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COMPUTER PROGRAMS AND OTHER FACULTY WRITINGS UNDER THE WORK-FOR-HIRE DOCTRINE: WHO OWNS THE INTELLECTUAL'S PROPERTY?

Cory H. Van Arsdale

I. INTRODUCTION

A screenwriter employed by a film producer produces a screenplay; the producer owns the copyright. A researcher working for an encyclopaedia publisher produces an article; that publisher owns the copyright to the article. A computer programer employed by a software publisher produces a program; the software publisher owns all copyright privileges in the program. A university professor writes an article and publishes it in a scholarly journal; the university owns the copyright to the article and is entitled to the royalties as well.

All but the last of these examples seems consistent with long established principle that an employer will own the rights to the products of employees. Section 201(b) of the 1976 Copyright Act (hereinafter 1976 Act) generally follows this premise and provides that where a work is made for hire, the employer shall be considered the author and shall presumptively own the copyright in an employee's work. In general, the work-for-hire doctrine appears to produce the result most employers and employees expect in their relationship.

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2. 17 U.S.C. § 201(b) (1976 & Supp. IV 1980). § 201(b) provides:
   (b) Works Made For Hire. — In the case of a work made for hire, the employer or other person for whom the work was prepared is considered the author for purposes of this title, and, unless the parties have expressly agreed otherwise in a written instrument signed by them, owns all of the rights comprised in the copyright.
3. Contrast the situation of freelance or independent creators of copyrightable works.
However, as the latter example above illustrates, the work-for-hire doctrine fails to produce the expected result when applied to the scholarly writings of college and university professors — the custom in this employment relationship is that a professor retains the copyright to his work. Application of the doctrine to university faculty will create anomalous results, yet these results are quite probable.

This article discusses the copyright work-for-hire doctrine as it applies to college and university faculty and their respective writings — especially computer programs. Part II considers the work-for-hire doctrine and the methods of judicial analysis it has generated. Section A analyzes the doctrine as applied to copyrightable employee works in general, and Sections B and C, respectively, consider application of the doctrine to faculty writings, generally, and to computer programs as faculty writings, specifically. Part III discusses the alternatives available to professors in retaining the copyright in computer programs and other faculty writings. Section A presents an argument that the doctrine does not apply to faculty; Section B considers possible contractual solutions available; and, finally, Section C contends that the work-for-hire doctrine is unconstitutional, either in general or as applied to faculty writings.

II. THE DOCTRINE OF WORK-FOR-HIRE

A. Generally

The work-for-hire doctrine is an established principle of statutory copyright law in the United States and presumes that the copyright in a work produced by an employee in the course of his employment vests in his employer. The concept of creating a presumption of ownership in favor of the employer is based upon the premise that the employer is often the true creator of employees' copyrightable works in that the work is produced for the employer and under his direction; the employee is compensated for his work; and since the employer pays the costs and bears the risk of any loss,


4. 17 U.S.C. § 201(b). A "work made for hire" is defined as "a work prepared by an employee within the scope of his or her employment . . . ." 17 U.S.C. § 101.

Under 1976 Act, copyright vests initially in the author. 17 U.S.C. § 201(a). Thus, under § 201(b), copyright in works made for hire vest initially in the employer, as he is considered the "author."

5. An employer's ownership of copyrightable works produced by employees is, in effect, a presumption which may be rebutted by a written agreement between employer and employee.
he should reap any gains, including copyright privileges. The concept appears to be commensurate with the underlying policy of copyright found in the Constitution — encouraging authorship.

The 1976 Act fundamentally revised the old 1909 Copyright Act (hereinafter 1909 Act) and made a major change in the work-for-hire doctrine by requiring a written agreement signed by both parties in order to rebut the presumption in favor of the employer. Except for this change, it appears that Congress approved the judicial precepts developed under the 1909 Act.

Under the 1909 Act, the courts had developed a two-part analysis to determine whether a work created in an employment relationship constituted a work made for hire. The first step determined whether the copyrightable work created was within the scope of employment. If so, the second step ascertained whether the presumption in favor of the employer had been overcome by evidence of a contrary agreement between the parties.

The courts' measure of a work made for hire was whether or

7. U.S. Const. art. I, § 8, cl. 8 [hereinafter referred to as the Copyright Clause] states: "The Congress shall have power . . . to promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries . . . ."
9. The longstanding rule that works were entitled to statutory copyright only upon publication, for example, has been radically changed by the 1976 Act — now any work which has been "fixed" in a tangible form is protected at the moment of creation. 17 U.S.C. § 102(a). Further, the area of common law copyright has been effectively preempted by the 1976 Act. 17 U.S.C. § 301.
12. For an excellent discussion of the precedents developed under the 1909 Act, see Simon, Faculty Writings: Are They "Works Made For Hire" Under The 1976 Copyright Act?, 9 J. Of Col. And Univ. Law 485, 486-492 (1983) [hereinafter cited as Simon].
14. Though the 1909 Act contained no reference to whether a work was within the "scope of employment," the phrase was developed judicially and was included specifically in the 1976 Act. See 17 U.S.C. § 101, supra note 4.
not the work was created within the scope of employment. By requiring that a work be created within the scope of employment, the courts allowed employees to retain a copyright in independent works of authorship; works created outside of the employment relationship were justifiably exempt from the work-for-hire doctrine. The analysis is directed toward the threshold issue of whether or not an employment relationship exists, and if so, does it exist to the extent that the principles behind the copyright clause and the work-for-hire doctrine are justified.

The crucial factor in determining whether a work is created in the scope of employment is the employer's right to supervise, direct, and exercise control over an employee's work. The importance of supervision relates to the overall copyright policy of encouraging authorship. That is, if employers are the impetus behind the creation of the employee's work, the former should be rewarded with the copyright. In contrast, if the employer has no right to exercise control over an employee's works, those works should be considered as rendered outside the scope of employment and rightfully should become the property of the employee. This is true even if the subject matter of the work thus created by the employee bears upon or arises out of the employee's activities for his employer, so long as the work was not produced pursuant to his duties as an employee.

Several other factors help to determine whether a work was within the scope of employment. These include insistence, expense, compensation, and whether the work was created within the regular hours of employment. Insistence, not unlike the factor of supervision and control, at one time or another, the courts have either relied upon these additional factors, or dismissed them as irrelevant. Compare Olympia Press v. Lancer Books, Inc., 267 F. Supp. 920, 924 (S.D.N.Y. 1967) (fact that author worked at home and in cafes, but never in office of employer, helped to show work was outside scope of employment) with Scherr v. Universal Match Corp., 417 F.2d 497, 500 (2d Cir. 1969), cert. denied, 397 U.S. 936 (1970) (factors other than supervision and control are pertinent, but nonessential, considerations).
sion and control, refers to whether the employer was the motivating factor in producing the work. For example, where an employer conceives of the work, edits the employee's work, or hires someone to produce a specific work, that work will be seen as created at the insistence of the employer. Expense has occasionally been labeled an important factor, even when nonessential. If the employer provides supplies, equipment, research facilities or other suitable work environment, such evidence strongly indicates that a work was made for hire.

