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TO PROMOTE THE PROGRESS OF SCIENCE AND USEFUL ARTS: THE PROTECTION OF AND RIGHTS IN SCIENTIFIC RESEARCH

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I. Introduction

Every day in universities around the country, researchers toil away in laboratories, unraveling the mysteries of science to gain a greater understanding of the world in which we live. Many are motivated by the pursuit of knowledge as an end in itself, some by visions of fame, and others by pecuniary interests. All, however, likely share the unifying belief that their research belongs to them, and not to the university with which they are affiliated. And most are probably unaware of the ongoing legal debate within the courts and among legal scholars over the interests of scientists, the control and ownership of research, and the precarious protection of research itself.

In considering how a university scientist may protect his research, I first discuss the traditional protection for scholarly output, namely copyright, with a focus on the work-made-for-hire doctrine, as well as the possibility of an academic exception to this doctrine. Next, I explore the relevance of First Amendment academic freedom to faculty ownership of research, offering in the process a policy discussion of who should have the rights to research generated in the university setting. I argue that these rights properly reside with the scientist whose creative expression is embodied in the research he or she has conducted. But as will become

[*2] clear, it is not at all certain that research itself, regardless of who asserts the claim of ownership, qualifies for protection under copyright law. Thus I examine the merits of this contention and alternative regimes of protection as intellectual property. Finally, I present sources of protection outside the realm of intellectual property, accompanied by a new scheme which combines elements from the full range of intellectual property law to specifically address the assignment of rights in scientific research.

II. The Locus of Rights: University or Faculty?

A. Copyright Law

1. Constitutional Issues

A common-sense examination would suggest that copyright is a proper tool for protecting scientific research. The Constitution specifically notes that the purpose of copyright is "to Promote the Progress of Science." n1 To this end, copyright does not strive to reward the author, but rather attempts "to secure 'the general benefits derived by the public from the labors of authors.'" n2 As the Supreme Court has explained, "encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and useful Arts'." n3 In other words, unlike the law of unfair competition, in which the focus is primarily on the business owner and not the public, n4 the single goal of copyright law is to motivate creative output for the benefit of the public.

Additionally, as Justice O'Connor recently admonished, "copyright rewards originality, not effort." n5 However, "only an

[*3] unmistakable dash of originality need be demonstrated." n6 In return for her original contribution, an author is granted a "limited monopoly over the expression it contains . . . [and] [a]ccordingly the scope of copyright . . . is narrow . . . embracing no more than the author's original expression of particular facts and theories already in the public domain." n7 "Implicit in this rationale is the assumption that in the absence of such public benefit, the grant of a copyright monopoly to individuals would be unjustified." n8

Copyright law was first codified in 1909, n9 and then reworked in the Copyright Revision Act of 1976. n10 As Judge Posner succinctly explains:

[u]ntil the Copyright [Revision] Act of 1976, this country had a dual system of property rights in expression. Until published, a work was protected by state common law principles; the author had a common law copyright. Upon publication, the author's common law copyright terminated; to preserve his property right, he had to obtain a federal copyright. . . . The 1976 Act abolished common law copyright as of January 1, 1978 . . . but made federal copyright attach at the moment of creation, not publication, of any work within the scope of the statute. n11

In other words, after the 1976 Act came into effect, fixation in a tangible medium of expression triggered copyright protection.

2. Work Made For Hire

Under the statutory codification of copyright law, "copyright in a work protected . . . vests initially in the author or authors of the work." n12 Read in isolation, this enactment would suggest that only the actual creator of the work is entitled to the copyright. However, even before

[*4] the first codification of copyright law in 1909, the term "author" was given a more expansive definition. Ownership of copyright by the employer rather than the employee/creator was first recognized by the Supreme Court in *Bleistein v. Donaldson Lithographing Co.* n13 In this case, the employer was found to own a copyright in the literary product of a salaried employee. n14 Then, in 1909, Congress codified this expanded concept of authorship and deemed the employer the "author" of works made for hire. n15 It did not, however, define the term "works made for hire." n16

Over time, courts looked to a number of factors to determine whether a work was made for hire. These factors include the employer's right to supervise, direct, and exercise control over the employee, whether the work was created at the "expense and insistence" of the employer, and whether the work was made during working hours. n17 Overall, this analysis was made in an effort to determine whether the work was made "within the scope of employment." n18 "Expense" referred to whether the employer provided supplies, equipment, and a salary, while "insistence" referred to whether the employer conceived of the idea or hired someone to produce a specific product. n19 The traditional justifications for assigning authorship to the employer in this circumstance are: 1) that the work is produced for the employer under his direction, 2) that the employee is compensated by the employer, and 3) that the employer pays the costs and bears the risk of loss, and therefore should reap any gains. n20 At stake in the assignment of authorship are the initial rights in the work, including first publication and licensing of derivative works, renewal rights, terms of the copyright, length and extension and termination of the copyright. When the United States

[*5] government is involved, whether the work is eligible for copyright at all is also in question. n21

The Copyright Revision Act of 1976 defines a "work made for hire" as a "work prepared by an employee within the scope of his or her employment," n22 and provides that

[i]n 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. n23

The burden has shifted as a result of this definition and assignment of rights, with the presumption that once a work is found to have been "made for hire," only a written agreement signed by both parties will rebut the assignment of rights to the employer, and even then, only the rights are reassigned; the employer is still technically the "author." n24 Before reaching the issue of assignment of rights, however, the work must be determined to have been "made for hire." As Professor Nimmer explains, this analysis asks two sequential questions: Is the creator of the work an "employee," and if so, was the work made "within the scope of employment?" n25

Although there have been various theories as to the meaning of "employee" advanced in the courts, n26 the Supreme Court clarified the definition recently in *Community for Creative Non-Violence v. Reid*. n27 In this decision, the Court adopted the common law of agency as the "touchstone for determining the existence of an employment

[*6] relationship." n28 In so doing, the Court "consider[ed] the hiring party's right to control the manner and means by which the product is accomplished." n29 This control was established by examining the "skill required, the source of the . . . tools, the location of the work, the duration of the relationship, the right of the hiring party to assign additional projects, the method of payment, the provision of employee benefits, and the tax treatment of the hired party." n30 Additionally, the involvement of the hired party in hiring assistants, and the hiring party's control over the timing of the work were relevant. n31 However, "no one of these factors is determinative." n32

The "scope of employment" analysis asks three general questions: First, is the work of authorship the product the kind of activity the employee is employed to perform? Second, are the activities that produced the work of authorship undertaken substantially within authorized work space and hours? And third, are these productive activities undertaken, at least in part, with the purpose of serving the employer? n33

Given the number of factors which must be considered to determine "employee" status and to delineate the "scope of employment," it should be no surprise that the identification of works made for hire is rarely straightforward. One source of conflict in this area of the law which is particularly relevant to the university scientist has arisen out of anon-codified tradition known variously as the "academic exception" or the "teacher exception." n34 Accordingly, this exception with its attendant legal debate is addressed in some detail below.

3. The Academic Exception

The issue of work made for hire is pivotal to the lives of university-based researchers. If a university professor is an employee in the agency sense, and if her research and scholarly output are produced within the scope of employment, then under the work-made-for-hire

[*7] doctrine, the research and scholarly output has as its author not the professor but rather her employer, the university. This was in fact the position taken by Estelle Fishbein, the general counsel for the Johns Hopkins University in a 1991 article in *Academic Medicine*: "There is no legal issue as to the ownership of data underlying research." n35 Additionally, Attorney Fishbein argued broadly that the university owns all rights stemming from its professors' research. n36 Indeed the life of the general counsel of a major research institution would be substantially less complicated if the courts accepted her view as representative of the current state of the law. Unfortunately for universities, the case law and legal commentary cast serious doubt on Attorney Fishbein's pronouncement. A major source of this doubt is the academic exception to the work-made-for-hire doctrine. As Judge Cudahy notes, the academic exception "has been the academic tradition since copyright law began . . . [and] covers scholarly articles and other intellectual property." n37 What, then, is this exception, and what is its status under the 1976 Act?

