

Copyright and Cartographic Multimedia

Maps are just one of many resources used in multimedia by cartographers. Increasingly complex copyright issues are developing around single media and their compilation in multimedia productions. This paper describes US copyright law and practices as they apply to multimedia works. The paper is directed to cartographers working in multimedia, and therefore, cuts a narrow path through the vast array of issues and information on this subject. It introduces legitimate ways to use copyrighted resources, as well as the process of copyrighting one's own work and includes recognition of ambiguities inherent in copyright law applied to any creative work.

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Multimedia is "the combined use of various media such as text, graphics, photos, video and sound in computer presentation and/or stand alone application" (Andrews and Tilton 1993, 349). Conventional copyright practices pertaining to standard media, including maps, apply to multimedia because multimedia involves the combined use of conventional media, albeit in wide variety and great volume.

Multimedia has been used by cartographers as a vehicle for visualization of environmental problems such as urban air pollution (Koussoulakou 1994); as a research tool/archive of historical American Indian maps (Andrews 1994); and in the classroom for geography education (Krygier et al. 1995). It has also been used as a tool for representing a geographic region as in *ExplOregon* (Loy and Searl 1995) and to facilitate collaboration in public land-use meetings for "what-if" scenarios (Shiffer 1993). Cartographers have also made multimedia map contributions to commercial products such as multimedia encyclopedias (see DiBiase 1994).

Cartographers developing multimedia work need some understanding of copyright issues. The issues discussed in this paper are organized into four sections: an introduction to copyright law; information for copyright compliance; new copyright issues as highlighted by ambiguities inherent in new expressions of creativity, i.e., multimedia works, and questions of copyright relevance. Readers should note that the information presented here pertains to United States copyright laws only and that there is considerable international variation in copyright practices and laws.

US copyright law first was enacted in 1790 under authority granted in Article I of the Constitution. The first version of copyright law applied to printed matter—books, maps, and charts. Elaborations on copyright have entered the law books at an increasing pace over time as attempts are made to account for emerging tangible forms of expression beyond

INTRODUCTION

COPYRIGHT LAW, TERMS, AND PRACTICES¹

1. Information about copyright compliance including topical circulars and forms is available from the Copyright Office on the World Wide Web at <http://lcweb.loc.gov/copyright/>. A web site that provides links to federal government information resources, including the Library of Congress, and also provides links to directories of intellectual property attorneys is <http://www1.backboard.com/legal.html>. [Http://www.ilt.columbia.edu/projects/copyright/index.html](http://www.ilt.columbia.edu/projects/copyright/index.html) includes links to Lexis/Nexis and Westlaw on-line services. Topics at the site are still under development, but promise to incorporate multimedia examples. [Http://www.benedict.com](http://www.benedict.com), "The Copyright Website," covers copyright thoroughly, and includes as one topic, "Bleeding Edge: Internet Issues."

Selected Changes in Copyright Law

- 1831 Music added to protected works
- 1865 Photographs added to protected works
- 1870 Registration centralized in the Library of Congress
- 1909 General revision of the copyright law, including coverage of some unpublished works
- 1912 Motion pictures, previously registered as photographs, added as a separate class of protected works
- 1947 Copyright law entered as US Code Title 17
- 1953 Recording and performing rights extended to nondramatic literary works
- 1972 Limited copyright protection extended to sound recordings
- 1976 General revision of the copyright law. Revisions effective in 1978. This Act attempted to cover ongoing technology developments
- 1988 Law explicitly includes idea from the courts (begun in the 1950s) that copyright pertains to expression of ideas, not ideas themselves
- 1980s Escalating number of amendments and revisions to copyright law, dealing with issues including piracy and counterfeiting, rent and lease of sound recordings, TV and satellite transmission
- 1992 The *Audio Home Recording Act of 1992* exempts video and audio recording for private use from copyright infringement

Figure 1: *Selected Changes in Copyright Law* (Library of Congress 1977, 1993a).

printed matter. A selected series of changes in the law, recognizing emerging forms of creative works relevant to multimedia production as content, is shown in Figure 1. The formalization in copyright law often lags behind artistic practice. Photography, for example, was invented in the 1820s, was in commercial use by about 1840, but wasn't incorporated in copyright law until 1865.

Copyright is the exclusive right to publish, reproduce and distribute copies, prepare derivatives, perform or display publicly, sell or license, control or disseminate a literary or artistic work (Figure 2). Copyright applies to the expression or representation of an idea, not the idea itself. A patent is granted for an invention or discovery of a new and useful process or machine, and pertains to a device embodying a new idea (Black 1990; Mellinkoff 1992).² Copyright law, as opposed to patent law, applies to multimedia works since the components of a new work (text, graphics, photos, video, sound) are governed by copyright law, and since the kind of multimedia product under discussion here is an artifact of ideas suitable for publication rather than a device or process that would be patented.