The final two factors, regular hours and compensation, generally have been dismissed as of dubious importance in determining the scope of employment. Whether a work was created during regular working hours has lost the value it once held as the courts have found that employees who create copyrightable works are less likely to work regular hours than other employees. Similarly, a regular, negotiated salary, while dispositive in showing an employment relationship, is a relatively minor factor in showing whether or not a work was created within the scope of employment. Thus, the determination of whether a work was created within the scope of employment and therefore under the 1976 Act a work made for hire is, as it was under the 1909 Act, largely predicated upon the

22. The latter example helps delineate between insistence and supervision and control. Where an employer hires someone to produce a specific work, he can be considered the motivating factor behind the work, even if he exercises no further supervision over that employee until receipt of the final product.

Insistence alone has made a situation one of work-for-hire. Murray v. Gelderman, 563 F.2d 773, 775 (5th Cir. 1977), petition for rehearing denied, 566 F.2d 1307 (1978).

23. See, e.g., Scherr, supra note 20, at 499.
24. Simon, supra note 12, at 488. Again, the importance of expense as a factor is uncertain. Some courts have weighed expense equally with other factors, Picture Music, Inc. v. Bourne, Inc., 457 F.2d 1213 (2d Cir. 1972), cert. denied, 409 U.S. 997 (1972); while others have dismissed expense as nondeterminative, Public Affairs Associates, Inc. v. Rickover, 284 F.2d 262 (D.C. Cir. 1960), vacated for insufficient record, 369 U.S. 111 (1962).

It appears that the expense factor will always be subordinate to the supervision and control factor. However, given the inconsistent history of the courts on determining which factors are relevant, a change may occur in the appropriate factual circumstances. Cf. Samet & Wells, Inc. v. Shalom Toy Co., 185 U.S.P.Q. 36 (E.D.N.Y. 1975) (District court held supervision and control were not essential factors despite upper court holding that said factors were critical).

27. Scherr, supra note 20, at 501. But see, Tobani v. Carl Fischer, 98 F.2d 57, 59 (2d Cir. 1938) (regular, negotiated salary was an important consideration although not critical to court's decision).
factor relating to supervision and control, weighed with other relatively unimportant factors.

That an employment relationship clearly exists should not, by itself, dictate that all works created by an employee are within the scope of employment. Professor Nimmer, a noted authority on copyright, suggests that notwithstanding broad language in employment contracts, the courts often strive to limit their effects in order to preclude an employer from claiming ownership in works outside the scope of the employment agreement. Despite the difficulty of applying this nebulous judicial standard for determining scope of employment, Congress provided no further guidelines in the 1976 Act.

If the court finds that a work was created within the scope of employment, the second major inquiry is whether the presumption in favor of the employer has been overcome by evidence of a contrary agreement between the parties. Under the 1976 Act, only a written contract signed by both employer and employee can rebut the presumption. Thus, prior judicial precedents, which allowed a contrary agreement to be shown by evidence of custom in an industry or by the intentions of the parties, have been legislatively overruled. Once a court finds that a work was created within the scope of employment, the absence of an express, written agreement signed by both parties will now be fatal to an employee's contention that he should retain the copyright.

28. For example, where there is an express employment contract.
29. Nimmer, supra note 15, at § 5.03[B][1].
30. There is some question as to whether the "scope of employment analysis should precede the presumption analysis, or should the presumption arise automatically whenever an employment relationship is established." Simon, supra note 12, at 489; see Murray, supra note 22, at 773. Given the logical sequence of the wording of § 201(b), and the definition of a work made for hire in § 101 as a work made "within the scope of employment," it appears that the presumption analysis should follow a determination of whether a work was within the scope of employment.
32. One commentator contends that the requirement of a written contract was a response by Congress to the uncertainty surrounding courts' discussions of custom, intent, assumptions of the parties, and other contract principles. Simon, supra, note 12, at 493. Interestingly, the commonly cited source of this concern of the legislature is a statement by Leonard Zissu. Copyright Law Revision: Hearings on H.R. 4347, H.R. 5680, H.R. 6831, H.R. 6835, Before Subcommittee No. 3 of the Committee on the Judiciary, 89th Cong., 1st Sess., 269 (1965) (Statement of Leonard Zissu, General Counsel, Composers and Lyricists Guild of America). However, Mr. Zissu expressed his concern for the courts' interpretation of contract principles in connection with a proposal to amend § 201(b) to reverse the presumption in favor of the employer. Mr. Zissu advocated a "shop-right" for copyright where if an employer makes no express provision in the employment contract, he is entitled to use the copyright in his regular course of business and the employee would otherwise retain his copyright privileges — the burden of contracting would be on the employer to
B. Faculty Writings and the Work-For-Hire Doctrine

The requirement of a written agreement under section 201(b) and the federal preemption provision under section 301, both provisions of the 1976 Act,\(^\text{33}\) seem to dictate that if faculty writings such as articles, textbooks and other research\(^\text{34}\) are works within the scope of employment, the attendant copyrights are owned by the employer, the university. Thus, if faculty writings are within the scope of employment, a written agreement signed by both the professor and the university is now required to rebut the presumption that the university owns the copyright to the professor's writings. This "presumption" flies in the face of the academic convention that a professor owns the copyrights to his own writings.\(^\text{35}\)

Additionally, the 1976 Act's preemption provision states that common law copyright must defer entirely to federal law for works which have been created or fixed,\(^\text{36}\) thereby undermining the sparse,
but positive, state authority which tended to exempt scholarly writings under the work-for-hire doctrine.\textsuperscript{37} Faculty writings, therefore, must start afresh under the work-for-hire doctrine's two-part analysis. That an employment relationship exists between university and professor is not questioned\textsuperscript{38} and therefore the inquiry is necessarily directed toward whether a professor's writings are within the scope of employment.\textsuperscript{39}

The most important factor in determining whether a professor's writings are within the scope of employment is the university's right to control and supervise the professor's work.\textsuperscript{40} Intuitively, it seems the university has no control over what a professor writes. Although it may dictate what classes a professor will teach or the amount of outside consulting a professor may engage in,\textsuperscript{41} an institution rarely specifically mandates what a professor will write.

Nevertheless, a certain level of control exists, which is embodied in the "publish or perish" maxim. The publication of scholarly articles and textbooks\textsuperscript{42} is the most common avenue for professional recognition in academia. In essence, publication is an unwritten requirement\textsuperscript{43} for professors.\textsuperscript{44} Although often not explicit, the con-

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\textsuperscript{37} See supra note 35.

\textsuperscript{38} If no employment relationship existed, the analysis would delve into whether or not the work was commissioned — as most professors are obviously employees of the university, commissioned works will not be discussed here. For an incisive discussion of the application of the work-for-hire doctrine regarding commissioned works, see Angel & Tannenbaum, supra note 13.

\textsuperscript{39} It must be stated here that not only is this the threshold inquiry, it is most probably the only inquiry, for most professors have not seen fit to retain their copyrights — much less by written, signed agreements. In fact, many professors do not sign an employment contract. Interview With Stanford Univ. Counsel, supra note 35. Thus, if faculty writings are within the scope of employment, the university will most probably own the copyright.

\textsuperscript{40} See supra text accompanying note 18.

\textsuperscript{41} Stanford University, for example, limits its professors to 13 days outside consulting each semester. Interview With Stanford Univ. Counsel, supra note 35.

Classes taught, etc., are logically an obvious part of a professor's employment contract. A professor's writings, however, do not fit so easily into the realm of duties that a university may require of a professor.