As Professor Dreyfuss explains, "[u]nder the Copyright Act of 1909, courts and commentators regarded the work-made-for-hire doctrine . . . [as] largely inapplicable to teachers." n38 Professor Dreyfuss refers to this distinction as the teacher exception, and traces the policy concerns underlying this exception to, among other things, the principles of academic freedom, and the academy's long tradition of professional authorship. n39 The legal authority for this exception to the 1909 Act's work-for-hire provisions is scant, and Professor Simon posits that this is not because the exception was doubted, but rather because virtually no one questioned that the academic author was entitled to copyright his writing. n40

The two cases most commonly cited as the origin of the teacher exception are *Sherrill v. Grieves* n41 and *Williams v. Weisser*. n42 The leading treatise on copyright cites these very cases, and accepts without question

[*8] the doctrine of the teacher exception. n43 Looking to custom and noting a lack of precedent, the court in *Sherrill* refused to apply work-for-hire principles to a military instructor's classroom supplements. This line of reasoning reappeared in *Williams*, where the court broadly rejected the application of the work-made-for-hire doctrine to the lectures of professors. n44

The *Williams* court asserted the normative rationale for the teacher exception, with the essence captured in the following admonition: "a rule of law developed in one context should not be blindly applied in another where it violates the intention of the parties and creates undesirable consequences." n45 The court justified the exemption for professors by noting that "[u]niversity lectures are sui generis [and] [a]bsent compulsion by statute or precedent, they should not be blindly thrown into the same legal hopper [as other instances where the doctrine is appropriate]." n46 Further, "[p]rofessors are a peripatetic lot, moving from campus to campus," n47 and as the Vice-Chancellor of UCLA reported to the court, if the university owned the rights to the output of its professors, "it would simplify [the Vice-Chancellor's] job immensely, since a faculty member would not be able to leave the university for the university would have a right to [that faculty member's] lectures and [any faculty member] could only go to another institution if he were in a position to turn his attention to a new subject." n48 Finally, the court found that the distinction between work and leisure time (part of the scope of employment inquiry) "illusory" where professors are concerned. n49

In *Public Affairs Associates, Inc. v. Rickover*, n50 the court looked to private industry for the accepted standard, and found that "[m]any scientific articles published in technical journals are written by scientists employed by private concerns, and . . . [n]o one would contend that the copyright on such articles would belong to the employer." n51 Professor

[*9] Nimmer uses this case to demonstrate that the employer does not necessarily own the copyright to a work merely because the subject matter of the work bears upon or arises out of the employee's activities for his employer. n52 And as Professor Dreyfuss concludes, "it is hard to think of a setting in which employer authorship is more of a legal fiction [than in the university]." n53

The current controversy in the literature centers not upon the merits of the teacher exception, but rather upon whether the exception was preserved under the 1976 Act. In one camp reside Professors Simon and DuBoff, both of whom opine that the exception did not survive. n54 Professor Simon argues that professors are clearly employees in the agency sense, and that their output falls within the scope of employment. n55 The university maintains the right to direct the employee because scholarship is necessary for tenure, and departments within the university often channel professors in particular directions. n56 Additionally, the university clearly meets the "expense" test, n57 and because the university provides sabbaticals and adjusts teaching schedules to allow professors to publish, the "insistence" prong is met. n58 Professor Simon agrees with the Williams court's notion that the leisure/work distinction is inapplicable to professors, observing that "this element has little validity today." n59

Having established that a professor's output is work for hire unless the academic exception survived the 1976 Act, DuBoff and Simon present their evidence for the exception's demise: an absence of a reference to the exception in the new, more specific 1976 Act, n60 and the existence of

301 of the 1976 Act which preempts all common law of copyright, which was the source of the teacher exception. n61 Additionally, Professor DuBoff argues that the Copyright Revision Act of 1976

[*10] rejected custom as evidence for the existence of a copyright, and therefore custom cannot also be used to exempt works from provisions of the 1976 Act. n62 Finally, Professor VerSteege submits that in its 1987 decision in *Weinstein v. University of Illinois*, n63 the court may have rejected, sub silentio, the notion of a teacher exception. n64 In *Weinstein*, the court noted that "the statute is general enough to make every academic article a 'work for hire' and therefore vest exclusive control in universities rather than scholars." n65

In the opposite camp, however, reside those who feel that the teacher exception is alive and well. Professor Lape rejects the DuBoff and Simon formulations, and notes that "[j]udicial glosses on sections of the 1909 Act reenacted in the 1976 Act survived adoption of the 1976 Act unless precluded by that Act." n66 This position is endorsed by Professor VerSteege who notes that 1909 precedents are still valid. n67 Indeed, looking to Professor DuBoff's own observation that nowhere in the legislative history surrounding the 1976 Act was the teacher exception considered, n68 Professor Reichman finds the DuBoff and Simon formulations "surprising." n69 This sense of surprise is echoed by Judge Posner:

[t]he reasons for a presumption against finding academic writings to be work made for hire are as forceful today as they ever were. . . . [C]onsidering the havoc that [concluding that the teacher exception has been abolished] would wreak in the settled practices of academic institutions, the lack of fit between the policy of the work-for-hire doctrine and the conditions of academic production, and the absence of any indication that Congress meant to abolish

[*11] the teacher exception, we might, if forced to decide the issue, conclude that the exception had survived the enactment of the 1976 Act. n70

Extending Judge Posner's reasoning, Professor Reichman rejects Professor Simon's notion that university professors fit squarely into the work-made-for-hire definition: "To equate a general duty to write with a duty to produce specific works for a university distorts the nature of academic employment and downgrades the professorial rank to that of an ordinary staff member." n71 Reichman also asserts that universities benefit reputationally from the scholarly output of their professors, allowing them to attract the best students and most prestigious faculty. n72 Finally, Reichman notes that the fact that professors "write to obtain tenure and retain its full benefits hardly entitles a university to regard itself as the author of a scholarly product over which it has exercised no direct supervisory control whatsoever." n73 He concludes by predicting that "courts will probably follow the late Professor Nimmer's lead and preserve the academic's ownership of his or her general literary or artistic output." n74

Another line of reasoning in support of the teacher exception is implied evidence of its existence in practice. When lawyers and courts want access to research, they do not subpoena the university, but rather the researcher. And in deciding whether to uphold these subpoenas, courts consider the researcher's interest in the requested data, the effects of the release of incomplete data, and the effects on the study if the data are produced in court. n75 Additionally, in *Weinstein*, the court observed

[*12] that Professor Weinstein was told to publish his article, not to ask the university for permission to publish, "permission that would have been essential if the [u]niversity owned the copyright." n76

In an examination of who owns faculty-generated inventions, as well as non-patentable employee discoveries, Professor Chew discusses the hired-to-invent doctrine, whereby an employer owns an invention or research only if the employee is specifically "hired to invent." n77 Her evidence for this proposition stems from *United States v. Dubilier Condenser Corp.*: n78

Dubilier and other decisions make clear that the typical university faculty member would not be considered an employee specifically "hired to invent." . . . The fact that faculty have research responsibilities and use university resources in conducting research does not alter this conclusion. n79

And finally, in a recent unpublished opinion, the Court of Appeals for the Fourth Appellate District in California agreed with this reasoning, finding that "in the absence of any indication [that the plaintiff] was hired specifically to determine the crystal structure . . . it was error to determine summarily [that] she held no ownership interest to the products of her research." n80 The court concluded that the plaintiff's "interest is analogous to that of an inventor or a producer of copyrightable material who has not contracted away her rights to her intellectual property." n81

Although no court has yet decided, under the 1976 Act, a case in which the academic exception is the focal point, there is certainly ample evidence to suggest that courts will recognize the survival of the exception. The Hays opinion articulated by Judge Posner leaned strongly in this direction, and there is substantial scholarly support for this proposition. Additionally, as Professor Dreyfuss notes, "the fact that

[*13] academic life does not lend itself to the kind of analysis intended by the statute suggests that it may, indeed, be wrong to apply the statute to academics." n82 And the sentiments of the Williams court regarding the blind application of the law n83 may be equally persuasive to judges interpreting the 1976 Act. At the very least, Attorney Fishbein's confidence that no legal uncertainty exists in this area of the law seems misplaced. n84

B. Academic Freedom

Another line of reasoning touches upon rights to scholarly work product and is based on academic freedom as protected by the First Amendment. This position is grounded on the proposition that "freedom to speak will be impermissibly chilled if universities are deemed the owners of faculty scholarship." n85 Academic freedom has been defined as:

the absence of or protection from restraints and pressures from internal or external sources designed to [inhibit] or having the effect of inhibiting the freedom of scholars studying, discussing, or publishing ideas and opinions. n86

The core values of this freedom are "unfettered inquiry and dissemination of knowledge." n87 The principles of academic freedom are particularly appropriate to scientific research, for according to sociologist Robert Merton, the "overriding institutional goal of science is the 'extension of certified knowledge' [through] empirical research." n88 As Lewis and Vincler note, "[t]he concept of academic freedom has special significance for scientific research activities. Constitutional scholars and courts have

[*14] both explicitly and implicitly recognized that research is protected by the concept of academic freedom." n89

The Supreme Court's first extensive treatment of academic freedom arose out of the activities of the House Un-American Activities Committee. In holding that a college professor could not be compelled to testify about the content of his lectures, Chief Justice Warren, writing for the Court in *Sweezy v. New Hampshire* n90 , asserted that

[t]he essentiality of freedom in the community of American universities is almost self-evident. No one should underestimate the vital role . . . played by those who guide and train our youth. To impose any strait [sic] jacket upon the intellectual leaders in our colleges and universities would imperil the future of our Nation. No field of education is so thoroughly comprehended by man that new discoveries cannot yet be made. . . . Scholarship cannot flourish in an atmosphere of suspicion and distrust. n91

Interestingly, the Court in its opinion, and Justices Frankfurter and Harlan in their concurrence, accepted without question that research in the natural sciences was governed by the principles of academic freedom, and were attempting to extend this presumed protection to the social sciences:

Freedom to reason and freedom for disputation on the basis of observation and experiment are the necessary conditions for the advancement of scientific knowledge. A sense of freedom is also necessary for creative work in the arts which, equally with scientific research, is the concern of the university. n92

