). Such a correction requires the payment of a fee that "should also act as a discouragement to grouping marginal inventions and loosely related inventions into the same applications." Final Rules, *supra* note 299, at 280. Therefore, while such grouping is possible, it is discouraged.

310. Initial Guidelines, *supra* note 6, at 267:

> Example 1 — Single Application — Plural Inventors
>
> Inventors A and B, both employees of Company E with obligation to assign all their inventions to E develop inventions X and Y respectively. An application for patent is properly filed listing A and B as joint inventors and with claims to both X and Y as now possible under § 116 as amended by Public Law 98–622.
>
> *Situation 1*
>
> The claims to X and Y are not patentably distinct.
>
> Examiner's Action:
>
> If otherwise patentable over the prior art — allows application.
>
> *Situation 2*
>
> The claims to X and Y are patentably distinct.
>
> Examiner's Action:
>
> Require restriction and election of claims to either X or Y. The applicant, after election, must correct the inventorship . . . .

allow the application if it is otherwise patentable and if inventions X and Y are essentially identical.[311]

The collaboration or even mutual knowledge of the two inventors A and B is nowhere explicitly mentioned.[312] They can be assumed to have worked wholly independently, unless a reference to the application being "properly filed" is taken to imply that all usual requirements have been met, rather than to imply that the example's requirements are the only ones necessary.[313] The example does not, however, go so far as to approve explicitly joint inventorship where, for example, A and B *independently* invented X and Y respectively.

A similar PTO example includes information that inventor B knew of A's invention when B made his invention.[314] The result determined by the PTO—allowance of the application if the claims are patentable and not patentably distinct—parallels that of the first example.[315] That the PTO apparently reaches the same decision indicates that it attaches little significance to whether B has knowledge of A's prior work.

Another PTO example deals with similar facts but two separate patent applications.[316] Here, the examiner is instructed to make a double

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311. *See id.*

312. Compare this example with the other examples provided by the PTO that at least specify knowledge by the second inventor of the first inventor's work. These examples, since they do not specify knowledge or any form of communication between the "joint" inventors, are particularly troubling in light of the case law requirements of communication and collaboration. *See supra* notes 234–41 and accompanying text.

313. *See* Initial Guidelines, *supra* note 6, at 267.

314.

> Example 4—Claims in single application by different inventors.
>
> An application for patent is filed in the [PTO] in which the owner E sets forth the following information.
>
> "The subject matter of claim 1 was invented by inventor A. The subject matter of claim 2 was invented by inventor B. Inventor B knew of the invention of inventor A at the time he made his invention. Both A and B made their inventions while working for owner E with a duty to assign." The inventions are different but not patentably distinct.
>
> Examiner's Action:
>
> If the claims are patentable over the prior art, the application should be allowed.

Id.

315. *See id.*

316.

> Example 2—Multiple applications—plural inventions
>
> Inventors A and B, both employees of Company E, with obligation to assign all their inventions to E, develop inventions X and Y with Y being developed by B after knowledge of A's development of X. A files application on X before B's development of Y and B later files application. Both applications establish they are owned by Company E.

patenting rejection if appropriate.[317] In a subsequent addition to these facts, A and B join with a third inventor C in a single application claiming "A's invention, B's invention and an improvement they jointly developed with C."[318] The examiner is told to "[e]xamine the application in the normal manner" because the problems of separate applications no longer exist.[319]

The explicit reference to the "improvement they *jointly* developed with C" can be interpreted to suggest that A and B made their inventions X and Y *independently*. While the joinder of A, B, and C falls within either of the two broader views of the "non-all claims rule,"[320] joinder of the three inventors seems improper if they truly did not collaborate on inventions X and Y. Should their joint development of the "improvement" satisfy the collaboration requirement for all inventions that can be squeezed into one application?

It seems that some amount of collaboration should be necessary to link together the claims to separate inventions X and Y, even if X and Y were initially independently invented. However, the examples discussed above suggest that the PTO will allow joinder even in the absence of minimal collaboration.