In examining traditional cartographic interests, copyrights are more common than patents. A map produced by a non-government organization or individual is copyrighted under United States law.³ Some or all of the underlying information may be public, but the unique representation can be copyrighted. It should be noted that patents are not unrepresented in cartography—projections, because they are mathematical

2. Both copyrights and patents, plus trade secrets, are encompassed by intellectual property, "a catchall label for property that is recognized in works of the mind" (Mellinkoff 1992, 320–321).

3. Data and documents produced by the US Government are in the public domain and are not copyrightable.

designs are patented (Snyder 1993) and a patent was issued on Moellering and Kimerling's color slope-aspect display process applied to terrain modeling (Moellering and Kimerling 1990; Moellering and Kimerling 1994). Copyright, however, is the more prevalent issue.

Duration of copyright; ownership and transfer. The earliest copyright protection extended for 14 years with one 14-year renewal term. The duration of copyright has been revised numerous times and the term of a copyrighted work will vary depending on creation date, date first published, and/or date registered. Works created on or after January 1, 1978 are copyrighted from the time of creation through the life of the author plus 50 years. Whether registered formally or not, some copyright protection begins when a work is created in fixed form. The Copyright Office, part of the Library of Congress, registers claims to copyright, that is, makes them part of the public record. It does not "grant" or "issue" copyrights (Library of Congress 1992).

Initially, the author of a work holds the copyright. If the work is made by an employee, however, the employer owns the copyright (this differs for work performed by an independent contractor). In the academic venue, this may mean that the academic institution has rights to the work. If a publisher serves as intermediary to the marketplace, the author may be required to assign copyright to the publisher. Ownership of the copyright is separate from ownership of the material object (Brinson and Radcliffe 1994).

Public access. User rights are expressed in the law as limitations on the authors' rights. One example of user rights expressly allowed in the law is loan of copyrighted work for nonprofit purposes (Library of Congress 1993a).

A major hedge designed in the law to benefit the public is the doctrine of fair use. *Fair use* means that the work or copies of work can be used "for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research" (*Copyrights*, 17 USCS §107 [1994]). Legitimate fair use is dependent on particular circumstances of an instance of use. Stowe (1995) argues that fair use rights are being eroded, and that academics should be principled yet aggressive in their exercise of fair use rights.

§ 102. Subject matter of copyright: In general

(a) Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include the following categories:

- (1) literary works;
- (2) musical works, including any accompanying words;
- (3) dramatic works, including any accompanying music;
- (4) pantomimes and choreographic works;
- (5) pictorial, graphic, and sculptural works;
- (6) motion pictures and other audiovisual works;
- (7) sound recordings; and
- (8) architectural works.

(b) In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

§ 103. Subject matter of copyright: Compilations and derivative works

a) The subject matter of copyright as specified by section 102 includes compilations and derivative works, but protection for a work employing preexisting material in which copyright subsists does not extend to any part of the work in which such material has been used unlawfully.

(b) The copyright in a compilation or derivative work extends only to the material contributed by the author of such work, as distinguished from the preexisting material employed in the work, and does not imply any exclusive right in the preexisting material. The copyright in such work is independent of, and does not affect or enlarge the scope, duration, ownership, or subsistence of, any copyright protection in the preexisting material.

An author's rights are protected even without visible notification on the work, but an obvious claim of authorship makes for a stronger claim in court.

COPYRIGHT LAW APPLIED TO MULTIMEDIA

Fair use is a fluid mix of the copyright owner's legal rights and economic interests (would the new use adversely affect the copyright holder's market?), the nature of the new use, and the relative amount of original work proposed for new use (there is no allowable smallest unit of copyright-free borrowing). Note, also, that *fair use* is not necessarily *free use*.

Author control; copyright registration process. Copyright law provides several benefits to an author. The registration process enables others to locate a copyright holder. The law also establishes author rights in the courts. The Copyright Office facilitates registration so that it is easier for others to locate authors and obtain permissions for use, but it is the courts that provide author protection.

An author's rights are protected even without visible notification on the work,⁴ but an obvious claim of authorship makes for a stronger claim in court. Claims may be substantiated with visible notification and without formal registration but are more substantial if the work is registered with the Copyright Office. Registration is required before a claim can be filed in court (Brinson and Radcliffe 1994).