\textsuperscript{42} While textbooks often result in professional recognition, their consideration for tenure purposes is rare.

\textsuperscript{43} See, e.g., STANFORD UNIVERSITY FACULTY HANDBOOK (1975), in which it nowhere expressly states that a professor must publish. Yet in the procedure for recommending appointments, etc., to the faculty, there is the requirement of a list of the recommendee's publications.
ditions for acquiring tenure, advancement in rank and salary, grants for research and travel and other similar benefits show that publication is expected and encouraged of faculty. Consequently, some university control over a professor's writings exists, albeit indirect.

Left to itself, the tacit degree of control that universities possess over professors may not be enough to bring faculty writings within the scope of employment. However, a consideration of the factors of insistence, expense, regular hours of employment, and compensation, together with the indirect element of control and supervision, cumulatively indicate that faculty writings are within the scope of employment.

One commentator has suggested that in order to determine if the university is the motivating or insisting factor in the creation of scholarly writings, it is necessary to look at the university's employment practices. As with the element of supervision and control, the reality of "publish or perish" gives the impression that the university is the insisting agent in the formation of professors' scholarly works. The drive for tenure certainly cannot be accomplished, in most instances, without scholarly publication. Arguably this may exempt tenured professors from the reach of the university's insistence, as such scholars are more likely to be motivated by a desire for professional and scholarly recognition or financial gain such as royalties. Nevertheless, university regulations and policies often can be construed as the principal motivation behind scholarly publication.

Additionally, the university generally bears the cost and expense of producing a scholarly work. Professors are frequently provided with office supplies, secretarial assistance, furnished offices, telephones, extensive library privileges and computer time. Computer time refers to accounts given to professors and students involved in the use of computers. That is, a student enrolled in a computer programming course will have an

44. Most frequently, publication is not part of the employment contract. At Stanford, an Assistant Professor cannot be fired for failure to publish in his initial three-year term of employment. However, such failure certainly tends to negatively influence the university when the rehiring of that professor at the end of three years is up for consideration. Interview With Stanford Univ. Counsel, supra note 35.

45. J. HOGAN & S. COHEN, AN AUTHOR'S GUIDE TO SCHOLARLY PUBLISHING AND THE LAW, 8 (Prentice Hall 1965).

46. For tenured professors, it may be said that the degree of university control over writings is so tenuous as to be non-existent. However, increases in salary and other benefits are often based upon a professor's continuing publication record. See Simon, supra note 12, at 504, fn. 112.

47. See supra text accompanying notes 20-27.

48. Simon, supra note 12, at 503.

49. But see supra note 45.

50. Computer time refers to accounts given to professors and students involved in the use of computers. That is, a student enrolled in a computer programming course will have an
larly, even the relatively unimportant factors of whether a work was created within the regular hours of employment and whether an employee was compensated tend to undermine a professor's position. As indicated, employees who create copyrighted works are less likely to work regular hours than other employees, and professors are no exception. The time during which faculty writings are created, therefore, should have no effect on the scope of employment analysis. Finally, the factor of compensation does not support the professor's position, for faculty enjoy regular compensation.

Consequently, it can be said that the university exercises at least indirect control and can often be construed as the primary motivating factor behind a professor's scholarly writing activities. That, coupled with the fact that the university compensates the professor and often covers the costs of producing the scholarly works, tends to suggest that faculty writings are within the scope of employment.

Once a court concludes that a faculty writing is within the scope of employment, it will be hard-pressed not to find that the university owns the copyright. Few professors even think about whether or not they own the copyright to their writings - much less retain such copyright by a written agreement signed by themselves and the university. Further, such agreements must be explicit in what rights are retained by the professor; it is insufficient if the agreement merely states that the professor shall retain all the copyrights of an author in all works which he might produce. Further, the agreement cannot, in lieu of the university, redesignate

51. See supra text accompanying notes 25, 26. Note that these factors may take on added importance if a cumulative effect is required to find faculty writings are within the scope of employment.
52. See supra text accompanying note 26.
53. One state court, speaking specifically of university professors, stated: "Since it is not customary for a college to prescribe the hours of the day when a teacher is to prepare for class, it follows that the time when he does so automatically ceases to be leisure time." Williams, supra note 35, at 739.
54. Nimmer, supra note 15, at § 5.03[D]. Professor Nimmer states that "the parties may by written agreement vary the rights which would otherwise be owned by the employer . . . , but they may not vary such person's status as the 'author' of the work." Id.
the professor as the author.\textsuperscript{55}

What is so strikingly anomalous in finding the university owns the copyright in a faculty member's work is the longstanding academic convention that faculty members own what they write. Such a tradition is frequently reflected in university policy statements,\textsuperscript{56} either explicitly in statements on copyright,\textsuperscript{57} or implicitly in statements concerning academic freedom.\textsuperscript{58} University policies, however, are often not a part of the employment contract\textsuperscript{59} and certainly are not signed by both parties. Although one commentator feels that the academic tradition is so strong that the courts may go outside the statutory requirement of a written contract and look at the intentions of the parties,\textsuperscript{60} the importance of the tradition and its constitutional underpinnings are such that a professor should not rely upon the possibility that a court will ignore the statute.

C. Computer Programs as Faculty Writings and the Work-For-Hire Doctrine.

Computer programs, as a form of writing,\textsuperscript{61} present additional

\textsuperscript{55} Id. Professor Nimmer contends that this is so the employer cannot avoid certain legal consequences of a work being made for hire, such as the manufacturing clause, nationality requirements and renewal rights.

\textsuperscript{56} See, e.g., Stanford University, Copyrightable Materials And Other Intellectual Property, GUIDE MEMO NO. 76 (1983) [hereinafter cited as Stanford Guide Memo].

\textsuperscript{57} Id. Stanford's policy reads in pertinent part:

In keeping with tradition, the University does not claim ownership of books, articles and similar works, the intended purpose of which is to disseminate the results of academic research or scholarly study. . . . If title to copyright in [such] works . . . vests in the University by law, the University will, upon request and to the extent consistent with its legal obligations, convey copyright to the creators of such works.

\textsuperscript{58} Id. While the above policy may appear fair, it suffers from at least two potential difficulties. First, the policy places, from a professor's perspective, an undesirable reliance on the good grace of the university to reconvey the copyright ownership to the professor. See, e.g., The Tempest Raging Over Profit-Minded Professors, Bus. Wk., 86-91 (Nov. 7, 1983) [hereinafter cited as Bus. Wk.]. Second, the policy may not be enforceable by specific performance, at least not practically soon enough.

\textsuperscript{59} Interview With Stanford Univ. Counsel, supra note 35. Copyright policies such as Stanford's are usually no more than general statements on the university's intent. Even if incorporated by reference into faculty employment contracts, such policies are neither express nor signed by both parties. While such a policy surely would have been effective under the 1909 Act, it's enforceability is severely doubtful under the 1976 Act.

\textsuperscript{60} Simon, supra note 12, at 506.