The PTO's liberal view of allowable joinder is also reflected in its adopted version of the "non-all claims" rule. The PTO selected the broadest possible version of the rule,[321] namely that inventors may be joined if each was "an inventor or joint inventor, of the subject matter of at least one claim of the patent; there is no requirement that all the inven-

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Situation 1

The claims to X and Y are not patentably distinct.

Examiner's Action:

. . . . Make a provisional rejection of the later filed application on the grounds of double patenting . . . .

Situation 2

After receiving the examiner's action in situation 1, A and B filed a continuation-in-part application with inventor C and claim A's invention, B's invention and an improvement they jointly developed with C. A and B abandon their prior applications.

Examiner's Action:

Examine the application in the normal manner; no double patenting and § 102(e)/103 problems now exist.

Id.

317. *See id.*
318. *Id.*
319. *Id.*
320. *See supra* notes 221–23 and accompanying text.
321. *See id.*

tors be joint inventors of the subject matter of any one claim."[322]

If the PTO is in reality allowing[323] joinder of inventors so liberally and without regard for the traditional requirements of joint inventorship, it has erred in its attempt to clarify the joint inventorship doctrine. The PTO approach is contrary to both the law and the policies of joint inventorship.

But perhaps the PTO's view does not actually conflict with the overall policies of patent law. After all, the PTO, and especially the patent examiners, have a different perspective, and a different role to play, than do the courts and the legislature. The role of examiners is to expedite the publication of patent disclosures of inventions that are new, useful, and nonobvious, and that therefore will be beneficial to the public.[324] Everything beyond those substantive requirements is generally viewed as mere formalism, which is less important and therefore should not ultimately obstruct the granting of patents.[325]

Thus, an "examiner will not inquire of the patent applicant concerning [inventorship] until it becomes necessary to do so . . . ."[326] Furthermore, an "application for a patent made by two or more persons claiming to be joint inventors is prima facie evidence that they are such. The Patent Office may act on such a representation."[327] Examiners simply do not closely scrutinize inventorship representations, nor do they need to, since

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322. Initial Guidelines, *supra* note 6, at 265. This broad view of the rule was promulgated in 37 C.F.R. § 1.45(c) (1991) ("each named inventor must have made a contribution, individually or jointly, to the subject matter of at least one claim"). Here it can be seen that the PTO apparently still recognizes a distinction between contributing to an invention "individually" and doing so "jointly."

323. Some evidence suggests that broader joinder of commonly employed inventors is not being practiced in actuality, despite the suggestions of the above discussed Initial Guidelines, *supra* note 6. If easy joinder were being used, double patenting rejections could often be avoided, but the number of such rejections has not been declining. *See* Daus, *supra* note 86, at 68–69.

324. *Cf.* A. F. Stoddard & Co. v. Dann, 564 F.2d 556, 566 n.13 (D.C. Cir. 1977):

> "In this context, the only things that are really matters of substance are whether the invention is new, useful and unobvious and whether it is adequately disclosed in the patent specification. Everything else can be thought of as form. When an invention is new, useful, and unobvious and is suitably disclosed, the public has received everything the patent laws are intended to give it in return for the grant of a patent."

(quoting Commissioner of Patents C. Marshall Dann, *Form and Substance in Patent Matters*, 57 J. PAT. OFF. SOC'Y 202, 203–04 (1976)).

325. *See id.*

326. Initial Guidelines, *supra* note 6, at 266.

327. Monsanto Co. v. Kamp, 269 F. Supp. 818, 823 (D.D.C. 1967); *see supra* notes 106–10 and accompanying text.

any improper joinder that affects other parties will be flushed out in adversarial proceedings when a dispute arises.[328]

Furthermore, the power and effect of examiners' determinations and PTO rules and guidelines is limited. First, as an executive agency, "the PTO [has] the obligation to carry out their duties under their authorizing statutes, [and] must in almost every case, follow the strict provisions of the applicable statute."[329] Because the text of section 116 does not require collaboration or joint conception, but instead specifies what is *not* required for joint inventorship, the PTO arguably has no power to impose positive requirements.[330]