Copyright registration requires submitting a fee, registration form, and depository copies of the work. The registration fee currently is \$20. Significantly more onerous than the fee is ascertaining, for mixed media creations, what portion of the work (and in what media) will be submitted as the depository copy.

Registering a multimedia work. The primary format of the multimedia work (such as a print, audiovisual product, phonorecord, or machine-readable copy) dictates the form of registration. One registration covers all copyrightable elements of a multimedia work so long as the person claiming copyright is the same for each element (Library of Congress 1992).

The last major revision to copyright law was written to accommodate future forms of creative products. The Copyright Office, however, currently cannot examine materials on all kinds of digital media. If the work is on CD-ROM it is submittable in that form. It is possible to submit work on videotape, supplemented by hard copy (Vankevich 1995). The prevailing stance is that the multimedia work must be converted into a "kit" of conventional components—scripts, outlines, photos, hard copy text, audiotape or audiodisk, and printed copy of computer-program source code. This would include components that have non-copyrightable parts such as materials obtained in the public domain or copyrighted materials used by permission. Where the work encompasses change—a part of work where the next displays are dependent on user action—a sample illustrative sequence of stills is submitted. One complete multimedia kit is deposited (Library of Congress 1992; Vankevich 1995). For example, a short multimedia work including a modest assembly of media would be prepared for copyright registration as follows:

- ◆ *Background texture that is original art, used throughout the presentation* – submit color hard copy
- ◆ *Original text* – submit printed copy of each frame
- ◆ *Maps based on US Bureau of the Census and Department of Agriculture data* – include in registration kit, but explain on the registration form the source of the base map, and that the base data is in the public domain

- ◆ *Photos with implicit copyright, used with photographer's permission, combined in displays with original art and text* – include full image, explain on the registration form that photos are pre-existing material for which the author is not claiming copyright
- ◆ *Short routine written in Macromedia Director's scripting language, Lingo, to capture user comments input as text* – send printout of Lingo script

Some suggestions that could ease compliance with copyright registration of a multimedia work are provided below.

Source materials. From the outset in designing and assembling a multimedia work, if others' copyrighted material is included in the work, the author should keep source records. If the status of work under development changes from private to commercial, or the work is distributed (published according to the Copyright Office),⁵ the author will need to review previously-obtained copyright permissions. Allowable uses and fees change as the work changes from private to commercial distribution. Clip art (commercially-available collections of graphic components intended for re-use), for instance, may include tiered permissions: the purchase price of a clip-art CD-ROM may grant personal use but use for distribution or profit as part of a multimedia work will require additional licensing and payment.

Maps as creative content. Maps and charts were awarded early coverage under US copyright law. Still, ambiguities persist, as sparsely evidenced in the cartography literature concerned with copyright issues. Cerny (1978) argued that US courts did not provide enough copyright protection to maps. By viewing maps as mere compilations of data from multiple sources, rather than appreciating the selection, generalization, and other cartographic transformations that add up to the look of a map, the courts confused original information with original expression of that information, the latter the proper object of copyright protection. Robinson et al. (1995, 444) indicate that the courts have come around to Cerny's point of view, such that copyright now applies to most maps and they instruct students about obtaining permission to reproduce other's "pictorial graphic expressions" or "selection, coordination, or arrangement" of facts. Andrews (McHaffie, Andrews, and Dobson 1990, 9) prescribes that "Cartography instructors should . . . take the responsibility of teaching their students about the ethical issues involving map copyright."⁶ Dobson, in the same article, diagnoses copyright as "the single greatest ethical problem" in the cartography industry, where commercial cartographers are victims of copyright infringement (McHaffie, Andrews, and Dobson 1990, 5).

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4. The usual notification is ©, date, and author name.

5. The Copyright Office defines publication very broadly, as offering copies by sale, rental, lease, or lending, where the intent is to further distribute, publicly perform, or publicly display the work (Library of Congress 1993a). Handing out one or two copies can constitute publication, unless the author makes it clear to the recipients that further distribution is not allowed (Strong 1993).

6. *Cartographic Perspectives* in 1990 reflected a flurry of interest in copyright. In addition to McHaffie, Andrews, and Dobson (1990), Gersmehl (1990) included copyright and clearance in a glossary of map-animation terms, and Loy (1990-91) indicated how copyright issues can be handled with clients of a cartography lab.

Maps are like other creative content because what is copyrighted is the graphic representation and not the underlying information.

Maps are like other creative content because what is copyrighted is the graphic representation and not the underlying information. Maps are different than other creative content because even a copyrighted map is compiled, at least in part, from maps or data in the public domain. A new, copyrightable map can be compiled from several different sources, applying creativity in generalization and symbolization (Monmonier 1993). Compilation of maps on CD-ROM and the Internet are subject to the same copyright issues as printed maps, although the issues are greatly exacerbated by the ease of copying when in digital form. Like printed maps, such sources are likely to be a mix of public information and creative re-expression of the non-copyrightable sources.