\textsuperscript{61} That computer programs are copyrightable is now indisputable. Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (1983). See generally, Pierce, Copyright Protection of Computer Programs, 30 ASCAP COPYRIGHT LAW SYMPOSIUM 1 (1980).
problems under the work-for-hire doctrine. Initially, the problem relates to income rather than cost. The recent proliferation of computers in society has resulted in a commensurate proliferation in the economic value of computers and computer-related items, especially computer software.62 Computer science, mathematics and engineering professors have long been a source of computer programs, but until recently, such programs were usually of value only in university research applications. The inexpensive availability of personal computers to small businesses and individual consumers, however, has encouraged a programming exodus from universities to hackers' garages to an entire industry of software development.

Professors now find that their software may be worth millions of dollars. With the stake in copyright ownership taking on such profitable proportions,63 many universities are re-thinking their policy of maintaining the longstanding tradition that professors retain ownership in their copyrightable works.64 Absent securing a signed, written agreement retaining his copyright, a professor has few alternatives open to him.

Although the apparent strength of the academic tradition of retaining the copyright in the professor suggests that faculty should have little difficulty in obtaining an agreement with the university,65 such may not be the case for computer programs. The economic potential in computer programs may lead some universities to refuse66 to release the copyright ownership back to the professor, and the professor may be forced to vie for the copyright privileges in court after a dispute arises. More likely, neither professor nor university will think or worry about who owns the copyright, and both

62. Software is defined as "the written programs and other data that may be inserted in computer programs." THE RANDOM HOUSE DICTIONARY, 847 (1978).

63. Generally, faculty royalties for texts, etc., are minimal, so universities may ignore them and maintain the tradition for that reason. Contra Simon, supra note 12, at 507-08. For computer programs, however, the potential rewards, and therefore the stakes, are very high. Many schools realize this in the case of patents — and this is reflected in typical university faculty patent policies — but are slow to recognize the potential of copyrighted works such as programs.

64. BUS. Wk., supra note 57. Yale University's policy is that a computer program belongs to the school, because it is a piece of technology produced with university equipment. Other schools, such as State University of New York at Stony Brook, treat programs as literature and maintain that the professor owns the copyright. Still other schools, such as MIT and Carnegie-Mellon are currently deciding what the policy for computer software should be. Id. The University of Santa Clara has neither a patent nor a copyright policy.

65. Accord STANFORD GUIDE MEMO, supra note 56, which states: "If title to copyright in works defined within this section . . . vests in the University by law, the University will, upon request and to the extent consistent with its legal obligations, convey the copyright to the creators of such works."

66. Recall that both parties must sign the written agreement.
will continue to adhere to the established policy and custom of the particular institution. However, notwithstanding the best intentions of the parties, the university could change its colors, however explicit, by going against tradition and seeking to secure its "legal" right to the professor's software.67

If it can be successfully argued that the writing of computer programs is outside the scope of a professor's employment, the copyright to such programs will remain in the professor even in the absence of a written agreement. If, however, computer programs are found to be within the scope of employment, then a faculty member is not totally without alternatives. In certain circumstances, a professor may argue a breach of his employment contract and retain the copyright. Additionally, a professor has three possible constitutional arguments which he may assert against section 201(b) — the section unconstitutionally designates the university as the author; as applied to academia, the section violates the copyright clause; and the section infringes upon a professor's First Amendment right of written expression.

III. ALTERNATIVE MEANS OF RETAINING COMPUTER PROGRAM COPYRIGHT IN THE PROFESSOR

A. Scope of Employment

For computer programs, the scope of employment inquiry is not identical to that for faculty writings in general. The dispositive factor is again likely to be the degree of supervision and control that the university has over the professor's program writing activities. However, computer programs do not fit so easily into the category of scholarly writings.

To the extent that it exists, university control over a professor via "publish or perish" concerns68 is based upon the tacit requirement for publication of scholarly works. A computer program is most probably not scholarly. Many programs written by professors are to aid research. That is, they are merely tools used to create scholarly publications rather than the scholarly publications themselves.69 Other programs are written to tap market potential.70

67. For a discussion of instances where universities have attempted to secure professors' computer software, see Bus. Wk., supra note 57, at 86, 91.
68. See supra text accompanying notes 43-46.
69. Indeed, the 1976 Act's definition (added by amendment in 1980) implicitly supports this notion. A computer program is defined as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." 17 U.S.C. § 101. Thus, programs are instructions to a machine and informative to other programmers but are
These, too, are not devised to disseminate scholarship. It is doubtful that a computer program, on its own, would constitute an acceptable publication for tenure purposes. Accordingly, computer programs are exempt from the indirect pressure of "publish or perish," and the university exercises no control, indirect or otherwise, over a faculty member's production of such programs.

Arguably, it can be maintained that for those professors who use and teach the use of computers, the writing of programs is within the scope of employment. At most, this is only partially true. If programs are written for teaching purposes, or if programs are written in the course of a professor's learning a new programming language or algorithm, or if a professor writes programs to further his own teaching abilities, then it can be said that the program was a scholarship activity and therefore indirectly controlled by the university.

However, for those programs unrelated to a professor's teaching activities, or those written to aid his research, or designed for his personal benefit/amusement, the degree of university control and supervision over the creation of such programs is tenuous at best. Similarly, the university is not the motivating factor behind the creation of such programs. The prospects for economic gain or the requirement to fill some research need is a more likely source of the insistence.

The factor of cost is likely to play a more important role in a software scope of employment determination. For example, in most

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not communications of scholarship. Though programs may impart information to other computer scholars, it is not their intended purpose to impart scholarship. Cf. Stanford Guide Memo, supra note 56 ("the intended purpose of which is to disseminate scholarship . . . ").

70. E.g., programs for personal computers such as spreadsheets, word processors and games.

71. See supra text accompanying note 43.

72. For example, computer science, mathematics, and electrical and mechanical engineering professors. This may also apply to general professors who use computers to help teach some aspect of their subject matter. Visiting Santa Clara Law Professor Lynn Lopucki, for example, wrote a computer program simulation for student use in the debtor/creditor course at the University of Santa Clara School of Law.

73. Given the rapid proliferation of computers, to stay "on top" of one's field as a teacher of computer science or programming must be of both inordinate importance and inordinate difficulty. The only way to learn a new language or algorithm is by doing. It can be argued, therefore, that when a professor is programming so as to learn a particular language or algorithm that he would like to teach, then he is writing within the scope of his employment.

74. Programs written for teaching purposes, or written to learn teaching methods, are not equivalent to programs written to aid research. The latter is impliedly already known, but utilized to disseminate scholarship (e.g., writing a word processing program).

75. E.g., games or programs to balance your checkbook.
instances programs will be written using university computer equip-
ment and materials. Given the cost of such equipment, the fact that
the university has paid such costs will be a stronger factor in favor
of the university than it was for faculty writings in general. In pro-
viding the expensive computer equipment and facilities, a university
is more apt to appear as the creating force behind a computer pro-
gram and thus more deserving of the program's copyright. Con-
dversely, software written on a professor's own computer is more
likely to indicate that the professor is the creative impetus behind
the program — notwithstanding that the program relates to the
professor's work. 76

Although the consideration of the final two factors regarding
the scope of employment — whether a work was created within the
regular hours of employment and whether a professor receives com-
ensation — remain the same for both computer programs and
more traditional faculty writings, 77 the overall result of the analysis
is different. If courts continue to regard supervision and control as
the dispositive factor, then computer programs generally, as a class
of faculty writings, should not fall within the scope of a professor's
employment. However, if courts continue their inconsistent ways 78
under the work-for-hire doctrine, expense could usurp supervision
and control as the key factor. 79 If this occurs, most cases would
result in a finding that software was within the scope of
employment.

