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**HOW DOES MY WORK BECOME OUR WORK?
DILUTION OF AUTHORSHIP IN SCIENTIFIC
PAPERS, AND THE NEED FOR THE ACADEMY TO
OBEY COPYRIGHT LAW**

*Sean B. Seymore**

Cite as: Sean B. Seymore, *How Does My Work Become Our Work? Dilution of Authorship in Scientific Papers, and the Need for the Academy to Obey Copyright Law*, 12 RICH. J.L. & TECH. 11 (2006), <http://law.richmond.edu/jolt/v12i3/article11.pdf>

I. INTRODUCTION

[1] Professors enjoy a world of extensive institutional autonomy and individual academic freedom.¹ Universities and courts defer to a professor's judgment for "genuinely academic decisions" unless they depart from academic norms.² Universities, courts, and professional societies should intervene, however, when academic norms and custom do not comport with the law.³ The need to "publish or perish," both in

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¹ RICHARD M. REIS, TOMORROW'S PROFESSOR: PREPARING FOR CAREERS IN SCIENCE AND ENGINEERING 3 (IEEE Press 1997) (internal citations omitted).

² Regents of the Univ. of Mich. v. Ewing, 474 U.S. 214, 225 (1985). "Academic freedom thrives not only on the independent and uninhibited exchange of ideas among teachers and students, but also, and somewhat inconsistently, on autonomous decisionmaking by the academy itself." *Id.* at 226 n.12 (internal citations omitted).

³ Some professor-student authorship battles have been adjudicated. *See, e.g.*, Seshadri v. Kasaian, 130 F.3d 798, 805 (7th Cir. 1997) (affirming summary judgment in favor of a graduate student claiming to be a joint author); United States ex rel. Berge v. Bd. of Trs.,

academic science⁴ and increasingly in industry,⁵ has led professors to publish papers whose authorship is suspect.⁶ Aside from the inherent ethical problems associated with this scientific misconduct,⁷ dilution of authorship⁸ does not comply with copyright law, harms young scientists, and casts a dark shadow on the academy.⁹

[2] Publishing is the key to success in academic science.¹⁰ Published works establish a scientist's reputation, demonstrate the scientist's productivity, and measure worthiness for employment, promotion,

104 F.3d 1453, 1465 (4th Cir. 1997) (preempting graduate student's claim against professor for conversion of intellectual property); *Patrick v. Francis*, 887 F. Supp. 481, 486-87 (W.D.N.Y. 1995) (student's tort and common law copyright claims were preempted by the 1976 Copyright Act). For a general discussion of intellectual property-related professor-student conflicts, see Melissa Astala, Comment, *Wronged by a Professor? Breach of Fiduciary Duty as a Remedy in Intellectual Property Infringement Cases*, 3 HOUS. BUS. & TAX L.J. 31 (2003).

⁴ See Mohamed Gad-el-Hak, *Publish or Perish – An Ailing Enterprise?* PHYSICS TODAY, Mar. 2004, at 61.

⁵ See Harlan Howe, Jr., *Publish or Perish: It's Not Just for Academics Anymore*, MICROWAVE J., Sept. 2000, at 172.

⁶ See Eugene Garfield, Editorial, *Giving Credit Only Where it is Due: The Problem of Defining Authorship*, THE SCIENTIST, Oct. 2, 1995, at 13.

⁷ See Dianne M. Bennett & David McD Taylor, *Unethical Practices in Authorship of Scientific Papers*, 15 EMERGENCY MED. 263 (2003); Addeane S. Caelleigh, *Roles for Scientific Societies in Promoting Integrity in Publication Ethics*, 9 SCI. & ENGR. ETHICS 221 (2003); Nisan A. Steinberg, *Regulation of Scientific Misconduct in Federally Funded Research*, 10 S. CAL. INTERDISC. L.J. 39, 50 (2000) (“Because peer recognition is the currency of the scientific community, improper attribution or citation has traditionally been seen as a form of scientific misconduct....”); William Vesterman, *The Death of the Scientific Author: Multiple Authorship in Scientific Papers*, 8 COMMON KNOWLEDGE 439 (2002).

⁸ “Dilution of authorship” is synonymous with “author inflation.” These terms refer to “giving byline credit to individuals who have made only trivial contributions to published studies.” Garfield, *supra* note 7, at 13. See also Vesterman, *supra* note 8, at 444 (“The multiplying demand for credit is producing inflation in the medium of exchange – authorship – which is thereby diluted as a measure and store of value.”).

⁹ See *infra* Part IV.

¹⁰ See, e.g., PETER J. FEIBELMAN, *A PH.D. IS NOT ENOUGH: A GUIDE TO SURVIVAL IN SCIENCE* 39 (Addison-Wesley 1993) (emphasizing that publishing exposes a young scientist's research and talents to the world); CORYNNE MCSHERRY, *WHO OWNS ACADEMIC WORK? BATTLING FOR CONTROL OF INTELLECTUAL PROPERTY* 84 (Harvard 2001) (“For...authors, gifts to the community (research), and the community's acceptance of them, determine status.”).

funding, and membership in professional societies.¹¹ The number of multi-author publications over the past five decades has steadily increased.¹² This is due in part to the modern focus on conducting multidisciplinary research projects within an academic department or with collaborators at other institutions, the move to an industry-like, team-based approach within an academic research group, and the counting of publications for promotion and tenure review. These changes have led to “deceptive authorship[,] and the dilution of responsibility within multi-author papers.”¹³ The standards for determining legitimate authorship have also been diluted.¹⁴

[3] Although determining who should be listed on the byline of scientific papers has received more attention in recent decades,¹⁵ authorship abuse has not caused a major change in science publishing. Some faculty advisors actually view dilution positively, seeing it as justifiable because the gift of authorship encourages other graduate students to work harder, and fair because future professors can perpetuate the system which will in turn motivate their graduate students to work harder.¹⁶ Though dilution of authorship “rarely impact[s] adversely upon the efficiency of science or seriously sap[s] its resources,” the practice is unethical, probably illegal,¹⁷ and harms the scientific community.

[4] This Article begins with an overview of basic copyright law in the university context. Part II examines who owns scholarly work. While a “faculty exception” to the work-for-hire doctrine has been recognized by courts for professor-administration disputes, the ability of graduate students to benefit from a similar exception is unclear. Part III addresses the dilution of authorship in academic science by exploring three principal types of authorship “irregularities,” including gift authorship - the practice

¹¹ Bennett et al., *supra* note 8, at 263.

¹² *Id.* at 264.

¹³ *Id.*; see also *supra* note 9 and accompanying text.

¹⁴ Garfield, *supra* note 7, at 13.

¹⁵ *Id.*

¹⁶ Vesterman, *supra* note 8, at 445 (internal citation omitted).

¹⁷ “The past 30 years have shown what happens when high standards in research conduct are not conveyed to incoming decades of trainees and junior faculty. Problems within the scientific community produced a lengthy list of [publishing] behavior ranging from distasteful to unethical to illegal.” Cailleigh, *supra* note 8, at 228.

of including persons on the byline who are not truly joint authors. After presenting the criteria for authorship of some academic journals, this Article offers a hypothetical example which shows how dilution occurs within a research group. It then explores the joint work doctrine and applies it to the dissertation transmutation scenario. Part IV first describes the consequences of dilution, including harms to employment, career advancement, and academic reputation. It then discusses possible remedies, including rethinking the “publish or perish” doctrine, instituting more quality-focused publication requirements for tenure and grant proposal review, and sanctioning professors who engage in scientific misconduct.