Second, PTO guidelines establishing internal procedural matters do not control in court.[331] This is true partially because courts, unlike the PTO,[332] have the power to "delve within the interstices of a statute to do justice, not only to the individual or individuals involved, but to the statutory scheme itself."[333] In the area of joint inventorship determinations, the courts have legislated interstitially within the boundaries erected by section 116, and have thereby defined the state of the law on the issue.[334] The PTO's guidelines, even when contrary to that law, do not change the requirements that must be met if a patent is to be upheld as valid.[335]

CONCLUSION

Attempts to clarify the metaphysics that underlie joint inventorship issues are indeed complicated by the muddy nature of this area of the patent laws. In practice, this lack of clarity can lead to inadequate or improper implementation of the joint inventorship provision. However, misapplications can be avoided through an analysis focusing on the

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328. *Cf. supra* note 110 and accompanying text.

329. *A. F. Stoddard*, 564 F.2d at 566 (The quote continues, discussing the PTO's refusal to make a correction of inventorship that was not expressly authorized by statute: "Finding no express statutory authorization for the correction here sought, the PTO cannot be expected to have stepped beyond the bounds of the statutes by which it is governed.").

330. *Cf. id.*

331. *See In re* Longi, 759 F.2d 887, 894 (Fed. Cir. 1985):

> We have held that the Double Patenting Notice . . . is only a procedural memorandum which merely sets forth guidelines for the [PTO], and that where those guidelines are not even applied [during the prosecution of a patent before the PTO], as in the instant case, they can have no bearing on the outcome [in court].

332. *See supra* note 329.

333. *A. F. Stoddard*, 564 F.2d at 566.

334. *See* Section IV.

335. *See supra* notes 109–112 and accompanying text.

themes of jointness and inventiveness. These themes are reflected not only in the policies behind joint invention, but also in the statutes and judicial precedent.

Under the United States patent laws, exclusive patent rights are granted only to actual inventors who were first to invent. Two or more inventors can be granted a patent on one invention only if none of them was independently first to invent, but rather if they acted as one, each making inventive contributions to the invention. For several inventors to act as one inventive entity, they must collaborate at least to the extent of mutually communicating their ideas. Because a mutual exchange of ideas and information among inventors results in increased aggregate innovation, a collaboration requirement of this nature serves to further a fundamental policy goal of the patent laws.

To foster collaboration, the law must require and reward inventive work that is in fact the product of joint efforts. The 1984 amendments to 35 U.S.C. § 116, along with other sections of the Patent Code, by merely specifying the limits of the courts' discretion in this area, implicitly impose such a requirement. The judicial precedent that addresses joint inventorship issues is in substantial accord, requiring joint inventors to make contributions of an inventive nature and in a joint collaborative manner toward the final inventive result.

The policy considerations do not suggest, and the law has never accepted, that either the mere common employment of inventors, or the common ownership of patent rights, is sufficient to satisfy the jointness requirement. The PTO further muddied the field in its guidelines for implementing the 1984 amendments. The practice sanctioned by the PTO guidelines, allowing joint applications by noncollaborating but commonly employed inventors, is at odds with both case law and congressional policy.

Despite the PTO's perception of the metaphysics of joint inventorship, the courts should continue to be guided by precedent, within the limits of the 1984 amendments. Thus courts should require collaborative joint inventive work and state that joint inventors need not work physically or temporally together, nor make the same type or amount of contribution, nor contribute to every aspect of a joint invention. Although Congress could further clarify the issues by enacting positive criteria of joint inventorship, this would be an unnecessary fettering of judicial discretion.

The PTO, on the other hand, should clarify its requirements for granting patents to joint inventors. The PTO requirements should parallel the judicially formulated requisites in order to avoid unnecessary litigation of patent validity in the courts and to enhance innovation by fostering collaboration among inventors.

Under the current state of joint inventorship doctrine, patent attorneys

making firsthand joint inventorship determinations must keep in mind the basic requirements of jointness and inventiveness, as well as the judicially created nuances and details of those requirements. Otherwise, a patent granted by the less rigorous PTO to purported joint inventors might later be held invalid by the courts.