B. Contractual Arguments

The previous analysis 80 indicates that a professor's best course
is to argue that a computer program 81 is not within the scope of
employment. In the event such argument should fail, a professor
may contend that, under state contract law, the university orally or
impliedly waived 82 its ownership of the copyright. State contract

76. See supra text accompanying note 19.
77. See supra text accompanying notes 51-53.
78. See supra note 20.
79. One pair of commentators consider expense and insistence as sub-factors of supervi-
sion and control, *o the possibility of a court taking this route is not so remote. See Angel &
Tannenbaum, supra note 11. This is especially so in light of the fact that the real issue in
ownership of computer programs is probably money and not the moral right of the author to
be known as the author. See supra note 101.
80. See supra Part II.
81. The subsequent analysis applies to faculty writings in general as well. Specific dif-
fences in the analysis between programs and writings, generally, will be indicated.
82. "A waiver is implied where one party has pursued such a course of conduct with
reference to the other party as to evidence an intention to waive his rights or the advantage
law of waiver, however, conflicts with section 201(b) in that the state doctrine would allow the professor to retain the copyright in absence of a written agreement.\footnote{Pacific Gas \& Elec. Co. v. State Energy Resources Conserv. \& Dev. Comm’n, 103 S.Ct. 1713 (1983). As the Supreme Court has stated, "[e]ven where Congress has not entirely displaced state regulation in a specific area, state law is preempted to the extent that it actually conflicts with federal law . . . or where state law ‘stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.’” Id. at 1722, 1730.} To that extent, the state doctrine is preempted.\footnote{Id.} 

However, if a professor’s relationship with the university has deteriorated to such a degree that the university has breached the professor’s employment contract, it is possible to argue that the presumption in favor of the university has dissolved. Professor Nimmer states that the university “may claim to be the copyright proprietor not simply by reason of . . . [its] status as an employer, but rather by reason of a presumed agreement . . . that the employer shall acquire the rights of the author.”\footnote{NIMMER, supra note 15, at § 5.03[E].}

Thus, if the university’s claim to the professor’s writing is at least impliedly based upon the employment contract, then a material breach by the university should entitle the professor to rescind the employment agreement and claim back the copyright which he had impliedly agreed to convey.\footnote{Id.} At least one court has explicitly recognized the right of an employee in a work-for-hire situation to rescind and claim back the copyright.\footnote{Black v. Pizza Time Theatres, Inc., COPYRIGHT LAW REP. (CCH) ¶ 25,569 (N.D. Cal. Aug. 15, 1983) (employer’s material breach of the employment contract would give rise to a claim to rescind the contract including the implied right to authorship — motion to dismiss or for a more definite statement denied).} For a professor, however, such an alternative is unlikely as not only does it require a material breach on the part of the university, but rescission would be a drastic choice, especially for a tenured professor.\footnote{Contrast the case of a Cal-Tech professor who quit as a result of his copyright dispute with the university. BUS. WK., supra note 57, at 86.}

C. Constitutional Considerations

1. Section 201(b)’s Designation of the Employer as “Author”

Section 201(b) potentially suffers many constitutional failings. First, among these is the legislative fiction that the employer shall...
be "considered" the author where a work is made for hire. Art. I, section 8, clause 8 of the Constitution (hereinafter Copyright Clause) specifies that "Congress shall have power . . . to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." It is clear that the assignee of an author can claim the copyright in the work assigned. However, in the absence of an assignment from his employee, it is not clear whether an employer qua employer can be regarded as the "author" for constitutional purposes. Professor Nimmer, for instance, has stated that the person closest to the actual creative process should be regarded as the author. The employee who writes a work is the one closest to the creative process and is, intuitively, the true author of the work. This creates a constitutional difficulty in that Congress' legal fiction that the employer is the author renders meaningless the Copyright Clause's use of the term. That is, "[i]f Congress may 'deem' an employer to be the author, is there any limit to the other classes of persons (besides the true author) who may be the recipient of Congressional beneficence in this manner?"

Although no court has ruled squarely on the constitutionality of section 201(b) or its predecessor, Professor Nimmer is of the opinion that the section is constitutional because the employee may otherwise contract as to what rights he may own in his copyrightable works. In other words, Congress has only presumed that the employer is a "quasi-assignee" and as such is entitled to the privileges of the author.

However, this analysis ignores some important considerations. Congress has seen fit not only to designate the employer as the implied assignee of the copyright, it has further designated the emp-

89. 17 U.S.C. § 201(b). § 26 of the 1909 Act was similar, see supra note 11.
91. American Tob. v. Werckmeister, 207 U.S. 284 (1907); NIMMER, supra note 15, at § 1.06[C].
92. NIMMER, supra note 15, at § 1.06[C].
93. Id.
94. Id.
95. In Vitaphone Corp. v. Hutchinson Amusement, 28 F. Supp. 526 (DC Mass 1939), the court — in dicta — stated that § 26 of the 1909 Act was constitutional. However, in Scherr v. Universal Match Corp., 417 F.2d 497 (2d Cir 1969), Judge Friendly, dissenting, but not on this point, stated: "It would . . . be quite doubtful that Congress could grant employers the exclusive right to the writings of employees regardless of the circumstances." Id. at 502.
96. NIMMER, supra note 15, at § 1.06[C].
97. Id.
ployer as the “author” of the copyright. On one hand, this can be said to have in its favor simplicity and definiteness of result. On the other hand, the designation of the employer as the author of an intellectual creation of another individual is artificial. The purpose of copyright is “to encourage people to devote themselves to intellectual and artistic creation . . . .”98, indicating that the actual creator is intended to be the individual beneficiary of the copyright. Although the incentive of individual reward is a secondary consideration, it accords greater encouragement to the production of copyrightable works that benefit the public as a whole, which is the primary consideration of the Copyright Clause.99

To the extent that the employer is the creative force behind the work,100 an assignment of the privileges of copyright is commensurate with the purposes of the Copyright Clause. However, a “quasi-assignment” of copyright authorship seemingly violates the intention of the Copyright Clause to protect authors.101 The employer may be entitled to the privileges of copyright, but he should not be entitled to the authorship itself.102

98. Goldstein, supra note 8, at 555 (emphasis supplied).
100. See supra text accompanying notes 4-8.
101. In addition to the economic rationale of copyright, there is the so-called “moral” rationale, which “asserts that an author is entitled to the ‘fruits of his labors’ and that the copyright law merely protects the author from unauthorized interference with this intellectual property right.” Tyerman, supra note 8, at 1100. An author's droit moral, or moral rights, include:

[T]o be known as the author of his work; to prevent others from being named as the author of his work; to prevent others from falsely attributing to him the authorship of work which he has not in fact written; to prevent others from making deforming changes in his work; to withdraw a published work from distribution if it no longer represents the views of the author; and to prevent others from using the work or the author's name in such a way as to reflect on his professional standing.

M. NIMMER, COPYRIGHT 499, 2d ed. (1979 West) (emphasis in original). Where professional recognition is largely the basis for scholarly publication, droit moral takes on added significance. Although not specifically part of U.S. copyright law, droit moral is explicit in European civil law countries and may be implicitly part of U.S. law in the forms of unfair competition, defamation, invasion of privacy and breach of contract. Id.