II. WHO OWNS SCHOLARLY WORK?

A. BASIC COPYRIGHT PRINCIPLES

[5] Copyright law seeks to protect an author’s original work from being copied by others for a fixed term.¹⁸ The author “is the party who actually creates the work, that is, the person who translates an idea into a fixed, tangible expression.”¹⁹ Protection begins upon creation, and copyright in the work vests initially in the author or authors.²⁰ The author enjoys a “bundle of rights” in the copyrighted work, which includes the exclusive right to control all forms of copying, distribution, public performance, revision, abridgment, translation, and others.²¹ Thus “[o]wnership includes not only immediate but also future rights.”²² The ownership of a copyright, including any or all of the exclusive rights, can be transferred.²³ Ownership of a material object is distinct from ownership of the copyright, so the transfer of a material object does not convey any of the exclusive rights of copyright.²⁴

¹⁸ See 17 U.S.C. §§ 102(a), 106, 302 (2000).

¹⁹ 17 U.S.C. § 102(a); Cmty. for Creative Non-Violence v. Reid, 490 U.S. 730, 737 (1989). Copyright law does not protect the idea itself. 17 U.S.C. § 102(b) (2000).

²⁰ Reid, 490 U.S. at 737 (quoting 17 U.S.C. § 201(a) (2000)). Joint works are discussed in Part III, *infra*.

²¹ 17 U.S.C. § 106 (2000 & Supp. 2003).

²² Ann Springer, *AAUP Intellectual Property Legal Issues for Faculty and Faculty Unions*, Mar. 18, 2005, <http://www.aaup.org/Legal/info%20outlines/05intellprop.htm>.

²³ 17 U.S.C. § 201(d) (2000).

²⁴ 17 U.S.C. § 202 (2000).

B. THE “WORK FOR HIRE” DOCTRINE IN THE FACULTY CONTEXT

[6] Although a professor who creates a work is usually the author,²⁵ American copyright law recognizes an alternative basis for appropriation.²⁶ In cases where a work has been commissioned or made within the scope of employment, the hiring party is considered the author *and* owner of the copyright unless the parties expressly agree otherwise.²⁷ “Commissioned” and “scope of employment” have been defined judicially and by statute.²⁸

1. ACADEMIC FREEDOM

[7] The “intellectual isolation” between the professor and the institution “is a central element in the principle of academic freedom,” which lies at the core of the university enterprise.²⁹ In its *Statement on Copyright*, the American Association of University Professors (AAUP) states that “it has been the prevailing academic practice to treat the faculty member as the copyright owner of the works that are created independently and at the faculty members own initiative for traditional academic purposes.”³⁰ Because professors choose the subject matter, intellectual approach, and direction of their scholarship, the university exerts little to no control and thus is not entitled to ownership.³¹ If this were not the case, the university

²⁵ See *supra* note 20 and accompanying text.

²⁶ 17 U.S.C. 201(b) (2000); *Reid*, 490 U.S. at 737; Sunil R. Kulkarni, Note, *All Professors Created Equally: Why Faculty Should Have Complete Control over the Intellectual Property Rights in Their Creations*, 47 HASTINGS L.J. 221, 226 (1995).

²⁷ 17 U.S.C. § 201(b); *Reid*, 490 U.S. at 737.

²⁸ The types of works that can be commissioned are listed under the definition of “work [made] for hire” in the 1976 Copyright Act. 17 U.S.C. § 101 (2000). The parties involved in a commissioned work must “expressly agree in a written instrument signed by them that the work shall be considered a work made for hire.” *Id.* The commissioned party is an “independent contractor.” *Reid*, 490 U.S. at 743. The *Reid* Court used agency principles to elucidate a non-exhaustive list of factors to construe “scope of employment.” *Id.* at 751-52.

²⁹ Robert A. Gorman, Lecture: *Copyright Conflicts on the University Campus*, 47 J. COPYRIGHT SOC’Y U.S.A. 291, 303 (2000).

³⁰ AAUP, *Statement on Copyright*, June 1999, <http://www.aaup.org/statements/Redbook/Spccopyr.htm>.

³¹ Kulkarni argues that balancing the equities in copyright ownership tips in favor of the professor. See Kulkarni, *supra* note 27, at 240.

would have the power to control, censor, and forbid dissemination of the work altogether, which is deeply inconsistent with the fundamental principles of academic freedom.³²

[8] There are occasions where faculty work can assuredly be considered a work-for-hire. These include obligatory duties and tasks that receive administrative oversight.

[Commissioned] works are *institution-directed*, or *assigned as an institutional responsibility*, [like] a recruitment brochure written by an admissions director, an affirmative action report written by a department chair, [or] a catalog for the university art museum's most recent exhibit written by an art professor (which would presumably be outside the art professor's normal scope of employment).³³

Reports prepared by a dean or faculty committee chair fall into this category because they are “specific requirements of employment.”³⁴

[9] A university may eagerly distance itself from its faculty’s scholarship because it does not want to deal with particulars or claim responsibility for content.³⁵ In fact, institutional intellectual property interests have

³² Gorman, *supra* note 30, at 303 (“Were the university to own the copyright in faculty-created works, the university can block publication, can decide where and when to place the professor’s work for publication, and can abridge, revise, and delete as it chooses”).

³³ Springer, *supra* note 23.

³⁴ AAUP, *supra* note 31.

³⁵ There are several reasons why universities do not want to own faculty work:

(1) If the administration owned all the work of faculty, then it would be responsible for the content. Few administrations want to claim responsibility for every conclusion reached by faculty.

(2) If the institution owned the scholarly work of faculty, it would also be responsible for things like negotiating book contracts, publishing agreements, handling revisions and updates, etc. Few institutions have the desire or resources to take this on.

....

(4) Similarly, administrations struggle with ownership of faculty websites on university servers. Institutions don't really want to own everything on their servers, if they did, they would face liability for everything posted. They would thus have to closely monitor and control

traditionally focused on research-based patents, which typically generate large royalties. However, universities now recognize that online courses can also generate substantial revenue. Thus institutions are directing more attention to copyrights.³⁶

2. "THE FACULTY EXCEPTION"

[10] Prior to the 1976 Copyright Act, several courts excluded faculty from the work-for-hire doctrine of federal copyright law.³⁷ This "faculty exception" was rooted in policy, custom, common law copyright, and possibly section 7 of the 1909 Copyright Act.³⁸ The 1976 Copyright Act does not explicitly mention a faculty exception, but "the language of the work-made-for-hire provisions of the 1976 Act does not preclude the

posting to every website, an impossible task. Thus most institutions walk the fine line between having some rules as to appropriate material for websites on the university server, but don't police the postings and don't claim ownership of faculty websites.

Ann Springer, *Intellectual Property Legal Issues for Faculty and Faculty Unions*, Mar. 18, 2005, <http://www.aaup.org/Legal/info%20outlines/05intellprop.htm>.

³⁶ Professor Dreyfuss explains the increased university interest in copyrights:

At one time, universities largely ignored copyrights, probably because scholarship rarely paid off in a financial way. The output of computer science departments led to a change in outlook and the advent of the internet, which allows universities to package and distribute teaching materials as "distance learning," further enhances their interest. Accordingly, as universities revise their policies on patents, they now also consider copyrights. A few treat copyrights just like patents: they consider the faculty (or student) author as the legal author. However, they then require an assignment of rights in any work made with substantial university resources. In exchange, the university agrees to handle administrative matters and to share royalties with the creators.