Subsequent case law echoed and expanded this dedication to academic freedom. As the Court asserted in *Keyishian v. Board of Regents of the University of the State of New York*, n93 another dispute which arose out of the twentieth-century "red scare,"

[o]ur Nation is deeply committed to safeguarding academic freedom, which is of transcendent value to all of us and not merely to the teachers concerned. [That] freedom is therefore a special concern of the First Amendment, which does not tolerate laws that cast a pall of orthodoxy over the classroom. "The

[*15] vigilant protection of constitutional freedoms is nowhere more vital than in the community of American schools." n94

And in *Regents of the University of California v. Bakke*, n95 the Court states that "[a]cademic freedom, though not a specifically enumerated constitutional right, long has been viewed as a special concern of the First Amendment." n96

The lower courts, taking their cues from the decisions noted above, have applied the concept of academic freedom to scientific researchers. In *Dow Chemical Co. v. Allen*, n97 the court noted that "the heart of the system consists in the right of the individual faculty member to teach, carry on research, and publish without interference from the government, the community, the university administration, or his fellow faculty members." n98 The court then announced that

[w]e think it clear that whatever constitutional protection is afforded by the First Amendment extends as readily to the scholar in the laboratory as to the teacher in the classroom. n99

In this case, looking to the wide latitude to be afforded a scientific researcher, the court allowed a consideration of the effect of subpoenas for research data on the research project and the researchers' rights and careers. n100 This research scholars' privilege was asserted "principally to protect scholars from the premature disclosure of their research." n101 A New York state trial court acknowledged that a researcher's "interest in academic freedom may properly figure into the legal calculation of whether forced disclosure would be reasonable." n102 And in noting that a subpoena jeopardized a research project to which a researcher had dedicated a decade of his life, the court in *Andrews v. Eli Lilly & Co.* n103

[*16] asserted that "[t]here is undoubtedly a compelling social interest in promoting research." n104

As Lewis and Vincler assert, "[t]he First Amendment should serve to protect the integrity of the scientist's expression of preliminary ideas." n105 As such, the academic freedom argument provides an important haven for scientific researchers, endowing them with the breathing space necessary to produce the creative expression which their scientific research endeavors represent. As the Supreme Court wisely observed in *Sweezy*, n106 "[p]rogress in the natural sciences is not remotely confined to findings made in the laboratory. Insights into the mysteries of nature are born of hypothesis and speculation." n107 Freedom to research, hypothesize and speculate creates an environment maximally conducive to scientific progress.

C. Policy Concerns

Bolstering support for faculty ownership of research generated in the university setting is an important policy consideration which accompanies the assertions of academic freedom and an academic exception. However, most universities have patent policies which give them some rights to the inventions of their professors, based in part on the "shop-rights" doctrine. As explained by the Fifth Circuit,

when an employee makes and reduces to practice an invention on his employer's time, using his employer's tools and the services of other employees, the employer is the recipient of an implied, non-exclusive, royalty-free license. n108

Research, however, is generally not subject to patent protection, n109 and the legislative history of the 1976 Copyright Act indicates that the shop-right principle was specifically excluded from copyright law. n110 What, then, is the justification for faculty members retaining the rights to their research, when often they relinquish at least some part of the bundle of rights which accompanies the patents on their inventions?

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Professor Simon, in considering this issue, posits that it "may seem to lack magnitude . . . [a]fter all, the universities have seldom tried to claim faculty copyrights in the past." n111 However, it appears that universities are taking an increasing interest in copyrights, particularly where scientific research is concerned. n112 To begin with, then, a faculty member is not a typical employee. This is the near-universal assertion in the commentary and the implicit teaching of the case law on academic freedom. Faculty are hired to teach and produce scholarship, but rarely, if ever, are told what to write, when to work, or how to teach. Most faculty-generated research provides little, if any, financial reward for the researcher, but all first-rate scholarship benefits the university, whose reputation grows with the prominence of its professors. This reputational benefit is the return on a university's investment in its faculty; in this light, additional gain in the form of financial benefit from faculty research and writing would constitute unjust enrichment of the university. The university provides resources and gains stature, through which it attracts students and endowment contributions. The quid pro quo is satisfied, and any incidental financial advantage to faculty members should be outside the reach of the university, which has already captured the return on its investment.

Professor Lape notes that "faculty members have . . . an interest in controlling [the] dissemination [of their works], such as the manner of distribution, the making of revisions, and the production of later works." n113 Professor Dreyfuss echoes these sentiments in describing the "nonpecuniary interests" n114 that faculty have in their works, namely possessory, integrity and reputational interests. n115 The possessory interest is "fulfilled by composing a work that satisfies the creator's initial vision." n116 The integrity of the work is "endangered by the process of compromising that vision with commercial demands" n117 The reputational interest "turns on how the work is presented to the public." n118 These interests are particularly relevant to scientific research. n119 Apart from

[*18] financial gain, when and in what context research is disclosed affects a broad range of interests, from publication and tenure to the protection of the public from premature disclosure of unproved or incomplete research.

Professor Chew raises additional important concerns. The university

is the protector of the faculty's academic freedom, and as such, would not want to intervene in faculty research interests. On the other hand, as the owner of faculty inventions and a prime beneficiary of any income arising from [them] . . . [the university's interests] . . . may conflict with the faculty's priorities. n120

Moreover, "faculty are more likely to be inventive if they own their research results," n121 and faculty ownership "ensure[s] the invention's proper development . . . [as faculty members] best understand the fundamental nature as well as the intricate nuances of the[ir] discover[ies]." n122 And finally, "not only the creator's interests, but also the public's interest in the highest quality, most accessible and creative products are best served if creators own their own works." n123

D. Other Approaches

Although faculty ownership of its work product, including research, is the best way to satisfy the requirements of academic freedom within the university and to impel faculty towards the greatest creativity and the most productive scholarly output, other proposals have surfaced in the literature. One such proposal is that faculty retain the rights to all of their work product, but reimburse the university for the expenses of a project which yields financial reward. Reimbursement provisions currently appear in the copyright policies of several universities. n124 As Professor Lape notes, however, reimbursement does not satisfy the "university's interest in generating revenue." n125

[*19]

Another proposal is the introduction of a modified shop-right principle to copyright law in the university setting, whereby the university would obtain a nonexclusive, zero-price license to use the research. However, as Professors Angel and Tannenbaum point out, this was specifically considered and excluded by Congress in the years preceding the adoption of the 1976 Copyright Act. n126 Hearings held in 1963 actually considered a proposal which would allow the employee/creator to use the work in non-competing fields (a distinction which is not part of the patent-law shop right), but it was concluded that a determination of which fields were non-competing was too difficult, and also that users would not know with whom to negotiate to acquire rights. n127 However, the shop-right principle as applied to research in the university setting is not entirely unworkable, especially if the non-competing fields distinction is removed. Again, however, the university would fail to capture the financial benefits of exclusive ownership, and as such would be unlikely to endorse this proposal.

III. Is Research Protected?

A. Introduction

Setting aside for the moment the issue of faculty versus university ownership of research, a large area of uncertainty still persists, for although a researcher's scholarly articles representing her findings and reporting her data clearly fall within the purview of copyright law, the fate of the research itself - the data, lab books, and the scientist's expression of "preliminary ideas" n128 - remains unclear. The uncertainty arises out of the fact that copyright protects "expression only, [and] may not be the ideal vehicle for the protection of fact works." n129 Accordingly, the question of whether research itself can be protected is explored below, for in the absence of such protection, the issue of ownership is moot.

An appropriate starting point might be to ask why research requires protection, though the answer may be apparent from the discussion of faculty ownership presented in the preceding section. In an ideal world, research would be disseminated immediately upon its discovery and formulation, but the realities of academic science today

[*20] preclude such a disclosure. Researchers have an interest in receiving credit for their work, as grant funding depends on continued demonstrations of progress. Additionally, in a "publish or perish" tenure system, academics must submit scholarly work to advance in the university hierarchy, a task which would be seriously undermined if a professor's research were available to all his colleagues to report as their own. Furthermore, in an era in which scientific research and industry are forming ever-closer ties, protection of research ensures that any financial gains accrue to those who made a discovery. This in turn reduces the motivation for faculty members to abandon the university in favor of careers in industry. Finally, as the creative expression of a scientist's work, research is deserving of the same protection as other intellectual property. As one court has concluded, the interest of a researcher "is analogous to that [of an individual] . . . who has not contracted away her rights to her intellectual property." n130 However, the goal of the law must be to protect scientific research without preventing the rapid dissemination necessary for the progress of science.

In this section I first explore the protection of research as intellectual property under existing law. Next, I present alternative proposals from the legal commentary. Finally, I propose a new scheme tailored specifically to scientific research.