Other creative content. Each of the contributing media industries—publishing, photography, movies, music—has their own established copyright procedures for controlling use of creative products. A media-specific clearing house acts as advocate for content producers, collects revenue for each use, and attempts to limit the number and use of copies. For example, the music industry has service agreements managed by Broadcast Music Inc. (BMI) and the American Society of Composers, Authors, and Publishers (ASCAP) that limit where and how music will be performed.⁷ Obtaining rights to all source materials on a media-by-media basis requires knowledge of a variety of these industry-specific procedures.

Alternatives more congenial to the multimedia authors are appearing. Some clearing houses now represent work from many media. Stock-film and stock-photo agencies, which in the past had standard use fees, now may charge fees on a variable scale, taking into account the relative role of any single component in a multimedia work.

Aids to ease copyright compliance, particularly for digital resources, are being developed. "Publishers Depot" is an on-line service with a searchable database of images. Once an image is selected, rights can be acquired on-line and publication-quality digital images downloaded over the Internet. "NetRights" provides the means through software for customers to preview source materials, track sources, obtain rights, and properly attribute source materials (Weiss 1995; Picture Network International Ltd. 1996; NetRights 1996).

An alternative to the pursuit of permissions to use copyrighted materials is to use public-domain materials. The author needs, however, to be confident about the legitimacy of source materials. Implied consent cannot be assumed simply because the copyright notice is absent. If one is unsure of the status of materials in traditional media they should consult the *Catalog of Copyright Entries* (Library of Congress 1906-); or the Copyright Office will perform a search of its records at \$20 per hour. Whether materials are or are not in the public domain remains a sensitive issue for material obtained from the Internet.

Another alternative to obtaining permissions is affordable replacement, which means creating original material that makes an impression like a similar, copyrighted source. With caution, ideas may be borrowed; the artifact not the idea is copyrighted.

Some material is free for use because it is not copyrightable. Material not subject to copyright includes words and short phrases, blank forms,

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7. Permission to perform is not the same as permission for use in multimedia work. For that, another kind of license is needed, obtained from other sources (see Brinson and Radcliffe 1994; Weiss 1995).

and works consisting entirely of information that is common property. Names of products, slogans,⁸ titles of works, and pseudonyms are examples of words and short phrases that cannot be copyrighted. Bank checks and scorecards are examples of blank forms. Calendars, schedules of events, and tables taken from public documents or other common sources are examples of common-property information (Library of Congress 1993b, 1994).

Unresolved single-media copyright issues carry over to multimedia. For example, easy electronic copying of sound and graphic media came about with widespread use of cassette tape recorders and photocopiers respectively, well in advance of multimedia. In the cartography literature Davies (1982) expressed concern with who can and will control reproduction of copyrighted maps in an era of easy copying. More generally, in the latest extension of easy electronic copying, it has been succinctly noted that "The Internet is the world's biggest copy machine" (Peters 1995, 59).

New copyright issues accrue as well in multimedia production. First, the variety of materials employed define multimedia. The sheer volume of material needed for an effective multimedia presentation can consume time and money in obtaining permissions to the extent that it is dourly predicted, ". . . the success or failure of multimedia may be driven less by technology than by the economics of authoring" (Adam 1993, 31).⁹ A second new copyright issue, and one more distinctly associated with multimedia, is its reliance on interaction—ability to be changed—for its claim to effectiveness. Together, variety and changeability can make copyright registration and protection of a multimedia work problematic.

Copyright and change—multiple meanings. Change challenges copyright law interpretation. Current copyright law attempts to account for change that occurs at a point in time between two fixed, definable states. In one meaning, change may shift the fixed form of information from the public domain to the private sector and to copyrighted status.¹⁰ This happened in the case of satellite imagery when the Landsat program shifted from government to private management in 1985. Another kind of public-to-private shift is illustrated with Bureau of the Census TIGER files: they remain in the public domain, but are obtained at little cost, enhanced, copyrighted, and sold as a value-added product by commercial entities.¹¹ Even a representative of a private-sector venture that produces such value-added products, however, is hard pressed to define where public data ends and *value-added* begins. A fairly clear instance of value-added product is the combination of two public-domain data sets, e.g., census boundaries and zip codes. The result may be copyrighted. Less clear is application of expertise to simply translate government data into a more palatable form, perhaps by geographic or thematic segmentation, or otherwise making parts of the data set more user-friendly without further enhancement (Jeppesen 1995).