Rochelle Cooper Dreyfuss, *Collaborative Research: Conflicts on Authorship, Ownership, and Accountability*, 53 VAND. L. REV. 1161, 1185-1186 (2000); see also Elizabeth Townsend, *Legal and Policy Responses to the Disappearing "Teacher Exception," or Copyright Ownership in the 21st Century University*, 4 MINN. INTELL. PROP. REV. 209, 217 (2003) (internal citation omitted).

³⁷ See *Williams v. Weisser*, 78 Cal. Rptr. 542, 545 (Cal. Ct. App. 1969) (holding that a professor, rather than the university, owns the common law copyright to his lectures); *Sherrill v. Grieves*, 57 Wash. L. Rep. 286 (D.C. 1929).

³⁸ *Sherrill*, 57 Wash. L. Rep. at 290; Laura G. Lape, *Ownership of Copyrightable Works of University Professors: The Interplay Between the Copyright Act and University Copyright Policies*, 37 VILL. L. REV. 223, 233-36 (1992).

continued existence of an exception for professors.”³⁹ Accordingly, intellectual property policies of universities vest ownership of the copyright in scholarly works with the author-professor, with a few exceptions.⁴⁰ In jurisdictions where the “faculty exception” has not been judicially recognized, the “faculty exception” is rooted in tradition rather than law.⁴¹

³⁹ Lape, *supra* note 39, at 237. Other legal scholars believe that the 1976 Copyright Act abolished the faculty exception:

Two influential articles published in 1983 and 1985 concluded that the 1976 Act abolished the exception for professors from the work-made-for-hire doctrine. The arguments proposed by these commentators to support this proposition were: (1) the 1976 Act's purported strengthening of the presumption that employers own the copyright of the works of their employees; (2) the preemption of common law copyright by § 301; and (3) the rejection by the 1976 Act of evidence of custom.

Id. at 240. Thus, “whether the ‘teacher exception’ survived the 1976 Act [is] questionable.” Townsend, *supra* note 37, at 234. Judge Posner, himself an academic, has examined Professor Lape’s view. *See Hays v. Sony Corp. of America*, 847 F.2d 412, 416-17 (7th Cir. 1988). Even if the 1976 Act literally abolished the faculty exception, a court, lacking a legislative intent to the contrary, “might, if forced to decide the issue, conclude that the exception had survived the enactment of the 1976 Act [possibly based on the words of § 201(b)].” *Hayes*, 847 F.2d at 416-17.

⁴⁰ Compare 17 U.S.C. § 106 (2000) with Brown University’s copyright policy:

It is the policy of Brown University that ownership of the copyright in a work shall belong to the author or authors of the work, with certain, stated exceptions. The exceptions to this policy that shall vest ownership of the copyright in a work with Brown University, rather than with the author or authors of the work, are: (1) if the work is a work-made-for-hire as defined by United States copyright law; (2) if the work is defined as an “Institutional Work” under Section 2.4 below....*Copyrightable works of scholarly research, course materials or artistic works made by faculty members would not be considered works-made-for-hire and are the property of the author or authors.*

Brown University Patent and Invention Policy and Copyright Policy 7-8 (Mar. 29, 2005), available at <http://www.cs.brown.edu/people/avd/PIP-CP-3-29-05.pdf> (emphasis added). *See also supra* notes 28-29 and accompanying text.

⁴¹ The Intellectual Policy Committee recognizes in its recommendation for clarification of the “work-for-hire” provision of the Cornell University’s intellectual property policy that the “faculty exception” is rooted in tradition rather than law.

This default position [that copyright ownership initially vests with the author] is based largely on the practices at peer institutions. This is a policy determination and not one based in legal precedent. Under U.S. copyright law, employers own the copyright to works created by their

[11] Two key decisions from the Court of Appeals for the Seventh Circuit lay the foundation for judicial recognition of the faculty exception doctrine. In *Weinstein v. University of Illinois*, an untenured assistant professor sued his colleagues for mutilating his work and stealing credit for a jointly authored publication that emanated from a clinical program funded by the university.⁴² The university argued, and the district court held, that Weinstein failed to state a claim because the university owned the article and do with it what it liked.⁴³ The *Weinstein* court rejected the university's argument.⁴⁴ The academic "requirement" to publish does not make the work a work-for-hire.⁴⁵ If the university owned the copyright,

employees. Faculty are legally employees of the University. Despite a widely held belief among academics that there is a "faculty exception" to the work-for-hire doctrine, the reality is that there are very few cases (none in our jurisdiction) recognizing an exception and then only with respect to scholarly publications (and all pre-date the latest (1976) revision to the copyright statute). There are, therefore, no legal constraints on the University in formulating its policy position.

CORNELL UNIVERSITY, DRAFT REPORT FROM [THE] INTELLECTUAL PROPERTY COMMITTEE 3 n.7 (Mar. 27, 2003), available at <http://web.cornell.edu/UniversityFaculty/OnLineForum/Intellectual%20Property/CopyrightReportRev.pdf>.

⁴² *Weinstein v. Univ. of Il.*, 811 F.2d 1091, 1092-93 (7th Cir. 1987).

⁴³ *Id.* at 1093. The university's intellectual property policy recognized that ownership of scholarly works initially vests with the author except in three circumstances, including "such works...for which the topic or content is determined by the author's employment duties and/or which are prepared at the University's instance and expense..." *Id.* at 1094.

⁴⁴ Judge Easterbrook relies on tradition to find the faculty exception:

A university "requires" all of its scholars to write. Its demands -- especially the demands of departments deciding whether to award tenure -- will be "the motivating factor in the preparation of" many a scholarly work. When Dean Manasse told Weinstein to publish or perish, he was not simultaneously claiming for the University a copyright on the ground that the work had become a "requirement or duty" within the meaning of [the university's intellectual property policy]. The University concedes in this court that a professor of mathematics who proves a new theorem in the course of his employment will own the copyright to his article containing that proof. This has been the academic tradition since copyright law began...a tradition the University's policy purports to retain. The tradition covers scholarly articles and other intellectual property....

Id. (citations omitted).

⁴⁵ *Id.*

professors would have to obtain permission to publish, which is not the case.⁴⁶

[12] Although *Hays v. Sony Corp. of America* involved a dispute between schoolteachers and a publisher, Judge Posner discussed the work-for-hire doctrine in the university context.⁴⁷ Judge Posner noted that college faculty use institutional facilities and support staff, but their work is not supervised.⁴⁸ Accordingly, the general assumption is that the faculty member retains the right to copyright.⁴⁹ So whether it is rooted in law or tradition, the faculty exception is firmly established in academia.

C. GRADUATE STUDENTS

[13] Elucidating a graduate student's authorship and ownership rights is often difficult. If a graduate student (or any student) creates a work without the use of university resources or faculty direction, the copyright vests with the student-author.⁵⁰ Journal publications are more problematic because they are prone to dilution of authorship. The ability of a graduate student to challenge a faculty advisor's authorship decision – or to exercise any intellectual property rights – is limited by policy, status, and custom.

1. THE PROFESSOR-STUDENT RELATIONSHIP

[14] If professors are the heart of a university, graduate students are the backbone.⁵¹ Ph.D. students in academic science conduct bench research

⁴⁶ *Id.* at 1095.

⁴⁷ 847 F.2d at 416-17.

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ Cornell's copyright policy is illustrative: "The University makes no claim to copyright ownership of works created by students working on their own, i.e. not within the scope of an employment relationship with the University or with one of its employees, and not making Substantial Use of University resources." Cornell University Copyright Policy (June 28, 1990), available at http://www.policy.cornell.edu/cm_images/uploads/pol/Copyright.html.