B. Research As Intellectual Property

1. Copyright

As discussed above, the embodiment of research in the form of a scholarly article may be protected by copyright, but the protection of the underlying research is still uncertain, and has been the subject of an active debate in the courts and the legal commentary. On one side are cases which collectively stand for the proposition that research is not copyrightable, while on the other side are cases which offer copyright protection to research, though the legal basis for this protection differs. The theories advanced in these cases are discussed below, although, as I demonstrate, neither side in any of these cases properly understands the nature of research itself. By focusing solely on the underlying facts and the labor of the researcher without recognizing that research is more than the facts interpreted by researchers or the labor employed to gather them, arguments on both sides of the issue fail to appreciate that

[*21] research, as an expression of the scientific process, may possess the requisite creativity and originality of expression to qualify as protected intellectual property.

In the case of *Rosemont Enterprises v. Random House, Inc.*,¹³¹ biographical research was found not to warrant copyright protection.¹³² The court refused to adopt the view that "an author is absolutely precluded [by copyright laws] from saving time and effort by referring to and relying upon prior published material."¹³³ The court went on to say that "it is just such wasted effort that the proscription against the copyright of ideas and facts . . . [is] designed to prevent."¹³⁴ The court did concede, however, that "the second historian or second directory publisher cannot bodily appropriate the research of his predecessor."¹³⁵ The court failed to issue any guidelines for determining just how much appropriation is too much.¹³⁶ And to justify its holding, the court explained that it "must occasionally subordinate the copyright holder's interest in a maximum financial return to the greater public interest in the development of art, science, and industry."¹³⁷ Although *Rosemont* has been cited as an important authority for the proposition that research is not copyrightable, the essence of the case actually concerned what would be termed "fair use" under the 1976 Copyright Act.¹³⁸ Thus the court's reasoning would not be disturbed if research were afforded copyright protection.

*Hoehling v. Universal City Studios, Inc.*¹³⁹ is a more recent case also cited as an authority for the legal opinion that research is not copyrightable. In this case, historical interpretation was found not to be protected by copyright.¹⁴⁰ Judge Kaufman did admonish, however, that courts should not "lose sight of the forest for the trees . . . [a] verbatim reproduction of another work, of course, even in the realm of nonfiction,

[*22] is actionable as copyright infringement." n141 The opinion concluded with the warning that "a second author may make significant use of prior work, so long as he does not bodily appropriate the expression of another." n142 Again, although research was a factor in the case, nowhere was there an explicit holding that research is not copyrightable. n143

A year later, in *Miller v. Universal City Studios, Inc.*, n144 the Fifth Circuit made explicit what many have found to be implied in the cases cited above, and drove a definitive nail into the coffin of research protection by copyright:

The valuable distinction in copyright law between facts and the expression of facts cannot be maintained if research is held to be copyrightable . . . To hold that research is copyrightable is no more or no less than to hold that the facts discovered as a result of research are entitled to copyright protection. n145

The court also rejected the notion that the labor involved makes research copyrightable, n146 anticipating the Supreme Court's resolution of the issue ten years later in *Feist Publications, Inc. v. Rural Telephone Service Co.* n147

Although the cases of *Toksvig v. Bruce Publishing Co.* n148 and *Wainwright Securities, Inc. v. Wall Street Transcript Corp.* n149 have been cited in support of the notion that research is copyrightable, their value as authority is questionable. The Toksvig court, in direct opposition to the reasoning found in *Rosemont*, decided that the key question was not whether the defendant "could have obtained the same information by going to the same sources, but rather did she go to the same sources and do her own independent research?" n150 Most scholars feel that Toksvig was wrongly decided, for it represented an "improper extension of copyright principles in an effort to protect labor and expense" n151 of acquiring

[*23] research. And Wainwright, while providing valuable insight into the nature of research, involved nearly verbatim copying, n152 disallowed even by Rosemont and Hoehling.

The flaw in the logic of the courts on both sides of the research copyrightability issue stems from a misunderstanding of the nature of research - a mistake particularly germane to scientific research in the university setting. Research is not the equivalent of the data uncovered, and it deserves more than a narrow consideration of labor and expense. If research were indeed merely the equivalent of the underlying facts, there would be no debate, because facts are not copyrightable. Additionally, Toksvig aside, copyright law does not grant protection based on the labor expended in the pursuit of research. However, if research were recognized to possess "more than a de minimis quantum of creativity," n153 and to represent the creative "expression of [an] idea," n154 it would merit copyright protection.

This definitional controversy is more than one of mere semantics, for it goes to the essence of scientific research. As the Wainwright court noted:

What is protected is the manner of expression, the author's analysis or interpretation of events, the way he structures his materials and marshals facts, his choice of words, and the emphasis he gives to particular developments." n155

In other words, what is protected is research - not merely the facts or the labor, but the processes of observation, decision-making, and conclusion. The facts are there for all to claim, but the process of doing so, from the choice of what and how to study, to the decision to exclude certain facts and vigorously investigate others, represents creative expression which should be protected by copyright. As Professor Chew insightfully states, "[r]esearch is both the conduit and manifestation of one's intellectual energy." n156

Commentators such as Richard Jones misunderstand and denigrate the scientific process when asserting that the order of data acquired is "dictated by nature, not the creativity of the scientist." n157 There are

[*24] many forks in the road leading to the final discovery; nature provides the forks, but the scientist through creativity and ingenuity chooses the path. And if astute, the scientist makes novel observations and innovative conclusions and records these as research, which is entitled to protection. As a recent article concludes:

[r]esearch contains the self-expression of the author. . . . To declare that no part of an author's research is entitled to copyright protection is to grant a license . . . to steal the self-expression of the author. . . . Such a result is in direct violation of the purpose of the 1976 Copyright Act. n158

Before leaving the realm of copyright to explore other options for the protection of scientific research, the issue of compilations must be addressed briefly, for this aspect of copyright law has been suggested as a possible source of research protection. n159 A compilation is defined in the 1976 Copyright Act as

a work formed by the collection and assembling of preexisting materials or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship. n160

Until 1991, a sturdy foundation of cases known as the "directory cases" rested on this definition, n161 for compilations were protected "regardless of whether the individual items in the material have been or ever could have been subject to copyright." n162 In 1991, however, the Feist court found that a directory lacked the "quantum of creativity" necessary for protection, and rejected the "sweat of the brow" theory through which copyright rewards labor, stating that "the 1976 revisions to the Copyright Act leave no doubt that originality, not 'sweat of the brow,' is the touchstone of copyright protection in directories and other

[*25] fact-based works." n163 The Miller court, ten years prior to Feist, dismissed the directory cases as "being in a category by themselves." n164

While protection as a compilation may be applicable to scientific research, such a classification also misses the mark, for the only creative aspect of a compilation is the organization of a group of obvious facts. As discussed above, however, research involves substantially more, as the facts must be uncovered by the scientific process - a process which embodies the type of creative expression which the Constitution sought to encourage and the Copyright Act was designed to protect. Richard Jones views the scientist as little more than a recording secretary for nature when he rejects the notion that research data can be considered a compilation because nature dictates the order of the facts. n165 He further posits that raw data are "too rigidly dictated by nature to justify the 'selectment and arrangement' rationale [of compilation protection]." n166 To him, research is "no more than choosing a subject within the public domain to copy," n167 and the "scientist's only contribution to the data collected is . . . determining which phenomenon to study." n168 One wonders if Dr. Jones harbors a personal grudge against scientists, for little else explains such a vituperative attack on the nature of the scientific process and the role of the scientist. Such bias aside, though protection as a compilation should not be dismissed, its failure to acknowledge the creative expression which is the essence of scientific research makes it a less than ideal source of rights in research.

2. Unfair Competition / Misappropriation

In 1963, Professor Robert Gorman observed that

[w]here it is clear that it is labor, effort, and expense that is sought to be protected, the most apt body of protective principles might be found in that branch of the law of unfair competition dealing with misappropriation. n169

[*26]

Although scientific research involves more than simply labor, effort and expense, the uncertain status of the copyrightability of research necessitates an examination of other sources of protection. The tort of unfair competition in business originally addressed an "attempt by [a] defendant to palm off its goods as those of the [plaintiff]." n170 In its 1918 decision in *International News Service v. Associated Press*, the Supreme Court introduced a new subset of unfair competition, namely the tort of misappropriation. n171 The essence of this tort is that in "taking material that has been acquired by [the plaintiff] . . . the defendant is appropriating it and selling it as its own [and] is endeavoring to reap where [he] has not sown." n172 And just like news, which is the subject of the *International News Service* opinion, scientific research "has an exchange value to one who can misappropriate it." n173 The Court concluded that news was to be viewed as "quasi-property" for the purposes of unfair competition. n174 Indeed, Keeton et al. note that "intangible interests, such as those involved in patents, copyrights, trademarks, and trade secrets, are often treated as property and given protection." n175 And as the Seventh Circuit observed in 1947:

[u]nfair competition rest[s] on the premise that the defendants . . . had taken and used to their advantage something in which the plaintiffs had a property right - more specifically, that the defendants had pirated or stolen [the] plaintiffs' property and used it in their business in competition with that of the plaintiffs. n176

Or, stated more succinctly, the defendant has appropriated the fruits of the plaintiff's labor.