102. The legislative fiction of designating the employer as the author elicited rigorous debate at the first meeting of the congressional committee charged with revising the 1909 Act. Discussion on the Report of the Register of Copyrights on the General Revision of the United States Copyright Law, 88th Cong., 1st Sess., pt. 2 at 53-59 (1963). In refusing to follow the 1961 Report of the Register of Copyrights on the Revision of Copyrights' recommendation that the employer should no longer be artificially defined as the author but rather should only have the initial right to secure the copyright in his name, Congress was swayed by representatives of the motion picture industry. The latter pointed out that unless producers of motion pictures were considered authors, they would be prejudiced in foreign countries where copy-
A discussion of United States patent law on this point is instructive. In general, patent law makes no special provisions regarding the ownership of patents or inventions made by employees in a work-for-hire situation. Some rules, however, have been judicially developed in employment situations. An employee who produces an invention, even within the course of employment and using the employer's facilities, is entitled to secure a patent for that invention, subject to the "shop-right" of the employer. For an invention created by an employee who is hired specifically for that purpose, the employer is considered to be entitled to the ownership of the patent, and he may compel the employee to assign to him any patent the latter has secured. Thus, under patent law, the rights to a patent may be explicitly, implicitly or legislatively assigned from employee to employer. But the status of who is to be the named inventor is not assignable, and only the true inventor may apply for a patent, except where the inventor has promised to assign the invention and has promised to help his assignee secure the patent for same.

Congress nevertheless explicitly rejected the concept of "shop-right" as regards copyright. Although this result may be rationalized in that the nature of copyright and its attendant privileges are markedly different from patent, it does not justify the failure of section 201(b) to apply more constitutional methods of achieving the same result. Rather than impliedly assigning the authorship in right-like privileges flow to the author of a work, that is, to the screenwriter/employee and not to the producer/employer. Id.

103. Title 35 U.S.C. §§ 1 et seq. 35 U.S.C. § 111 states in pertinent part that an "application for a patent shall be made by the inventor . . . ." [emphasis added]; 35 U.S.C. § 261 provides in part that "applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing;" and 35 U.S.C. § 118 states in part that "whenever an inventor refuses to execute an application for patent, . . . a person to whom the inventor has assigned or agreed in writing to assign the invention . . . may make application."

104. Instructive in that both patent and copyright law is derived from Art. I, § 8, cl.8 of the U.S. Constitution. See, e.g., Lee v. Runge, 404 U.S. 867 (1971) (Douglas, J., dissenting from cert.), where it is suggested that copyright and patent should have the same standards — at least as regards novelty.

105. A "shop-right" is where an employee, during his hours of employment and while working with his employer's materials and appliances, conceives and perfects an invention for which he obtains a patent, and he must accord his employer a nonexclusive right to practice the invention. U.S v. Dubilier Condenser Corp. 289 U.S. 178, 188-89 (1932).

106. Id.

107. That is, the right to make, use or sell the invention for a term of years. 35 U.S.C. § 154.


109. LEGISLATIVE HISTORY, supra note 13, at 5737.
the employer, Congress should have only assigned the ownership of the privileges arising from the employee’s copyrightable work. The designation of the employer as the author is immutable, even by agreement between the parties. In specifying that parties may vary the rights which would otherwise be owned by the employer but may not vary the employer’s status as the author, Congress may have constitutionally impinged upon the rights of employees as “authors.”

2. Section 201(b) Violates The Copyright Clause

The second constitutional criticism of section 201(b), which has been levelled at the 1976 Act in general, is that it fails to implement the purposes of the Copyright Clause as regards faculty writings. As discussed, the purpose of copyright is to encourage authorship and thereby secure the general benefits derived by the public from the labors of authors. The rationale underlying the purpose “is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors . . .”

In the case of faculty writings, it appears that section 201(b), if read literally, will have the effect of discouraging authorship. Universities will not only have the right to all the royalties generated from faculty writings, but they will be considered the author as well. That a faculty member produces a work of authorship in order to secure professional recognition does not eliminate royalties as a viable incentive to produce scholarly work. Indeed, for works such as computer programs, prospective royalties may be the only incentive underlying the creation of the work. If a univer-

110. 17 U.S.C. § 201(b), supra note 2; Nimmer, supra note 15, at § 5.03[D].
112. See supra Part II A.
114. As Professor Nimmer states: “[T]he authorization to grant to individual authors the limited monopoly of copyright is predicated upon the dual premises that the public benefits from the creative activities of authors, and that the copyright monopoly is a necessary condition to the full realization of such creative activities.” Nimmer, supra note 15, at § 1.03[A].
115. Since § 201(b) makes the university the “author,” the university will no doubt be entitled to place its name on the particular work and take credit for its creation.
116. Note, however, that if the university can place its name on an article as creator, supra note 115, the professor will have even lost the incentive of professional recognition.
117. Whether the primary incentive for creation of the work was economic or not should not be a factor. While it may be said that the tradition of academe is that copyright in
sity seeks to own all that a professor writes, the professor will certainly be discouraged from writing, at least until an agreement to the contrary can be secured. Thus, the constitutionality of section 201(b) is suspect in that when applied to university/professor employment relationships it is directly contrary to the underlying purpose of the Copyright Clause.

If section 201(b) is constitutionally challenged, to section 201(b), a court will apply a rational basis test as the section is presumptively constitutional. To be constitutional, the means chosen by Congress must be rationally related to a legitimate end within the scope of the Constitution. A challenging professor

scholarly publications are to remain in the professor, it is often the case that a publication can result in both scholarly recognition and economic gain. Nobel prizewinners, for example, receive both international acclaim and a $190,000 cash prize. An attempt to define some arbitrary standard for university ownership of professor's works based upon whether the work was produced for scholarly recognition or economic gain would be disastrous.

118. Again, the professor will have to explicitly define all rights to be retained by him — he may not simply define himself as the "author" of all works he creates. Nimmer, supra note 15, at § 5.03[D]. Additionally, a sudden parade of professors seeking to contractually retain their copyrights may cause a university to balk or at least drag its feet as it rethinks its policies, especially in relation to potentially lucrative faculty writings such as computer programs. Such a delay is bound to be extensive, for copyright questions are not answered quickly. Witness the fact that it took over 21 years — from administrative hearings to Congressional enactment — to revise the 1976 Act. The difficulties are the same on a smaller scale — Stanford University's latest guide memo on copyright took several years to revise.

119. As enumerated powers go, laws enacted pursuant to the Copyright and Necessary and Proper Clauses have been relatively unchallenged. On the rare occasions where a court has been confronted with a law arising under the Copyright Clause, it usually will either skirt the issue, Scherr, supra note 20 (issue only raised by Justice Friendly in his dissent); consider the issue in dicta, Vitaphone, supra note 95; or defer entirely to Congress, Kalem Co. v. Harper Bros., 222 U.S. 55, 56 (1911) ("If . . . a grant of monopoly is thought a proper way to secure the right to the writings, this court cannot say that Congress was wrong . . . ."). But see, Trade-Mark Cases, 100 U.S. 82 (1879), infra note 121.

120. Hodel v. Indiana, 452 U.S. 314, 323 (1981) (In construing an act under the Commerce Clause, the Supreme Court stated that "[i]t is established beyond peradventure that legislative Acts adjusting the burdens and benefits of economic life come to the court with a presumption of constitutionality . . . .").