⁵¹ See Sandip L. Patel, Note, *Graduate Students' Ownership and Attribution Rights in Intellectual Property*, 71 IND. L.J. 481, 485 (1995) (stating that the fruits of academic research come from graduate student contributions).

for years in pursuit of a doctorate – the crown jewel of the science community.⁵² Graduate students enter the lab as neophytes, requiring substantial direction from the faculty advisor and other lab personnel. However, they grow into wholly legitimate and independent members of the science community.

[15] Before the dissertation defense, the graduate student is viewed and often treated as an apprentice.⁵³ The faculty advisor is the master who controls every aspect of the research enterprise, including project focus, selecting new students, hiring staff, fund allocation, and publication decisions. The professor's unilateral control creates a power mismatch within the research group. As Ryan Seidemann points out, "all graduate students should expect some degree of 'academic abuse' as part of their training[, which can be] chalked up to paying your dues."⁵⁴ Nevertheless, graduate students necessarily place considerable trust in their faculty advisors.⁵⁵

[16] Publication is the key to recognition, success, and advancement in science. Thus, every publication decision is necessarily decisive. The faculty advisor determines what work is published, where manuscripts are submitted, and the number and order of names on the byline. These decisions are viewed as academic rather than legal. The graduate student has little power or incentive to challenge the professor's decision.⁵⁶

⁵² *Id.*

⁵³ See Sean B. Seymore, *My Patent, Your Patent, or Our Patent? Inventorship Disputes within Academic Research Groups*, 16 ALB. L.J. SCI. & TECH. (forthcoming 2006).

⁵⁴ Ryan Seidemann, *Authorship and Control: Ethical and Legal Issues of Student Research in Archaeology*, 14 ALB. L.J. SCI. & TECH. 451, 457 (2004) (internal citation omitted).

⁵⁵ The professor-graduate student relationship often ranks as the most important professional relationship that a scientist will form. See DALE F. BLOOM ET AL., *THE PH.D. PROCESS: A STUDENT'S GUIDE TO GRADUATE SCHOOL IN THE SCIENCES* 22 (Oxford Univ. Press 1998). The bond is perpetual: it often extends from the beginning of graduate school until many years thereafter. A fiduciary duty may arise in some professor-student relationships. See Kent Weeks, *Fiduciary Duties of College and University Faculty and Administrators*, 29 J.C. & U.L. 153 (2002).

⁵⁶ Academic freedom affords a professor tremendous autonomy in the university. See REIS, *supra* note 2, at 3 (internal citations omitted). Universities and the courts are reluctant to challenge an *academic* decision made by a faculty member. *Supra* note 3. The faculty advisor's recommendation, or reputation alone, impacts future jobs, research

2. STUDENT OR EMPLOYEE?

[17] A graduate student's employee status may affect the student's duties, rights, and willingness or ability to assert intellectual property rights. Universities and courts disagree on whether graduate students are employees.⁵⁷ Courts first look to the state statute for the definition of "employee," and then consider a number of factors.⁵⁸ The National Labor Relations Board (NLRB) classifies graduate students as statutory employees, and rejects the contention that graduate students are precluded from employee status because they are "predominately students."⁵⁹ Ryan Seidemann explains the peculiar status of graduate students in the university:

Although it would seem that the funded graduate students might fall under the "work made for hire" rule of copyright law or patent law's workplace doctrine, such a classification

grants, and publication opportunities, *id.*, so graduate students want to keep the relationship cordial and collegial.

⁵⁷ Some universities classify students based on the primary purpose of university involvement. Thus degree-seeking graduate students are often designated as "primarily students," even though they receive a paycheck and are eligible for worker's compensation. *Compare* Cuddleback v. Florida Bd. of Educ., 381 F.3d 1230, 1234-35 (11th Cir. 2004) (concluding that a graduate student researcher is an employee for Title VII purposes) *and* United Faculty of Fla. Local 1847 v. Bd. of Regents, 417 So.2d 1055 (Fla. Dist. Ct. App. 1982) (concluding that graduate assistants are employees under the Florida Constitution in spite of their student status, and that universities hire graduate assistants to supplement the faculty) *with* Ross v. Univ. of Minn., 439 N.W.2d 28, 33 (Minn. Ct. App. 1989) (finding that although the state worker's compensation classifies medical students as employees, employment principles do not apply when a resident is fired for academic reasons). *See* Kathleen M. Capano et. al., Comment, *In re Cronyn: Can Student Theses Bar Patent Applications?* 18 J.C. & U.L. 105, 114-15 n.74-76 (1991); Grant M. Hayden, "The University Works Because We Do": *Collective Bargaining Rights for Graduate Assistants*, 69 FORDHAM L. REV. 1233, 1249-60 (2001).

⁵⁸ These factors may include: (1) Did the student receive taxable compensation; (2) Did the students receive fringe benefits like other employees; (3) Would the employer be liable for the student's actions under a theory of respondeat superior; (4) Did the teaching/research primarily benefit the student or the employer? (5) Would employment continue after graduation; (6) Was the purpose of employment to earn a living or to receive an education. *See* Capano et al., *supra* note 62, at 114 n.74 (internal citations omitted).

⁵⁹ New York Univ., 332 N.L.R.B. 1205, 1205 (2000).

could only result from a misunderstanding of the graduate student employment environment. [M]uch of the funding [that a graduate student receives as a stipend] actually goes directly back to the university to pay for tuition and other costs of education....

[I]t is apparent that graduate students occupy a vague position within the university system; they are not employees in the traditional sense of the term, but they often serve in a similar research capacity as their professors (who do qualify as traditional employees).⁶⁰

Even though a student's status may affect the type of "process" that the student is due in a professor-student "employment" conflict, a student can rarely win an "academic" conflict. The Supreme Court, for example, defers to faculty expertise in academic decision making:

When judges are asked to review the substance of a *genuinely academic decision*...they should show great respect for the faculty's professional judgment. Plainly, they may not override it unless it is such a substantial departure from accepted academic norms as to demonstrate that the person or committee responsible did not actually exercise professional judgment.⁶¹

Thus an aggrieved graduate student may face an insurmountable hurdle if a professor cloaks an authorship decision as "genuinely academic."

III. DILUTION OF AUTHORSHIP IN ACADEMIC SCIENCE

[18] At one time the scientific community followed the general rule that "any coauthor should be able to take responsibility for the *entire content* of a paper."⁶² Since, in the past, most papers were solely authored, the individual(s) listed on the byline actually wrote the paper. This rule has

⁶⁰ Seidemann, *supra* note 55, at 479-80.

⁶¹ Regents of the Univ. of Michigan v. Ewing, 474 U.S. 214, 225 (1985) (citation omitted) (emphasis added).

⁶² Editorial, *Games People Play with Authors' Names*, 387 NATURE 831, (1997).

become impractical for most researchers, leading the academy to lower the threshold for authorship.⁶³

A. THE EXTENT OF AUTHORSHIP ABUSE

1. TYPES OF AUTHORSHIP IRREGULARITIES

[19] Bennett and Caelleigh have both compiled a list of authorship irregularities.⁶⁴ A “guest” or “gift” author is included on the byline even though the individual does not meet authorship criteria.⁶⁵ These authors “do not help write the paper and may not have seen the final version submitted to the journal.”⁶⁶

[20] Bylines include guest authors for several reasons. First, a professor may want to help build a student’s resume.⁶⁷ Second, a junior faculty member may add a prominent scientist to the byline in order to enhance the visibility of the junior faculty member’s publication.⁶⁸ This practice, which Vesterman calls “the *reverse* of giving false credit,” is more likely to occur when a junior faculty member needs to publish a unique, novel, or controversial result.⁶⁹ Third, it is often customary in the scientific community to give coauthorship to a colleague who donated funds, advice, or research support.⁷⁰

[21] In addition to guest and gift authors, there are several other types of pseudo-authorship. A “ghost author” meets the criteria for authorship but is omitted from the byline.⁷¹ A “pressured author” is a ghost author who uses their seniority, position, or title to force their name onto the byline.⁷²

⁶³ *Id.*

⁶⁴ Bennett et al., *supra* note 8, at 266-67; Caelleigh, *supra* note 8, at 228.