The applicability of misappropriation to research protection has been acknowledged by scholarly commentators, n177 and has been presented as having some advantages over copyright. Professor Gorman asserts that "[s]hould courts rest on a theory of unfair competition, the duration of the decree can be molded so as simply to regulate the competitive

[*27] abuse." n178 This would allow a more narrow tailoring of the law, as courts would not be forced to grant a full-blown copyright monopoly. Indeed, for Professor Gorman, the great benefit of unfair-competition law derives from its flexibility. n179 However, this flexibility, which may be an advantage for the courts, could prove detrimental to the researcher. The extent of protection, if any, would be unclear, and would depend on a subjective, ex post facto determination by the courts. This not only leaves research in a precarious position, but severely curtails the bargaining power of researchers in industry, an increasingly important aspect of university science. Industrial concerns will be unlikely to attach much value to preliminary research absent any guarantees that this research will enjoy some protection from copying or use by others. Furthermore, unlike copyright which issues notice ex ante to all would-be users, a competitor in a system governed by unfair competition would have to guess how much taking is too much, or alternatively, what part of the research comprises its essence, the taking of which would constitute misappropriation. Moreover, the competitor may be willing to gamble that the court will be on its side, or at least that by the time a decision is issued, the dispute will have been mooted by subsequent discoveries.

Richard Jones once again attempts to deprive research of protection by advancing the idea that unfair competition, as state common law, is preempted by

301 of the 1976 Copyright Act, under which any state statute or common law which addresses rights equivalent to any of the "exclusive rights within the general scope of copyright" was invalidated. n180 It is interesting to note that earlier in his argument, Mr. Jones found that research is not protected by copyright, yet he still finds that the Copyright Act preempts the application of unfair-competition principles to research. n181 Needless to say, Mr. Jones' indictment of the use of unfair competition to protect research has not been universally ratified by commentators or the courts. Additionally,

43(a) of the Lanham Act federalized the tort of unfair competition, n182 and if preemption is an issue, may provide a solution in applicable circumstances.

[*28]

3. Patent and Trade Secrets

Two other avenues of protection for scientific research as intellectual property have been discussed in the legal commentary and will be included for completeness, although neither offers adequate protection, if indeed either strategy offers any protection at all.

a) Patent Protection

Patent protection has generally been unavailable for basic research, largely as a result of both the "new and useful" requirement and the "operability" component of patent law. n183 From a policy perspective, patent protection is neither appropriate for nor deserved by scientific research.

Patent protection is inappropriate because the patent monopoly is too strong, restricting all unlicensed uses of patented subject matter. There is no fair use provision, and unlike copyright, more than merely the expression of an idea is protected. In fact, it is not entirely without merit to say that patent law actually protects ideas themselves, as long as they are reduced to practice.

Finally, this form of intellectual property protection is not deserved because in patent terms, an invention involves conception and reduction to practice. n184 In research, the conception requirement is surely met, but rarely will any such conception be reduced to practice. Whenever a conception is reduced to practice, it probably no longer constitutes research, and should be protected as an invention.

Because copyright protects creative expression and not individual facts and processes, it is a more appropriate form of protection for research. One may not bodily appropriate the research of another, but may use the individual facts without fear of infringement. Additionally, unlike patent protection, copyright will generally not preclude independent discovery, for it is unlikely that two scientists will proceed in exactly the same way, absent substantial copying which would infringe.

[*29]

b) Trade-Secret Protection

Professor Eisenberg has given the most extensive treatment in the literature to the applicability of trade-secret protection to research. As Professor Eisenberg explains,

[1]legal trade secrecy affords a remedy in tort to persons who disclose certain kinds of information in confidence against those who breach this confidence or who otherwise misappropriate the information. n185

Trade secrecy is usually governed by state common law, and generally involves a showing of appropriate subject matter, "some measure of actual secrecy, reasonable efforts to maintain secrecy, and misconduct by the defendant in acquiring, using, or disclosing the trade secret." n186 As with copyright, independent discovery of the secret or discovery through reverse engineering are not precluded. The key elements are wrongful disclosure or improper acquisition of the information. As Keeton et al. note, the gravamen of a trade secrecy claim is "[a] breach of confidence committed or induced in obtaining" information not in the public domain. n187 Once a secret becomes generally known to other scientists, either through independent discovery or publication, the first discoverer loses protection. n188 Thus the protection afforded by trade secrecy is fleeting at best.

There is some question, policy arguments aside, whether trade secrecy is an appropriate tool for protecting research. The definition of trade secret in the Uniform Trade Secrets Act is as follows:

Trade secret means information, including a formula, pattern, compilation, program, device, method, technique, or process, that:

(i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and

(ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy. n189

[*30]

Additionally, some case law on the subject has adopted the formulation of the Restatement of Torts which requires that the trade secret be "use[d] in . . . business."ⁿ¹⁹⁰ As these definitions indicate, the main focus of this branch of intellectual property law is economic, and if a research product could not be shown to have independent economic value, it may be left unprotected by trade-secret law. Moreover, there are many non-economic interests of a researcher in his work product, all of which seem to fall outside the realm of trade-secret law. ⁿ¹⁹¹

Trade-secret law's prohibition against divestment to qualify for protection poses another problem for the scientific researcher. Both the need to confer with other scientists and the urge to publish, which is driven by a nearly inertial force in the academic community, render trade-secret law largely inapplicable, for as soon as one lab confers with another (its competitor unless collaboration agreements are signed) or publishes its results, the trade secret has disappeared. Both the ephemeral quality of trade-secret protection and its strong probability of interfering with scientific progress make it a problematic source of protection. Nevertheless, under the appropriate circumstances, a research product may indeed fall squarely within the purview of trade secrecy, in which case the option to make such a claim should not be foreclosed.

C. Other Approaches

A law review article ⁿ¹⁹² offering an answer to the Miller ⁿ¹⁹³ court's determination that research is not copyrightable has suggested that the fact/expression dichotomy is inadequate. ⁿ¹⁹⁴ Rather, "[c]ourts should begin their analysis in copyright infringement cases by isolating the most important stratum of original contribution."ⁿ¹⁹⁵ Such a determination must be made because there are works in which research is the primary original contribution. In such cases, the "most original stratum" approach would provide protection. Although this is an interesting

[*31] concept, it shares with unfair-competition law the defects of offering little ex ante protection to the author, providing little guidance to those who wish to use the work and leaving much to the subjective interpretation of the courts.

Another way to provide research protection is through legislation designed to guarantee a teacher exception to the work-for-hire doctrine of copyright law, discussed above. And finally, a researcher recently won a case against the University of Michigan under state-law fraud. n196 The essence of the researcher's claim was similar to one of misappropriation, although no economic injury was proved. n197 The case was essentially an action for plagiarism, framed within the legal doctrine of fraud. n198 Clearly, turning to state law fraud is an alternative of last resort, and offers no definite protection to research.

D. A New Scheme For Scientific Research Protection

A scheme of protection ideally suited to scientific research would serve the dual purposes of encouraging creative output by the scientist and securing the greatest benefit for the public. In the absence of research protection, the motivation of the scientist to produce and release innovative ideas may be lacking. However, the evil of granting overly expansive monopolies is that knowledge may be hoarded, and the progress of science actually impeded. Unfortunately, the current options for scientific research protection do not adequately address the duality of individual and public benefit.

An alternative approach could be modeled conceptually on one aspect of the Trademark Revision Act of 1988. n199 This revision of the Lanham Act strengthened the effect of the registration certificate and altered the use requirement for trademark acquisition. n200 The essence of this revision is that applicants may file an application for a mark with an "intention to use." n201 As long as use is made within the statutorily defined time, the applicant may register the mark and thereby exclude all other users, including those who may have started to use the mark after the

[*32] original applicant filed the "intent to use" application but before the applicant actually used the mark.

The applicability to research protection of early filing, securing benefits to those who use it effectively, is as follows. When an important research discovery is made, the researcher would be able to register the discovery as his own, either under the Copyright Act, or within a distinct regulatory scheme. Immediately upon registration, the discovery would be dedicated to the public, and the progress of science would be enhanced. From that point, it would essentially be a race to use the information in a tangible way, with the original research filer having one clear advantage; as long as he reduces the research to practice within a statutorily defined time, he will be considered the author of the research, and all benefits, financial and otherwise, will accrue to him, regardless of any work done by another individual or group.

There are disadvantages to such a scheme. Other scientists either may not want to make an investment of resources when the benefits of doing so are uncertain, or they may reduce the research to practice and then keep the discovery secret until the original filer's exclusive period expires. Additionally, there would be a large administrative burden attached to research filing.

There are, however, advantages to the scheme proposed here. To begin with, this scheme meets the dual goals of individual motivation and public benefit more completely than any other system by ensuring credit to the filer but early dedication to the public. Additionally, the scheme could provide that researchers may reassign all or some of their rights during their exclusivity period. In this way, a second scientist (the junior user in trademark terms) citional discoveries may not have been made as quickly under a different regime of protection, as the original ideas would not have been dedicated to the public as early in the process.