121. McCulloch v. Maryland, 17 U.S. (4 Wheat.) 316 (1819). In McCulloch, the court stated: "Let the end be legitimate, let it be within the scope of the [C]onstitution, and all means which are appropriate, which . . . consist with the letter and spirit of the [C]onstitution, are constitutional." Id.

It may be contended that more recent Supreme court rulings will derive a better test in this circumstance than McCulloch. However, several reasons support the choosing of McCulloch as the test. First, the more recent judicial formulations of the so-called deferential/rational basis test do not deal with laws enacted pursuant to the Copyright Clause. See supra note 119. Second, all powers of the national government "typically benefit from the broad construction of discretion in the choice of means first articulated in McCulloch v. Maryland." G. GuntHER, CONSTITUTIONAL LAW, 246 (10th ed. 1980). Third, McCulloch involved interpretation of five enumerated powers, not just commerce power. Finally, in the Trade-Mark Cases, supra note 119, the Supreme Court applied a deferential McCulloch-type test to
would have to show that section 201(b)'s presumption in favor of the employer is neither a rational nor an appropriate means of advancing the purposes of the Copyright Clause. Stated conversely, if a court finds that there is any rational basis for asserting that section 201(b) encourages authorship when applied to faculty writings, then the section is constitutional.

Even a highly deferential court may find it difficult to hold that section 201(b) encourages faculty authorship. The statute will enable universities to exact all benefits and privileges, such as collecting royalties, arising from copyrightable faculty works, including reproduction of the work, preparation of derivative works, and distribution of the work by sale, lease or other transfer. If a court finds that section 201(b) makes the employer the "author," the university may secure its name in lieu of the professors on the copyrightable work and thus the university will take credit for the true author's creation.

If section 201(b) is literally applied, a professor will have lost almost all incentive to create works of authorship. A professor will not be able to accrue any royalties or scholarly recognition from articles, textbooks, computer programs or other work that might be within the scope of his employment. A tenured professor, especially, will find little reason to do more than teach his classes. While further authorship on the professor's part may advance scholarship in general, it will not bolster his individual reputation or finances.

Furthermore, a professor may not be certain as to what works of authorship are or are not within the scope of his employment. The uncertainty that the university might own the copyright to a work of authorship — even if that work is clearly outside the scope

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123. While this may appear extreme, it is entirely within the purview of the statute. Applied to business, the designation of the employer as the author is traditionally and logically reasonable. Applied to academics, however, designation of the university as the author may be unconstitutional.
124. Non-tenured professors, too, will be discouraged, despite the requirements of scholarly authorship while on the tenure-track. If the university designates itself as the author of the professor's work, the latter may have difficulty identifying his publications to be considered in his tenure application. Although a particular university may be able to catalogue its own professors' works of authorship which are in the university name, a professor who changes universities one or more times before applying for tenure at any particular institution may have considerable problems identifying which scholarly publications are his.
of employment — may discourage a professor from creating that work. Other than "authorship for authorship's sake," section 201(b) appears to strip all academics of incentives to create copyrightable works. Consequently, the section functions in a manner directly contrary to the purposes of the Copyright Clause.

3. Section 201(b)'s Infringement of First Amendment Rights

Deference to Congress is inappropriate if legislation infringes upon a fundamental constitutional right. A professor's freedom to write clearly falls under the First Amendment freedom of written expression. Section 201(b) has an indirect effect upon a professor's right of written expression. As discussed, applying the work-for-hire doctrine to academia will substantially discourage scholarly authorship and is therefore a non de minimus burden on the right of written expression.

The university may argue that the copyright in a written work is a financial right and not a First Amendment right. That is, the

125. For example, a mystery novel written by a physics professor is clearly outside the scope of employment.

126. That an individual writes for the sake of writing does not indicate that § 201(b) rationally encourages authorship — the individual has provided his own incentive.

127. Further, written faculty expression may be circumscribed by the nebulous First Amendment right of "academic freedom," and thus, as such, is a more cherished right. See, e.g., Keyshian v. Bd. of Regents, 385 U.S. 589, 603 (1967) ("Our nation is deeply committed to safeguarding academic freedom . . . That freedom is therefore a special concern of the First Amendment, which does not tolerate laws which cast a pall of orthodoxy over the classroom."); Sweezy v. New Hampshire, 354 U.S. 234, 250 (1957) ("Teachers . . . must always remain free to inquire, to study and to evaluate . . . .").

128. See supra Section C, 2.

129. It appears that a threshold issue in First Amendment infringement cases is whether the alleged infringement is significant and was proximately caused by the Congressional or other legislative action. Although the Supreme Court has never explicitly stated this "requirement" as such, in Branzberg v. Hayes, 408 U.S. 665 (1972), Justice Stewart, dissenting, stated that: "we have asked, often implicitly, (1) whether there was a rational connection between the cause (the governmental action) and the effect (the deterrence or impairment of First Amendment activity), and (2) whether the effect would occur with some regularity, i.e., would not be de minimus." Id. at 733-34 (dissenting opinion of Stewart, J.). Justice Stewart objected to the majority's requirement that infringement of First Amendment rights be demonstrated "beyond any conceivable doubt." Prior cases support Justice Stewart's position on the threshold First Amendment issue. See, e.g., Talley v. California, 362 U.S. 60 (1960) (city ordinance forbading circulation of handbills without distributor's name printed thereon would tend to restrict freedom to distribute information, justifying judicial review); NAACP v. Alabama, 357 U.S. 449 (1958) (compelled disclosure of names of those in Alabama belonging to NAACP would be likely to adversely affect the ability of NAACP members to pursue their beliefs, justifying judicial review). Consequently, the apparent threat that § 201(b) will impair the right of written expression should not require precise proof of that threat before justifying a review of its constitutionality under the First Amendment.
ability of the professor to write is not being impinged, it is only his ability to transfer, copy or collect royalties on that writing that is being regulated. However, written expression and other speech is protected by the First Amendment even though it is in the form of a solicitation to pay or contribute money.\textsuperscript{130} Congress may certainly regulate a professor's copyright, but not in such a manner as to unduly intrude upon his right of written expression.\textsuperscript{131}

If a professor properly asserted that section 201(b) impairs his First Amendment writing activity,\textsuperscript{132} then some intensified form of judicial review would be applicable to determine whether the statute is sufficiently justified to be upheld. It is unclear what intensity of scrutiny would be applicable to section 201(b). Since the section is content neutral — it does not directly forbid the publication and generation of faculty writings — a less than exacting form of scrutiny seems appropriate.\textsuperscript{133} In general a content-neutral time, place or manner restriction upon a First Amendment right must be a narrowly tailored and substantially effective means for achieving the substantial government interest asserted.\textsuperscript{134}

\textsuperscript{130} Schamberg v. Citizens For A Better Environ., 444 U.S. 620, 633 (1980) (ordinance barring door-to-door and on-street solicitations of contributions by charitable organizations that did not allocate at least 75% of their receipts for charitable purposes was held unconstitutional). \textit{See also} Heffron v. Int'l Soc. For Krishna Cons., 452 U.S. 640 (1981) (distribution oral and written dissemination of religious views is protected by First Amendment, even if sold rather than given away).