⁶⁵ Caelleigh, *supra* note 8, at 228.

⁶⁶ Bennett et al., *supra* note 8, at 266.

⁶⁷ See MCSHERRY, *supra* note 11, at 84-86.

⁶⁸ Garfield, *supra* note 7, at 13.

⁶⁹ Vesterman, *supra* note 8, at 444.

⁷⁰ *Id.*

⁷¹ Bennett et al., *supra* note 8 at 266-67.

⁷² *Id.*

Pressure may come from senior faculty, department chairs, deans, and others.⁷³

2. WHO AND IN WHAT ORDER?

[22] “The professor, the highest-ranking member of an academic research group, determines authorship – both who should be included and in what order the contributions are ranked.”⁷⁴ The professor’s personal ambition – including promotion, tenure, and reputation – affect the “need” to include gift, pressure, or ghost authors. Although many professional societies have ethical guidelines,⁷⁵ professors more or less do as they please.⁷⁶

[23] Making decisions about the order of listing names can be complex. Ideally, the order of authorship on the byline “should be a joint decision between the coauthors.”⁷⁷ Conflicts arise because the scientific community uses the order of authors to make assumptions about achievements and capabilities, which consequently influence hiring, promotion, and tenure decisions.⁷⁸ Although there are no widely accepted rules, there are trends.

[24] The first author, theoretically, contributes the most work to the project and writes the manuscript.⁷⁹ In academic labs, a doctoral student often holds this position. If publications emerge out of a team-based group, authorship credit may be assigned based on the number of hours each student contributes.⁸⁰ Some professors view the designation of a student as a first author as a gift rather than a just practice, others do it

⁷³ “[I]t is not unheard of for laboratory or department heads to routinely add their names to the publications of their staff.” Vesterman, *supra* note 8, at 444.

⁷⁴ MCSHERRY, *supra* note 11, at 84-94.

⁷⁵ See, e.g., American Chemical Society, *Ethical Guidelines to Publication of Chemical Research*, available at https://paragon.acs.org/paragon/ShowDocServlet?contentId=paragon/menu_content/newtothissite/eg_ethic2000.pdf

⁷⁶ “[P]rofessors clearly establish the authorship policy. One senior researcher said, ‘[I]t is my judgment to make and I think that there has to be a boss in every institution.’”

MCSHERRY, *supra* note 11, at 84.

⁷⁷ Bennett et al., *supra* note 8, at 265.

⁷⁸ *Id.*

⁷⁹ *Id.*; MCSHERRY, *supra* note 11, at 84; Vesterman, *supra* note 8, at 444-45.

⁸⁰ See MCSHERRY, *supra* note 11, at 84-85.

simply to build the student's resume.⁸¹ Most professors place their names at the end of the byline, since the position of the last author is often "reserved" for the senior researcher or the head of the research group.⁸² This tradition is an act of "noblesse oblige."⁸³

[25] Middle authors are the most problematic types because their contributions can range from trivial to substantial.⁸⁴ As Bennett points out, middle authors "are the least likely to contribute to the intellectual tasks of a study, such as the initial conception, design, analysis, interpretation, manuscript writing and revision."⁸⁵ Accordingly, dilution of authorship festers and grows in the middle positions. Works that should bear one or two names may diffuse into multi-authored publications where individual contributions are often impossible to ascertain. Listing every conceivable person who assisted on a project as an author is rooted in custom rather than law. Undoubtedly there are thousands of journal articles in the academy whose authorship is suspect.

3. CRITERIA FOR AUTHORSHIP

[26] The International Committee of Medical Journal Editors (ICMJE) developed the following criteria for authorship:

Authorship credit should be based on (1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content; and (3) final approval of the version to be published. Authors should meet conditions (1), (2), and (3).

....

Acquisition of funding, collection of data, or general supervision of the research group, alone, *does not justify authorship*. All persons designated as authors should

⁸¹ *See id.* at 85-86.

⁸² Bennett et al., *supra* note 8, at 265.

⁸³ *Id.* (internal citations omitted); Vesterman, *supra* note 8, at 443.

⁸⁴ *See* Bennett et al., *supra* note 8, at 265.

⁸⁵ *Id.* (internal citation omitted).

qualify for authorship, and all those who qualify should be listed. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.⁸⁶

Numerous journals have included these guidelines in their instructions for authors.⁸⁷

B. TRADITION, AUTHORSHIP, AND “SWEAT OF THE BROW”

[27] Scientific misconduct might subside if science professors were taught basic intellectual property law. Admittedly it is easy to confuse “idea,” “expression,” “conception,” “inventorship,” “authorship,” “joint inventorship,” and a “joint work.”⁸⁸ The academy’s strict adherence to custom adds complexity because the professor is sovereign over the research group.

1. A HYPOTHETICAL EXAMPLE

[28] Professor X seeks to synthesize a particular molecule, which is assigned to Student A as a dissertation project. At the outset Professor X speculates on a potential synthetic route to the molecule. Professor X’s synthetic strategy fails, but over the years Student A develops a new, successful strategy. Students B and C, fellow members of the research group, occasionally run trivial, non-intellectual procedures for Student A, and Staff Chemist D provides instrumental support. Professor X requires Student A to revise the dissertation before it is suitable for submission. Student A incorporates Professor X’s suggestions. Six months after Student A graduates, Professor X submits a chapter of Student A’s dissertation to a journal. The journal article subsequently publishes with

⁸⁶ ICMJE, *Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication* (Oct. 2005), available at <http://www.icmje.org/index.html> (emphasis added).

⁸⁷ See, e.g., *Information for Authors*, ANNALS OF INTERNAL MED. (2006) https://www.annals.org/shared/author_info.shtml; *Instructions for Authors*, 295 JAMA 1 (Jan. 4, 2006), available at http://jama.ama-assn.org/ifora_current.dtl.

⁸⁸ For an overview of joint development issues in intellectual property law, see Gary H. Moore, *Joint Ownership of Intellectual Property: Issues and Pitfalls*, 1132 PLI/CORP 215 (1999).

A, B, C, D, and X listed in that order. Using the terms described above, A is a principal author, X is possibly a joint author, and B, C, and D are gift authors.

2. WHO IS A JOINT AUTHOR?

[29] A “joint work” is “a work prepared by two or more authors with the intention that their contribution be merged into inseparable or interdependent parts of a unitary whole.”⁸⁹ Many courts interpret the statute according to *Childress v. Taylor*, where the Second Circuit held that (1) the parties must intend to be joint authors;⁹⁰ and (2) each author’s contribution must be copyrightable.⁹¹ “Authors of a joint work are co-owners of the copyright.”⁹² The *Childress* court described the potential risks for affording joint authorship where it is not deserved:

Care must be taken to ensure that true collaborators in the creative process are accorded the perquisites of co-authorship and to guard against the risk that a sole author is denied exclusive authorship status simply because another person rendered some form of assistance. Copyright law best serves the interests of creativity when it carefully draws the bounds of “joint authorship” so as to protect the legitimate claims of both sole authors and co-authors.⁹³

The key question in an academic research group, like the hypothetical example presented above, is which types of contributions rise to the level of joint authorship?⁹⁴

⁸⁹ 17 U.S.C. § 101 (2000 & Supp. 2003).