This scheme borrows concepts from many aspects of intellectual property law. From trademark law comes early filing and preservation of rights attached to concrete use, as well as the concept of the junior user. From copyright law comes the concept of authorship, with its attendant provisions of bargaining certainty and rights to exploit and publish first. And from patent law flows the concept of reduction to practice as a requirement for exclusive use. Obviously, the proposal would entail complex legislation and is certainly not problem-free, but it employs applicable concepts from the full spectrum of intellectual property law without pigeonholing research into a regime to which it is not ideally suited. Research is different from other types of intellectual property, and accordingly deserves its own scheme of protection. It is not enough

[*33] to say, as some courts and commentators have, that because research does not fit into an existing regulatory regime it cannot be protected. n202 Such a conclusion is a legislative and judicial cop-out, and undermines the very purpose of the Constitutional grant of rights in intellectual property - the promotion of the "Progress of Science and useful Arts." n203

IV. Conclusion

That a university expends resources on faculty scholarship and research is axiomatic. There is a risk assumed by the university in extending this support, and the university appropriately expects and should receive a return commensurate with this risk. The exact nature of this return has been a major focus of this analysis, for now more than ever universities are asserting ownership claims over the work product of faculty members as the appropriate return on their investment in faculty. This article contends that such a return is inapposite to the risk assumed, and in effect constitutes unjust enrichment of the university. The return for its investment in faculty is a vigorous atmosphere of scholarship which in the great academic tradition encourages the pursuit of knowledge as an end in itself, as well as all of the reputational and financial endowments which accrue to a university meeting its academic goals. Any further financial or exclusive ownership claims exceed a reasonable return for the university. The observation has been made that the university scientist is only the "caretaker, or the steward," n204 not the owner of his work product. n205 But instead, it is more appropriate to view the university as the caretaker or steward of its faculty, not their owners or the owners of their work product.

The other major focus of this analysis has been the protection of research itself, as opposed to scholarly articles clearly governed by copyright, or inventions which are the subject of patent law. Much space in court reporters and law journals has been dedicated to the proposition that research, particularly scientific research, represents no more than a recitation of facts, and the labor of the researcher is akin to that of a recording secretary. What has been missed by courts and commentators alike is that research is a creative process, one that involves decision

[*34] trees outlined not by nature or history, but by the investigator's ingenuity and tenacity. The facts are not simply plucked off the vine of nature, and the process is not merely a choice of which facts to describe. Research is itself a creative expression of the investigative process, and rightly deserves protection from wholesale appropriation by others whose only creative decision is whose research to pilfer.

The existing regimes of intellectual property are ill-suited to the protection of scientific research. Either the protection is too fleeting or dangerously unpredictable, or the monopoly granted too extensive to facilitate the progress of science. A new regime, an amalgam of various elements of patent, copyright and trademark law, may offer a solution which fulfills the dual goals of individual motivation to create and broad public benefit. Until a regime specifically tailored to scientific research is in place, the existing protections of intellectual property law must suffice, and the acknowledgment that research is a creative output rather than a mindless assemblage of facts, will go a long way towards accommodating current law to the protection of scientific research.

n1 U.S. Const. art. I, 8, cl. 8.

n2 1 Melville B. Nimmer & David Nimmer, *Nimmer on Copyright* 1.03[A], at 1-66.7 (Dec. 1997) [hereinafter *Nimmer on Copyright*] (quoting *Fox Film Corp. v. Doyal*, 286 U.S. 123, 127, 13 U.S.P.Q. (BNA) 243, 244 (1932)).

n3 *Mazer v. Stein*, 347 U.S. 201, 219, 100 U.S.P.Q. (BNA) 325, 333 (1954) (quoting U.S. Const. art. I, 8, cl. 8.)

n4 See generally W. Page Keeton et al., *Prosser & Keeton on the Law of Torts* 130, at 1013 (5th ed. 1984).

n5 *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 364, 18 U.S.P.Q.2d (BNA) 1275, 1285 (1991).

n6 *Weissmann v. Freeman*, 868 F.2d 1313, 1321, 10 U.S.P.Q.2d (BNA) 1014, 1021 (2d Cir. 1989).

n7 *Hoehling v. Universal City Studios, Inc.*, 618 F.2d 972, 974, 205 U.S.P.Q. (BNA) 681, 682 (2d Cir. 1980).

n8 1 *Nimmer on Copyright*, supra note 2, 1.03[A], at 1-66.8 (rel. no. 44, Dec. 1997) (quoting *Hutchinson Tel. Co. v. Fronteer Dir. Co. of Minn.* 586 F. Supp 911, 913, 223 U.S.P.Q. 800, 801 (D. Minn. 1984)).

n9 Copyright Act of 1909, Pub. L. No. 60-349, ch. 320, 35 Stat. 1075 (1909).

n10 Pub. L. No. 94-553, 90 Stat. 2541 (1976) (codified as amended at 17 U.S.C. 101-118 (1994)).

n11 *Hays v. Sony Corp. of America*, 847 F.2d 412, 415, 7 U.S.P.Q.2d (BNA) 1043, 1045 (7th Cir. 1988) (citing 17 U.S.C 302(a)).

n12 17 U.S.C. 201(a).

n13 188 U.S. 239, 248 (1903).

n14 *Id.*; see also Dennis Angel & Samuel W. Tannenbaum, Work Made for Hire Under S. 22, 22 *N.Y.L. Sch. L. Rev.* 209, 210 n.5 (1976).

n15 Copyright Act of 1909, Pub. L. No. 60-349, ch. 320, 62, 35 Stat. 1075, 1088 (1909).

n16 *Id.*; see also Rochelle Cooper Dreyfuss, The Creative Employee and the Copyright Act of 1976, 54 *U. Chi. L. Rev.* 590, 595 (1987).

n17 Todd F. Simon, Faculty Writings: Are They "Works Made for Hire" Under the 1976 Copyright Act?, 9 *J.C. & U.L.* 485, 488 (1982-83).

n18 William A. Rome, Scholarly Writings in the University Setting: Changes in the Works and on the Books, 35 *Copyright L. Symp. (ASCAP)* 41, 44 (1988).

n19 Simon, *supra* note 17, at 488.

n20 Angel & Tannenbaum, *supra* note 14, at 211, n.8.

n21 U.S. Government works are not copyrightable. See Copyright Act of 1909, Pub. L. No. 60-349, ch. 320 7, 35 Stat. 1075, 1077 (1909) and Copyright Revision Act of 1976, Pub. L. No. 94-553, 105, 90 Stat. 2541, 2546 (1976) (codified at 17 *U.S.C.* 105 (1994)). See also Angel & Tannenbaum, *supra* note 14, at 225.

n22 101, 90 Stat. at 2544 (codified at 17 *U.S.C.* 101).

n23 201(b), 90 Stat. at 2568 (codified at 17 *U.S.C.* 201(b)).

n24 Angel & Tannenbaum, *supra* note 14, at 215-16.

n25 1 Nimmer on Copyright, *supra* note 2, 5.03[B][1][a], at 5-14.2 (rel. no. 46, Sept. 1998), 5.03[B][1][b], at 5-31 (rel. no. 46, Sept. 1998).

n26 See *Aldon Accessories Ltd. v. Spiegel, Inc.*, 738 *F.2d* 548, 553, 222 *U.S.P.Q.* (BNA) 951, 954 (2d Cir. 1984); *Easter Seal Soc'y for Crippled Children and Adults of La., Inc. v. Playboy Enters.*, 815 *F.2d* 323, 334, 2 *U.S.P.Q.2d* (BNA) 1585, 1594 (5th Cir. 1987); *Town of Clarkstown v. Reeder*, 566 *F. Supp.* 137, 142, 220 *U.S.P.Q.* (BNA) 793, 798 (S.D.N.Y. 1983); *Donaldson Publ'g Co. v. Bregman, Vocco, & Conn, Inc.*, 375 *F.2d* 639, 643, 153 *U.S.P.Q.* (BNA) 149, 152 (2d Cir. 1967).

n27 490 *U.S.* 730, 10 *U.S.P.Q.2d* (BNA) 1985 (1989).

n28 *Id.* at 741, 10 *U.S.P.Q.2d* at 1990 (quoting 1 Nimmer on Copyright, *supra* note 2, 5.03[B][1][a], at 5-21 (rel. no. 38, Dec. 1995)).

n29 *Id.* at 751, 10 *U.S.P.Q.2d* at 1995.

n30 *Id.* at 751-752, 10 *U.S.P.Q.2d* at 1995.

n31 *Id.*

n32 *Id.* at 752, 10 *U.S.P.Q.2d* at 1995.

n33 Of note, the definition of work made for hire under the 1976 Copyright Act also included a provision for independent contractors, 17 *U.S.C.* 101 (1994).

n34 See generally Dreyfuss, *supra* note 16, at 597.

n35 Estelle A. Fishbein, Ownership of Research Data, *Acad. Med.*, Mar. 1991, at 133, 129.

n36 *Id.* at 130.

n37 *Weinstein v. University of Ill.*, 811 F.2d 1091, 1094 (7th Cir. 1987).

n38 Dreyfuss, *supra* note 16, at 591.

n39 *Id.* at 597.

n40 *Hays v. Sony Corp. of America*, 847 F.2d 412, 416, 7 U.S.P.Q.2d 1043, 1047 (7th Cir. 1988) (citing Simon, *supra* note 17, at 499).