\textsuperscript{131} \textit{Id.} As the \textit{Schamberg} court stated:

Soliciting financial support is undoubtedly subject to reasonable regulation but the latter must be undertaken with due regard for the reality that solicitation is characteristically intertwined with informative and perhaps persuasive speech seeking support for particular causes . . . , and for the reality that without solicitation the flow of such information and advocacy would likely cease. Canvassers in such contexts are necessarily more than solicitors for money.

\textit{Schamberg}, 444 U.S. at 632. Similarly, professors writing scholarly articles, textbooks and even computer programs, are more than authors seeking money. They are disseminators of information and scholarship, benefitting society as a whole.

\textsuperscript{132} Note that if the professor successfully triggers intensified scrutiny by showing a First Amendment infringement, then the university (or whomever is seeking to uphold the validity of the statute) must satisfy the two requirements of the less-than-strict scrutiny. \textit{See generally}, Galloway, \textit{Exacting Scrutiny: "Strict" in Theory and Lenient in Fact?}, 8 IN BRIEF 31, 32-33 (Winter 1981) [hereinafter cited as Galloway].

\textsuperscript{133} Even if strict scrutiny were to apply, the test would be essentially the same. The additional requirement that the government must meet under strict scrutiny is the "compelling government interest" requirement. \textit{Id.} at 32. The purpose of the Copyright Clause to advance and encourage authorship is arguably a compelling interest. The remaining two requirements for strict scrutiny are similar to the requirements for less-than-strict scrutiny, therefore, the analysis is practically identical.

\textsuperscript{134} § 201(b) fits into no precise area of First Amendment infringement. It is clear that the section would not trigger strict scrutiny as would, for example, a content-based infringement such as direct censorship. \textit{E.g.}, New York Times v. Sullivan, 376 U.S. 254 (1964).
Section 201(b) serves a significant governmental interest\textsuperscript{135} where the employer is the true author of an employee's work,\textsuperscript{136} for it encourages this authorship by presumptively vesting copyright in the instigative party. However, to be a substantially effective means in the academic setting, section 201(b)'s presumption must encourage faculty authorship. As previously discussed,\textsuperscript{137} the application of the statute to academia will actually have a perverse effect. Scholarly authorship will be discouraged, thereby making the relationship between the means, the employer-biased presumption, and the ends, encouraging authorship, completely attenuated and therefore unconstitutional.

To be narrowly tailored, section 201(b) must encourage authorship without unnecessarily interfering with a professor's constitutional rights.\textsuperscript{138} Certainly for academia, alternatives, other than an automatic presumption in favor of the university absent written agreement, exist which are less onerous and more encouraging of authorship. The presumption could, for example, be reversed, and the university could be allowed to contract with professors in those situations where university retention of the copyright is necessary — that is, where the university is the true creator, and thus retention of the copyright would be encouraging authorship.\textsuperscript{139} For academia, section 201(b)'s employer-biased presumption is an ineffective means of achieving a legitimate end and such means could be more narrowly tailored. Therefore the statute may be

\textsuperscript{135} Similarly, the level of scrutiny for § 201(b) does not fall as low as that for government restrictions of provocative speech or "fighting words." E.g., Chaplinsky v. New Hampshire, 315 U.S. 568 (1942). Rather, the level of appropriate scrutiny falls somewhere in between, nestled amongst those content-neutral time, place or manner restrictions on speech coupled with conduct, e.g., U.S. v. O'Brien, 391 U.S. 367 (1968), and commercial speech, Central Hudson Gas & Elec. Corp. v. Public Serv. Comm'n, 447 U.S. 557 (1980).

In O'Brien, the court held that a government regulation was sufficiently justified if: 1) within a constitutional power; 2) it furthered a substantial government interest; 3) the interest is unrelated to the suppression of free expression; and 4) the incidental restrictions on alleged First Amendment freedoms is no greater than necessary to further the interest. O'Brien, 391 U.S. at 377. In Central Hudson, a similar test was stated: 1) is the expression protected by the First Amendment; 2) is the government interest asserted substantial; 3) does the regulation directly advance the government interest asserted; and 4) is the regulation more extensive than is necessary to serve that interest. Central Hudson, 447 U.S. at 566.

\textsuperscript{136} As the Supreme Court has stated in Heffron, supra note 127, "[a] valid time, place and manner regulation must also 'serve a significant governmental interest.'" Id. at 649.

\textsuperscript{137} See supra text accompanying notes 4-8.

\textsuperscript{138} E.g., Citizens Against Rent Control v. City of Berkeley, 102 S. Ct. 434, 440 (1981).

\textsuperscript{139} An example situation might be where the university requests of a professor that he or she author a specific work for university purposes.
unconstitutional.  

IV. CONCLUSION

When they meet, the copyright doctrine of work-for-hire and the traditions of academia are unlikely to get along. The underlying purposes of the doctrine are distorted when applied to faculty writings in general, and professors' computer programs, specifically. The interference with longstanding tradition will have far-reaching and unwanted effects. A court may be forced to choose between abrogating academic tradition or finding the work-for-hire doctrine unconstitutional.

A prudent choice for a professor will be to retain the ownership in his copyrightable works with a written contract. However, this may only open universities' eyes to the vast potential for exploiting professor's writings — especially computer programs. In order to retain the copyright in his works of authorship, a professor may necessarily have to resort to litigation, and he would have to convince the court that either section 201(b) does not apply to faculty writings or, alternatively, that the section is unconstitutional.

For the former argument, the professor will have to show that faculty writings are not within the scope of his employment. This will be difficult if the court considers all factors relating to the scope of employment equally. However, the equity of the situation of a typical professor being legally "robbed" of his copyright might occasion the court to weigh the scope of employment factors differently so as to benefit the professor's position. If such an argument should fail, a professor may try to rescind the employment contract. However, this represents a drastic step for most faculty members and requires a material breach on the part of the university as well.

A professor may attempt to challenge the constitutionality of section 201(b) in three ways. First, he can claim that the section's arbitrary and fictional designation of the employer as the "author" of a work-for-hire renders meaningless the Constitution's use of the term. While it is clear that ownership in copyrightable works can be expressly or even impliedly assigned, an assignment of authorship which cannot be rebutted legislatively mocks the inherent limitations of the congressional grant of authority in the Copyright

140. Note that "the Burger Court is much more deferential in finding narrowly tailored and substantially related means and much more willing to accept government interests as sufficiently important to justify infringements." Galloway, supra note 132, at 36. A professor will thus likely encounter great difficulty in maintaining that the statute is unconstitutional.
Clause. Second, a professor can claim that if applied to the university/faculty settings, the work-for-hire doctrine abuses the purpose of the Copyright Clause which is to encourage authorship for the benefit of the public. Finally, a professor can argue that section 201(b) unconstitutionally chills his First Amendment right of written expression.

Given the disinclination of the courts to find congressional legislation unconstitutional, a professor is likely to encounter great difficulty in advocating that section 201(b) is unconstitutional. Nevertheless, this judicial reluctance may encourage the courts to alternatively find that faculty writings are not within the scope of employment. If courts fail or refuse, however, to circumvent the application of section 201(b) to academe, then scholarship will be discouraged. Further, universities will cease being able to educate in such fields as computer science as discouraged program-writing professors will seek to apply their skills in private industry rather than the academic arena.