⁹⁰ 945 F.2d 500, 507 (2d Cir. 1991).

⁹¹ *Id.* at 506-07; *accord* Aalmuhammed v. Lee, 202 F.3d 1227, 1234-36 (9th Cir. 2000); Thomson v. Larson, 147 F.3d 195, 200 (2d Cir. 1998); Erickson v. Trinity Theatre, Inc., 13 F.3d 1061, 1070-71 (7th Cir. 1994) (explaining and adopting the copyrightability test).

⁹² 17 U.S.C. § 201(a) (2000).

⁹³ *Childress*, 945 F.2d at 504.

⁹⁴ Is the joint work doctrine the appropriate way to deal with collaborative research?

Professor Dreyfuss thinks not:

[I]f the Second Circuit’s test on joint authorship is the law of the land (the Supreme Court has not spoken to the issue), then joint authorship is not an appropriate way in which to deal with collaborations. In a way, that is a pity because the part of the test that examines the

[30] Joint authorship should not be granted as a gift for lab assistance or physical labor. A copyright rewards creativity and originality.⁹⁵ Thus, as in patent law, “joint” status should not be obtained by someone who merely conducts experiments.⁹⁶ To the extent that a putative joint author’s sole contribution is experimental data, that data is statutorily excluded from copyright protection.⁹⁷ The Supreme Court has also rejected the “sweat of the brow” doctrine.⁹⁸

[31] To the extent that professors make substantive changes to a manuscript, the faculty advisor satisfies both prongs of the joint authorship test. As a co-owner, the professor enjoys an equal and undivided interest in the work.⁹⁹ A co-owner “may revise the work (that is, make a

contribution of the putative co-author is resonant with policies being considered on collaboration. However, the intent test is fair only if participants in the creative process know each another's plans. Unfortunately, many collaborations have features, such as cultural differences, divergent disciplinary practices, and valuation gaps, that make misunderstanding quite likely. Further, as applied, joint authorship suffers from the same hierarchical problems we saw in work for hire, for it privileges the dominant participant (or, perhaps, the first one in the group to have considered the project). In the university setting, in science, and perhaps in other areas, collaborators can have power relationships that do not match the level of expertise and intellectual investment that they bring to their work. Certain parties – the tenured professor, the principal investigator, the head of the research group – would receive authorship status under this test to the detriment of those who did the actual work and understand it enough to vouch for it and follow it up.

Dreyfuss, *supra* note 37, at 1208-09.

⁹⁵ 17 U.S.C. §§ 102 (a), 201(a) (2000).

⁹⁶ “The case law thus indicates that to be a joint inventor, an individual must make a contribution to the conception of the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention.” *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997).

⁹⁷ 17 U.S.C. § 102(b) (2000).

⁹⁸ *Feist Publ’ns. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 352-56 (1991).

⁹⁹ “Joint authors co-owning copyright in a work are deemed to be tenants in common, with each having an independent right to use or license the copyright, subject only to a duty to account to the other co-owner for any profits earned thereby.” *Comty. For Creative Non-Violence v. Reid*, 846 F.2d 1485, 1498 (D.C. Cir. 1988), *aff’d without consideration on this point*, 490 U.S. 730 (1989), *cited with approval in Thomson v. Lawson*, 147 F.3d 195, 199 (2d Cir. 1998) (Joint authorship entitles the co-authors to equal undivided

derivative work) and publish the original or the revision” without depriving the student of a property interest.¹⁰⁰ The professor has a duty, however, to account to the student (or any other co-owner) for profits that come from the exploitation.¹⁰¹ Graduate students are not so concerned with profits; they want proper credit.

[32] A faculty advisor, however, does not *automatically* qualify as a joint author because of directing and supervising the research. As the Seventh Circuit noted:

The assistance that a research assistant or secretary or draftsman or helpfully commenting colleague provides in the preparation of a scholarly paper does *not* entitle the helper to claim the status of a joint author. To be a joint author, an assistant or collaborator must contribute significant copyrightable material.¹⁰²

A faculty advisor who makes minor corrections to a graduate student’s manuscript is not a joint author. Therefore, the graduate student should be the sole author of the resulting publication.¹⁰³ Unfortunately, this result is rarely observed in academic science.¹⁰⁴

C. PROBLEM: DISSERTATION “TRANSMUTATION”

interests in the whole work – in other words, each joint author has the right to use or to license the work as he or she wishes, subject only to the obligation to account to the other joint owner for any profits that are made.).

¹⁰⁰ Weinstein v. Univ. of Ill., 811 F.2d 1091,1095 (7th Cir. 1987).

¹⁰¹ See *supra* note 100 and accompanying text.

¹⁰² Seshadri v. Kasraian, 130 F.3d 798,803 (7th Cir. 1997). See also, Erickson v. Trinity Theatre, Inc., 13 F.3d 1061, 1070-71 (7th Cir. 1994); Childress v. Taylor, 945 F.2d 500, 506-07 (2d Cir.1991); M.G.B. Homes, Inc. v. Ameron Homes, Inc., 903 F.2d 1486, 1493 (11th Cir. 1990).

¹⁰³ Professor Dreyfuss suggests that the Second Circuit’s test easily allows faculty advisors to claim joint author status. See Dreyfuss, *supra* note 37, at 1208-09.

¹⁰⁴ Peer reviewers would probably reject a manuscript that does not bear the faculty advisor’s name as a co-author.

[33] Doctoral research in academic science usually produces several short papers,¹⁰⁵ where each chapter serves as an independent publication.¹⁰⁶ Graduate students either begin to publish their research during doctoral training or, alternatively, delay publishing until after the dissertation is completed. In both cases, the journal publisher obtains an exclusive copyright in the work.¹⁰⁷

[34] A dissertation which emanates from one or more journal articles is a derivative work because “[it] is a work based upon one or more

¹⁰⁵ “There are many advantages to writing up your work as a series of short papers...[Y]ou can keep your name in the spotlight, ... [and] are less likely to be ‘scooped.’” FEIBELMAN, *supra* note 11, at 41-42.

¹⁰⁶ See, e.g., University of California – Irvine, UCI Thesis and Dissertation Manual, <https://www.lib.uci.edu/libraries/collections/special/thesis/td3.html> (last visited Feb. 9, 2006); Wake Forest University Graduate School of Arts and Sciences, Instructions for the Preparation of Theses and Dissertations, <http://www.bgsm.edu/graduate/thesesprep.html> (last visited Feb. 2, 2006).

¹⁰⁷ The American Chemical Society’s copyright transfer form is illustrative:

The undersigned, with the consent of all authors, hereby transfers, to the extent that there is copyright to be transferred, the exclusive copyright interest in the above cited manuscript, including the published version in any format (subsequently called the "work"), to the American Chemical Society subject to the following....

A. The undersigned author and all coauthors retain the right to revise, adapt, prepare derivative works, present orally, or distribute or transmit to not more than 50 colleagues, their own paper, provided that copyright credit is given to the source and ACS, that recipients are informed that they may not further disseminate or copy the paper, and that all such use is for the personal noncommercial benefit of the author(s) and is consistent with any prior contractual agreement between the undersigned and/or coauthors and their employer(s)....