n41 57 *Wash. L. Rep.* 286 (D.C. 1929).

n42 78 *Cal. Rptr.* 542, 163 U.S.P.Q. (BNA) 42 (Cal. Ct. App., 2d Dist. 1969).

n43 1 Nimmer on Copyright, *supra* note 2, 5.03[B][1][b][i], at 5-33 & 5-33 n.94 (rel. no. 46, Sept. 1998).

n44 *Abernethy v. Hutchinson*, 47 *Eng. Rep.* 1313 (Ch. 1825); *Caird v. Sime*, 12 A.C. 326 (H.L. Scot. 1887).

n45 *Williams*, 78 *Cal. Rptr.* at 547, 163 U.S.P.Q. at 45.

n46 *Id.*

n47 *Id.* at 546, 163 U.S.P.Q. at 45.

n48 *Id.* at 545, 163 U.S.P.Q. at 44.

n49 *Id.* at 549, 163 U.S.P.Q. at 47.

n50 177 *F. Supp.* 601, 123 U.S.P.Q. (BNA) 252 (D.D.C. 1959), *rev'd* on other grounds 284 *F.2d* 262, 127 U.S.P.Q. (BNA) 231 (D.C. Cir. 1960), *vacated* for insufficient record 369 *U.S. 111*, 132 U.S.P.Q. (BNA) 535 (1962).

n51 *Public Affairs Assocs.*, 177 *F. Supp.* at 605, 123 U.S.P.Q. at 255.

n52 1 Nimmer on Copyright, *supra* note 2, 5.03[B][1][b][i], at 5-32 (rel. no. 46, Sept. 1998); see also Russ VerSteeg, Copyright and the Educational Process: The Right of Teacher Inception, 75 *Iowa L. Rev.* 381, 392 (1990).

n53 Dreyfuss, *supra* note 16, at 603.

n54 See generally Simon, *supra* note 17, and Leonard D. DuBoff, An Academic's Copyright: Publish and Perish, 32 *J. Copyright Soc'y* 17 (1984).

n55 Simon *supra*, note 17, at 505.

n56 *Id.* at 503.

n57 *Id.* at 504.

n58 See *supra* text accompanying note 19.

n59 Simon, *supra* note 17, at 489.

n60 Duboff, *supra* note 54, at 25.

n61 See Simon, *supra* note 17, at 501.

n62 DuBoff, *supra* note 54, at 33.

n63 811 F.2d 1091 (7th Cir. 1987).

n64 VerSteeg, *supra* note 52, at 402.

n65 *Id.* (citing *Weinstein* 811 F.2d at 1094).

n66 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, 242 (1992) (citing *Stewart v. Abend*, 495 U.S. 207, 217, 14 U.S.P.Q.2d (BNA) 1614, 1619 (1990)).

n67 VerSteeg, *supra* note 52, at 397.

n68 DuBoff, *supra* note 54, at 26.

n69 J. H. Reichman, Computer Programs as Applied Scientific Know-How: Implications of Copyright Protection for Commercialized University Research, 42 *Vand. L. Rev.* 639, 674 (1989).

n70 *Hays v. Sony Corp. of America*, 847 F.2d 412, 416- 417, 7 U.S.P.Q.2d (BNA) 1043, 1047 (7th Cir. 1988).

n71 Reichman, *supra* note 69, at 674.

n72 *Id.*

n73 *Id.*

n74 *Id.* at 675.

n75 See, e.g., *Richards of Rockford, Inc. v. Pacific Gas and Elec. Co.*, 71 F.R.D. 388 (N.D. Cal. 1976) (where researcher's interests outweighed plaintiff's need for data at trial); *Dow Chem. Co. v. Allen*, 672 F.2d 1262 (7th Cir. 1982) (where early disclosure could hurt opportunities to publish and diminished professional opportunities could be a factor in deciding whether to uphold subpoena for data); *Andrews v. Eli Lilly & Co.*, 97 F.R.D. 494, 500 (N.D. Ill. 1983) (where the court noted that "there is undoubtedly a compelling interest in promoting research"); *In Re Reynolds Tobacco Co.*, 518 N.Y.S.2d 729 (N.Y. Sup. Ct. 1987) (where concepts of academic freedom and scholar's interest in his research are factors to be considered in quashing subpoenas); *Mount Sinai Sch. of Med. v. American Tobacco Co.*, 880 F.2d 1520 (2d Cir. 1989) (where a research scholar's privilege not to reveal research data was a subject of discussion for the court).

n76 *Weinstein v. University of Ill.*, 811 F.2d 1091, 1095 (7th Cir. 1987).

n77 Pat K. Chew, Faculty-Generated Inventions: Who Owns the Golden Egg?, 1992 *Wis. L. Rev.* 259, 285 (1992).

n78 289 U.S. 178 (1933), amended by 289 U.S. 706 (1933).

n79 Chew, *supra* note 77, at 271.

n80 *Pelletier v. Agouron Pharm., Inc.*, Super. Ct. No. 677772, Slip op. at 9 (Cal. Ct. App., 4th Dist., Div. 1, Feb. 14, 1997).

n81 *Id.* at 7. The court relied principally on *Dubilier*, 289 U.S. 178 (1933) and *Williams v. Weisser*, 78 Cal. Rptr. 542, 163 U.S.P.Q. (BNA) 42 (Cal. Ct. App., 2d Dist. 1969) in reaching its decision, as well as on *Zahler v. Columbia Pictures Corp.*, 4 Cal. Rptr. 612, 125 U.S.P.Q. (BNA) 462 (Cal. Ct. App., 2d Dist. 1960) (articulating the hired to invent principle). Of note, the Pelletier court was not deciding the issue of the copyrightability of research, Pelletier, Super. Ct. No. 677772 at 6.

n82 Dreyfuss, *supra* note 16, at 602.

n83 *Williams*, 78 Cal. Rptr. at 547, 163 U.S.P.Q. at 45.

n84 See *supra* text accompanying note 35.

n85 Dreyfuss, *supra* note 16, at 600.

n86 Tammy L. Lewis & Lisa A. Vincler, *Storming the Ivory Tower: The Competing Interests of the Public's Right to Know and Protecting the Integrity of University Research*, 20 J.C. & U.L. 417, 440 (1994) (citing Fritz Machlup, *On Some Misconceptions Concerning Academic Freedom*, in *Academic Freedom and Tenure A Handbook of the American Association of University Professors* 177, app. B at 178 (Louis Toughin ed. 1967)).

n87 Lewis & Vincler, *supra* note 86, at 440.

n88 Rebecca S. Eisenberg, *Proprietary Rights and the Norms of Science in Biotechnology Research*, 97 *Yale L.J.* 177, 182-183 (1987) (quoting R. Merton, *The Normative Structure of Science*, in *The Sociology of Science* 228-53, at 267 (1973)).

n89 Lewis & Vincler, *supra* note 86, at 441, (citing Michael D. Davidson, *First Amendment Protection for Biomedical Research*, 19 *Ariz. L. Rev.* 893, 909 (1977)); John A. Robertson, *The Scientist's Right to Research: A Constitutional Analysis*, 51 *S. Cal. L. Rev.* 1203, 1218 (1977).

n90 354 U.S. 234 (1957).

n91 *Id.* at 250.

n92 *Id.* at 263 (Frankfurter, J. and Harlan, J., concurring) (citations omitted).

n93 385 U.S. 589 (1967).

n94 *Id.* at 603 (quoting *Shelton v. Tucker* 364 U.S. 479, 487 (1960)).

n95 438 U.S. 265 (1978).

n96 *Id.* at 312.

n97 672 F.2d 1262 (7th Cir. 1982).

n98 *Id.* at 1275 (quoting Thomas I. Emerson, *The System of Freedom of Expression* 594 (1970)).

n99 *Dow Chem. Co.*, 672 F.2d at 1275.

n100 *Id.*

n101 *Mount Sinai Sch. of Med. v. American Tobacco Co.*, 880 F.2d 1520, 1528 (2d Cir. 1989).

n102 *In re R.J. Reynolds Tobacco Co.*, 518 N.Y.S.2d 729, 734 (N.Y. Sup. Ct. 1987).

n103 97 F.R.D. 494 (N.D. Ill. 1983).

n104 *Id.* at 500.

n105 Lewis & Vincler, *supra* note 86 at 445.

n106 *Sweezy v. New Hampshire*, 354 U.S. 234 (1957).

n107 *Id.* at 261.

n108 *Hobbs v. United States*, 376 F.2d 488, 494, 153 U.S.P.Q. (BNA) 378, 383 (5th Cir. 1967).

n109 See *infra* text at 26-28.

n110 Angel & Tannenbaum, *supra* note 14, at 212.

n111 Simon, *supra* note 17, at 512.

n112 See generally Rome, *supra* note 18.

n113 Lape, *supra* note 66, at 265.

n114 Dreyfuss, *supra* note 16, at 605.

n115 *Id.*

n116 *Id.*

n117 *Id.*

n118 *Id.*

n119 See, e.g., *Dow Chem. Co. v. Allen*, 672 F.2d 1262, 1274 (7th Cir. 1982) ("there are hazards in relying on incomplete research"). The court further explained that "even inadvertent disclosure of the information would risk total destruction of months or years of research," *id.* at 1273. See also *supra* text 12-15, on academic freedom.

n120 Chew, *supra* note 77, at 305-306.

n121 *Id.* at 309.

n122 *Id.* at 310.

n123 *Id.* One final interest addressed in the commentary is that lack of ownership of research has contributed to the flight of faculty to industry. See generally Lape, *supra* note 66, and Simon, *supra* note 17.

n124 Lape, *supra* note 66, at 261.

n125 *Id.*

n126 Angel & Tannenbaum, *supra* note 14, at 212.

n127 *Id.*

n128 Lewis & Vincler, *supra* note 86, at 445.

n129 Robert A. Gorman, Copyright Protection for the Collection and Representation of Facts, 76 *Harv. L. Rev.* 1569, 1571 (1963).

n130 *Pelletier v. Agouron Pharm., Inc.*, Super. Ct. No. 677772, Slip op. at 7 (Cal. Ct. App., 4th Dist., Div. 1, Feb. 14, 1997).

n131 *366 F.2d 303*, 150 *U.S.P.Q. (BNA) 715* (2d Cir. 1966).

n132 *Id. at 311*, 150 *U.S.P.Q. at 722*.

n133 *Id. at 310*, 150 *U.S.P.Q. at 721*.

n134 *Id.*

n135 *Id. at 310*, 150 *U.S.P.Q. at 722*, (citing *Huie v. National Broad. Co.*, 184 *F. Supp. 198*, 200, 125 *U.S.P.Q. (BNA) 266*, 227 (S.D.N.Y. 1960)).

n136 *Rosemont*, 366 *F.2d at 310*, 150 *U.S.P.Q. at 722*.

n137 *Id. at 307*, 150 *U.S.P.Q. at 719*, (citing *Berlin v. E.C. Publications, Inc.*, 329 *F.2d 541*, 544, 141 *U.S.P.Q. (BNA) 1*, 3 (2d Cir. 1964)).

n138 Pub. L. No. 94-553, 107, 90 Stat. 2451, 2456 (1976) (codified at 17 *U.S.C. 107* (1994)).

n139 *618 F.2d 972*, 205 *U.S.P.Q. (BNA) 681* (2d Cir. 1980).

n140 *Id. at 980*, 205 *U.S.P.Q. at 687*.

n141 *Id. at 979-80*, 205 *U.S.P.Q. at 687*.

n142 *Id. at 980*, 205 *U.S.P.Q. at 687* (citing *Rosemont*, 366 *F.2d at 310*, 150 *U.S.P.Q. at 721-722*).

n143 *Hoehling*, 618 *F.2d at 980*, 205 *U.S.P.Q. at 687*.

n144 *650 F.2d 1365*, 212 *U.S.P.Q. (BNA) 345* (5th Cir. 1981).

n145 *Id. at 1372*, 212 *U.S.P.Q. at 350*.

n146 *Id. at 1370-72*, 212 *U.S.P.Q. at 349-350*.

n147 *499 U.S. 340*, 18 *U.S.P.Q.2d (BNA) 1275* (1991).

n148 *181 F.2d 664*, 85 *U.S.P.Q. (BNA) 339* (7th Cir. 1950).

n149 *558 F.2d 91*, 194 *U.S.P.Q. (BNA) 401* (2d Cir. 1977).

n150 *Toksvig*, 181 *F.2d at 667*, 85 *U.S.P.Q. at 341*.

n151 *Gorman*, *supra* note 129, at 1584.

n152 *Wainwright*, 558 *F.2d at 96*, 194 *U.S.P.Q. at 404*.

n153 *Feist*, 499 *U.S. at 363*, 18 *U.S.P.Q.2d at 1285*.

n154 *Hoehling v. Universal City Studios, Inc.* 618 *F.2d 972*, 978, 205 *U.S.P.Q. (BNA) 681*, 685 (2d Cir. 1980).

n155 *Wainwright*, 558 *F.2d at 95-96*, 194 *U.S.P.Q. at 404*.

n156 *Chew*, *supra* note 77, at 309.

n157 Richard H. Jones, *Is There a Property Interest in Scientific Research Data?*, 1 *High Tech. L.J.* 447, 455 (1986).

n158 Tim Suich, Note, Copyright Law - Will the Denial of Copyright to an Author's Research Impede Scholarship? *Miller v. Universal City Studios, Inc.*, 5 *W. New Eng. L. Rev.* 103, 124 (1982).

n159 See generally Jones, *supra* note 157.

n160 Pub. L. No. 94-553, 101, 90 Stat. 2541, 2542 (1976) (codified at 17 *U.S.C.* 101 (1994)).

n161 See *Miller v. Universal City Studios, Inc.* 650 *F.2d* 1365, 1369, 212 *U.S.P.Q. (BNA)* 345, 349 (5th Cir. 1981) for a complete listing for the cases.

n162 H.R. Rep No. 94-1476, at 57 (1976), reprinted in 1976 *U.S.C.C.A.N.* 5659, 5670.

n163 *Feist Publications, Inc. v. Rural Tel. Serv. Co.* 499 *U.S.* 340, 359-360, 18 *U.S.P.Q.2d (BNA)* 1275, 1283 (1991).

n164 See *Miller*, 650 *F.2d* at 1370, 212 *U.S.P.Q.* at 349.

n165 See Jones, *supra* note 157 and accompanying text.

n166 Jones, *supra* note 157, at 461.

n167 *Id.* at 456.

n168 *Id.*

n169 Gorman, *supra* note 129, at 1571.

n170 *International News Serv. v. Associated Press*, 248 *U.S.* 215, 241 (1918).

n171 *Id.* at 242.

n172 *Id.* at 239.

n173 *Id.* at 238.

n174 *Id.* at 242.

n175 Keeton et al., *supra* note 4, 130, at 1015.

n176 *Vargas v. Esquire, Inc.*, 164 *F.2d* 522, 526, 75 *U.S.P.Q. (BNA)* 304, 307 (7th Cir. 1947). See also Dreyfuss, *supra* note 16, at 637 n.168.

n177 Edwin K. Sato, Note, Copyright Law and Factual Works - Is Research Protected? - *Miller v. Universal City Studios, Inc.*, 58 *Wash. L. Rev.* 619, 630 (1983).

n178 Gorman, *supra* note 129, at 1582.

n179 *Id.*

n180 Pub. L. No. 94-553, 90 Stat. 2541, 2572 (codified at 17 *U.S.C.* 301(a) (1994)).

n181 Jones, *supra* note 157, at 481.

n182 Lanham Trademark Act, Pub. L. No. 79-489, ch. 540, 60 Stat. 427 (1946) (codified at 15 *U.S.C.* 1125 (1994)).

n183 See generally Eisenberg, *supra* note 88, and the Patent Act, 35 *U.S.C.* 102 (1994).

n184 35 *U.S.C.* 102.

n185 Eisenberg, *supra* note 88, at 190.

n186 *Id.* at 191.

n187 Keeton et al., *supra* note 4, 130, at 1022.

n188 Eisenberg, *supra* note 88, at 194.

n189 Unif. Trade Secrets Act 1, 14 *U.L.A.* 388 (1990).

n190 *Forest Labs., Inc. v. Formulations, Inc.*, 299 *F.Supp.* 202, 205, 161 *U.S.P.Q.* (BNA) 622, 624 (*E.D. Wis.* 1969) (quoting Restatement of Torts, 757, comment (b) (1939)) *aff'd* in part, *rev'd* in part 452 *F.2d* 621, 171 *U.S.P.Q.* (BNA) 731 (7th Cir. 1971).

n191 See *supra* text accompanying note 114.

n192 See Sato, *supra* note 177.

n193 *Miller v. Universal City Studios, Inc.*, 650 *F.2d* 1365, 212 *U.S.P.Q.* (BNA) 345 (5th Cir. 1981); see *supra* note 144 and accompanying text.

n194 See Sato, *supra* note 177, at 627.

n195 *Id.* at 628.

n196 See *Phinney v. Verbrugge*, 564 *N.W.2d* 532 (*Mich. Ct. App.* 1997).

n197 *Id.* at 527.

n198 *Id.* at 525.

n199 Pub. L. No. 100-667, Title I, 102 Stat. 3935 (1988) (codified at 15 *U.S.C.* 1051-1128 (1994)).

n200 Paul Goldstein, *Copyright, Patent, Trademark and Related State Doctrines* at 221 (4th ed. 1997).

n201 15 *U.S.C.* 1051(b) (1994).

n202 This is the conclusion of *Richard Jones*, *supra* note 157, at 461, and is implicit in the *Miller* court's reasoning, *Miller v. Universal City Studios, Inc.* 650 *F.2d* 1365, 212 *U.S.P.Q.* (BNA) 345 (5th Cir. 1981).

n203 U.S. Const. art. I, 8, cl. 8.

n204 Fishbein, *supra* note 35, at 130.

n205 *Id.*