B. Where a work is prepared as a "work made for hire" for an employer, the employer(s) of the author(s) retain(s) the right to revise, adapt, prepare derivative works, publish, reprint, reproduce, and distribute the work in print format, and to transmit it on an internal, secure network for use by its employees only, and additional rights under A, provided that all such use is for the promotion of its business enterprise and does not imply endorsement by ACS....

American Chemical Society, Copyright Status Form, *available at* https://paragon.acs.org/paragon/ShowDocServlet?contentId=paragon/menu_content/auth_orchecklist/copyright.pdf (last visited Feb. 2, 2006).

preexisting works.”¹⁰⁸ The journal’s copyright provision allows the paper to be incorporated into the dissertation¹⁰⁹ as long as the prior journal publication is properly acknowledged.¹¹⁰ For a multi-author publication, universities attempt to elucidate the student’s actual work. If the

¹⁰⁸ 17 U.S.C. § 101 (2000 & Supp. 2003). The preexisting jointly-authored publication does not cause a copyright conflict for the doctoral student because derivative works based on joint works do not transmute into joint works. 17 U.S.C. § 103(b) (2006); *see* *Ashton-Tate v. Ross*, 916 F.2d 516, 522 (9th Cir. 1990); *Weissmann v. Freeman*, 868 F.2d 1313, 1317 (2d Cir. 1989). “If such were the law, it would eviscerate the independent copyright protection that attaches to a derivative work that is wholly independent of the protection afforded the preexisting work.” *Id.* at 1317.

¹⁰⁹ The author may retain substantial rights after assignment to the publisher:

As an author you (or your employer or institution) may do the following: (1) make copies (print or electronic) of the article for your own personal use, including for your own classroom teaching use; (2) make copies and distribute such copies (including through e-mail) of the article to research colleagues, for the personal use by such colleagues (but not commercially or systematically, e.g. via an e-mail list or list server); (3) post a pre-print version of the article on Internet websites including electronic pre-print servers, and to retain indefinitely such version on such servers or sites; (4) post a revised personal version of the final text of the article (to reflect changes made in the peer review and editing process) on your personal or institutional website or server, with a link to the journal homepage (on elsevier.com); (5) present the article at a meeting or conference and to distribute copies of the article to the delegates attending such meeting; (6) for your employer, if the article is a ‘work for hire’, made within the scope of your employment, your employer may use all or part of the information in the article for other intra-company use (e.g. training); (7) retain patent and trademark rights and rights to any process or procedure described in the article; (8) include the article in full or in part in a thesis or dissertation (provided that this is not to be published commercially); (9) use the article or any part thereof in a printed compilation of your works, such as collected writings or lecture notes (subsequent to publication of the article in the journal); and (10) prepare other derivative works, to extend the article into book-length form, or to otherwise re-use portions or excerpts in other works, with full acknowledgement of its original publication in the journal.

Elsevier Ltd., Transfer of Copyright Agreement (Jan. 2002), <http://www1.elsevier.com/homepage/saf/ifac/site/IFAC%20CCC.pdf>.

¹¹⁰ Some universities nevertheless require a permission letter from the journal publisher which holds the exclusive copyright. *See, e.g.*, University of California – Irvine, UCI Thesis and Dissertation Manual, <https://www.lib.uci.edu/libraries/collections/special/thesis/td3html> (last visited Feb. 9, 2006).

published material lists as a coauthor the faculty advisor who directed and supervised the research, a simple acknowledgement is sufficient.¹¹¹ If there are additional coauthors, “middle” authors, the student’s work must be clearly identified.¹¹²

[35] The potential for dilution of authorship is not so easily “caught” in the second approach where journal publications succeed the dissertation. The dissertation is by definition an *independent* work,¹¹³ which graduate students are encouraged to register with the Copyright Office.¹¹⁴ Quite often photocopied portions of the dissertation are submitted verbatim to research journals. The major difference is that the dissertation—whose copyright vested in one author, the graduate student¹¹⁵—has transmuted into a journal publication with a multi-author byline. In most cases, a scientific paper emanating from a dissertation should bear no more than

¹¹¹ *Id.*

¹¹² Universities want to make sure that what the student is claiming in the dissertation is actually the student’s work.

If the student has submitted, had accepted, or published one or more papers pertinent to the subject of the thesis, the paper(s) may be incorporated into the thesis. Whether as a senior author or co-author of at least one paper, *the student must have had the major role in the preparation of the manuscript.* Portions of papers representing work either not done by the student or used as part of another thesis should be identified clearly and perhaps placed in an appendix.

....

In addition, the student should also indicate in the case of multiple authorship that portion of work for which he or she is responsible.

Wake Forest University Graduate School of Arts and Sciences, Instructions for the Preparation of Theses and Dissertations, <http://www.bgsm.edu/graduate/thesesprep.html> (last visited Feb. 6, 2006) (emphasis added).

¹¹³ A dissertation is “a substantial paper that is submitted to the faculty of a university by a candidate for an advanced degree that is typically based on independent research and that if acceptable usu. gives evidence of the candidate’s mastery both of his own subject and of scholarly method.” WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY UNABRIDGED 656 (1993).

¹¹⁴ Most universities require Ph.D. recipients to submit their dissertations to UMI Dissertation Services, which publishes and archives dissertations and will register them with the Copyright Office. UMI, Dissertations and Services, <http://tls.il.proquest.com/umi/dissertations/> (last visited Feb. 6, 2006).

¹¹⁵ “Remember that copyright privileges now vest immediately upon creating your work, without the requirement of notice or registration formalities.” Kenneth D. Crews, *New Media, New Rights, & Your New Dissertation*, COPYRIGHT LAW & GRADUATE RES. (2000), <http://tls.il.proquest.com/umi/dissertations/copyright/>.

two names on the byline: those of the principal-student author and possibly the faculty advisor as a joint author.¹¹⁶ Those who do not qualify for authorship should be listed in the acknowledgments. If the listed authors are not joint authors,¹¹⁷ dilution has occurred, and the copyright cannot be assigned to a publisher in good faith.¹¹⁸

IV. MOVING FORWARD

A. WHY DOES IT MATTER?

[36] Dilution of authorship can be particularly detrimental to young scientists. The quality and number of “first-authored” refereed journal publications affect employment, promotion, tenure, grant funding, and overall stature.¹¹⁹ This is especially true for newly-minted Ph.D.s seeking their first job or research grant.¹²⁰ Although letters of recommendation,

¹¹⁶ Professor Crews explains what should happen if the dissertation is actually a joint work:

Consult with your faculty advisor and your graduate dean if you have any unusual complications in claiming ownership to your dissertation’s copyright. For example, are you actually a co-author of the dissertation with another student or faculty member? A professor who actually contributed to copyrightable elements of your dissertation might actually be deemed a co-owner of your work.

Id. If the faculty advisor is not a joint author, the faculty advisor’s name should be omitted. *See supra* note 104 and accompanying text.

¹¹⁷ These authors fail to meet both statutory and ICMJE authorship criteria.

¹¹⁸ Copyright transfer agreements allow an author to execute the assignment on behalf of the other joint authors. *See supra* note 108 and accompanying text.

¹¹⁹ An academic department’s tenure and promotion policy illustrates the importance of publications: “Without a minimum of four refereed journal publications (or the equivalent) where the candidate is listed as first author, or second author where the first author is an advisee of the candidate’s, tenure cannot be recommended.” *See* University of Nevada, Las Vegas, Dept. of Mechanical Engineering, Rules and Bylaws, *available at* <http://www.me.unlv.edu/GeneralInfo/bylaws.html> (last visited Apr. 22, 2005). The criteria for a tenure-track professor’s third-year review are similar: “Review/critique [of scholarship includes] not only numbers of publications or creative works, but also quality of journals, press (for books), or creative outlet; order and number of authors and [grantsmanship].” Univ. of Iowa, Office of the Provost, Annual Reviews, Promotion, and Tenure, *available at* <http://www.uiowa.edu/~provost/facappt/assessment.htm> (last visited Feb. 1, 2006).

¹²⁰ Graduate students are also subject to the “publish or perish” requirement.

pedigree, and the faculty advisor's reputation may carry substantial weight, young scientists emerging from a Ph.D. program who lack at least a few "top-tier" first-authored publications face a competitive disadvantage.¹²¹ Committees and potential employers will review the publication record with the highest scrutiny because the neophyte does not have an extensive, independent research record to rest on. As the byline becomes longer, a publication becomes more "dilute" or suspect. Inevitably a person reviewing a multi-author publication will ask what exactly the candidate's contribution was.¹²² If the candidate's name occupies a middle author position, this question may lead to an embarrassing answer. In more and more academic environments, middle-authored publications carry reduced or negligible weight for hiring, promotion, and tenure review.¹²³

[37] Authorship abuse can also hurt senior scientists. These scientists take a risk when their names are inserted on a byline as a gift authorship. As pointed out in *Nature*, "[t]here have been occasions where distinguished scientists have put their names irresponsibly on a paper that

As a minimum, applicants must have at least one first-author publication in press or published in an international peer-reviewed journal at the time of application. This rule is strictly applied as experience shows that those with weaker CVs are never successful.

....

[T]he results of your PhD thesis project may be impressive, but if they have not appeared in a scientific journal, they simply do not count when you apply for funding to take the next step in your academic career.

Jan Schmollinger, *Labs Look for the Write Stuff*, FOCUS, Apr. 18, 2003, http://focus.hms.harvard.edu/2003/April18_2003/forum.html.

¹²¹ *Id.*

¹²² A research associate at Harvard's Dana Farber Cancer Institute explains the problem:

I also think it would be of interest to find out how much the newly minted PhD actually contributed to the listed publications. Of the six principal investigators I have interviewed with so far for a postdoctoral stint, only one asked me straight out how much of the published manuscript I had actually written.

Id.

¹²³ *See supra* note 116.

has turned out to contain serious errors or fraud.”¹²⁴ Some of these scientists have justifiably paid a heavy price.¹²⁵

[38] The entire scientific community is harmed by the abuse of authorship. Dilution further reduces the quality of science publications, which betrays the abuser’s colleagues. For example, adding a prominent scientist to the byline to allow questionable results to evade peer review fills the literature with junk science. Eventually insiders and outsiders view science with distrust.¹²⁶

B. POSSIBLE REMEDIES

[39] Policy changes within the academy can help cure dilution of authorship and related deceptive practices. First, universities need to change their hiring, promotion, and tenure policies. Review committees could only allow a candidate to submit a fixed number of publications in the dossier, and only give full credit to first-author publications.¹²⁷ Funding agencies could also implement a similar restrictive review policy.¹²⁸ This would teach young faculty that conducting quality science is more important than finding ways to build a mediocre publication record. Second, universities need to train science faculty and graduate students in intellectual property fundamentals.¹²⁹ This could be done, for example, in a half-day workshop at faculty/graduate student orientation.¹³⁰ Universities could also require faculty members and graduate students to take a workshop on ethics and/or scientific misconduct.¹³¹

[40] In spite of academic freedom, deans and other university administrators cannot take a passive role and let the problem resolve itself.

¹²⁴ NATURE, *supra* note 63, at 831.

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ Professor Gad-el-Hak suggests listing only five to ten publications. Gad-el-Hak, *supra* note 5, at 62

¹²⁸ Grant proposals submitted to the National Science Foundation can only list a fixed number of publications. *Id.*

¹²⁹ See Sean B. Seymore, *My Patent, Your Patent, or Our Patent? Inventorship Disputes within Academic Research Groups*, 16 ALB. L.J. SCI. & TECH. (forthcoming 2006).

¹³⁰ *Id.*

¹³¹ See Seidemann, *supra* note 55, at 492-94; Steinberg, *supra* note 8, at 65.

No one should expect a graduate student to challenge a professor's decision making, particularly when the science community views listing a student at all is a gift or reward.¹³² Students who reveal a professor's unethical standards may be labeled a whistleblower, which could lead to "problems continuing their education and/or seeking employment through an advisor's refusal to write letters of recommendation or defamation of character by word of mouth."¹³³ Change must initiate from outside of the research group because "authorship depends on and helps create a trust relationship between the advisor and advisee. To question it is to question that relationship and the advisor's authority."¹³⁴

[41] Journal editors can reduce scientific misconduct by changing publication policies. First, editors should only allow a fixed number of authors to appear on the byline, truncating and replacing additional authors with "*et al.*"¹³⁵ Some journals have already implemented this practice, where the fixed number ranges from three to six.¹³⁶ Second, journals can require the corresponding author and each listed author to sign a statement attesting to the ICMJE authorship criteria.¹³⁷ Those individuals who fail to satisfy these criteria can be credited in the acknowledgments.¹³⁸ Third, listed authors could list their individual contributions in a footnote.¹³⁹ This obviates the naming order conflict because the reader can personally assess merit.¹⁴⁰ Alternatively, the contributor's list could be submitted as a separate document for peer review. Thus a manuscript could be challenged or rejected at the review stage if authorship appears suspect.

[42] Federal and private funding agencies wield the most power to sanction scientific misconduct since most scientific research is externally funded. The Office of Research Integrity (ORI), which oversees the

¹³² Students often contrast their advisor's generosity with the unfair practices they "hear" happens in other labs. MCSHERRY, *supra* note 11, at 86. Students repeatedly characterize authorship not as something claimed but as something they were given. *Id.*

¹³³ Seidemann, *supra* note 55, at 486 (internal citation omitted).

¹³⁴ MCSHERRY, *supra* note 11, at 86.

¹³⁵ Bennett et al., *supra* note 8, at 266.

¹³⁶ *Id.*

¹³⁷ See Garfield, *supra* note 7, at 13.

¹³⁸ *Id.*

¹³⁹ Bennett et al., *supra* note 8, at 268.

¹⁴⁰ *Id.*

National Health Institute (NIH), Food and Drug Administration (FDA), and other agencies, can take administrative actions against researchers.¹⁴¹ These actions may include loss of funding, debarment from receiving future federal funds, prohibition from peer review and advisory committee service, imposition of an individual to oversee the scientist and the submission of a retraction, or the submission of an article correction.¹⁴² These sanctions are typically imposed for three years, but can range from one to ten years.¹⁴³

V. CONCLUSION

[43] Universities, funding agencies, professional societies, and publishers must insist that professors obey proper codes of conduct and the tenets of copyright law when publishing scientific papers. Notwithstanding academic freedom, the reluctance of these entities to invade the sanctity of the academic research group – thereby allowing the professor to make unilateral, unreviewable authorship decisions – cannot continue. Requiring professors to follow the joint work doctrine will create objective standards for authorship which are congruent with copyright law. Traditional publishing practices which allow dilution of authorship hurt graduate students, the quality of the science literature, tarnishes the academy, and potentially creates an intellectual property “time bomb.”¹⁴⁴

¹⁴¹ Office of Research Integrity, Handling Misconduct – Administrative Actions, Jan. 10, 2005, http://ori.dhhs.gov/misconduct/admin_actions.shtml.

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ Seidemann, *supra* note 55, at 495.