UNRESOLVED ISSUES OF COPYRIGHT AND MULTIMEDIA

Together, variety and changeability can make copyright registration and protection of a multimedia work problematic.

8. Some product names, mottoes, or slogans may be registered as trademarks and subject to trademark laws, which protect an owner's right to use a character in connection with goods or services. If another use does not cause confusion among consumers, the trademark may be usable—but dilution laws may, then, provide protection (Brinson and Radcliffe 1994).

9. A CD-ROM project with some 500 items to clear may cost \$200,000 to \$275,000 (Weiss 1995).

10. We also can theorize a change from private copyright to public domain—upon expiration of a copyright—but with the term of copyright on a newly-created work lasting about 75 years, this theorizing is not very helpful in legitimately obtaining resources for use in multimedia work.

11. While such enhanced data are readily available from libraries, the scope and cost of legitimate re-use beyond fair use is unresolved. Explicit permission from the vendor for use of such materials in a published or commercial work is suggested (Lamont 1995).

The fixed state is, however, problematic with interactive multimedia designed to change with each use.

In another meaning of change, consider the case of substantial alteration of existing work. If a copyrighted work is altered substantially, the user may not be infringing on the original author's rights. A key to copyright infringement is whether the original work is recognizable. Like fair use, this is laden with circumstantial considerations.

Change and multimedia. The examples above are variants on change that already have precedent in copyright history. A third meaning of change, and a significant copyright issue for multimedia, is how the law can accommodate interactive capability and the results of interaction, that is, change to the multimedia work itself. Copyright currently pertains to a work in fixed form. A work can be registered for copyright only when in tangible, fixed form. The fixed state is, however, problematic with interactive multimedia designed to change with each use. The copyright office advises the author to refile the copyright when he or she has changed the work "enough." With multimedia, when is a change enough?

The latest (1992) version of Copyright Office Circular 55, *Copyright Registration for Multimedia Works*, lists ten hypothetical multimedia products and suggested depository materials. Only one of the examples includes interactive capability (more typical examples of multimedia deposits are slides-plus-booklet, or manuals-plus-identifying material for a computer program). A key element of multimedia, however, is that the user interacts with, and changes, the information and form of presentation. The current official approach to this changeable nature of multimedia is to declare that multimedia works are like video games, whose "fixed" nature has already been settled in court (Information Infrastructure Task Force 1995).

Within the definition of copyright, an author holds the right to prepare derivatives of his or her original work. If user-induced change is one of the author's design goals, where does the author's right to the benefit from derivatives intersect with a user's right to claim creation of a new work based on substantive change to the author's work?

RELEVANCE OF COPYRIGHT

Some copyright topics can be discussed with relative certainty—as in the case of copyright practices that have accrued around conventional media. Ambiguities become apparent, however, even in copyright basics, and they are intensified when considering copyright for multimedia. The current broad debate questions whether copyright law is even relevant anymore.

Opinions expressed cover the gamut of positions on whether current copyright law is sufficient as is, needs reinterpretation, needs to be completely rewritten, or is completely hopeless in meeting the needs of multimedia authors (Samuelson 1994). The conservative economic view of copyright law is that the law is necessary to promote the dissemination of creative work. The recent report from the President's Information Infrastructure Task Force (IITF) Working Group on Intellectual Property Rights says that without legal protection intellectual property owners will not make their works available to the public. Legal protection of intellectual property owners is necessary for "customers" (the public) to benefit from new technology. The Working Group advocates clarification and adaptation of existing law. For instance, the term "copies," explicitly defined in current copyright law, should be retained but simply be more broadly defined to include electronic transmissions (IITF 1995). At the other extreme to the IITF's conventional, institutional approach is Barlow (1994), who believes that copyright law is useless and that the market alone will protect—read economically reward—authors.

Samuelson (1995, 17) notes that "copyright is a social construct . . . that should be tailored to achieve the purposes we have for it." Rights protected by copyright law cover economic gain or loss, but also have a moral component. It may be true that "laws ratify already-developed social consensus" (Barlow 1994, 88). Indeed, this seems to be borne out by the example of private taping of music and movies. Daly (1990) noted the ubiquitous occurrence of home taping in 1990. Today such copying often is legal under the *Audio Home Recording Act of 1992* (17 USCS §1001 [1994]).¹²

Does the author desire copyright protection? Desirable is a personal philosophy that embraces both an economic and moral stance. Economic gain is not a big impetus in academic work. As Samuelson (1995, 110) expresses it, "Most authors of scholarly materials want the 'mind-share' arising from free access to their work." An author may choose to distribute copies of his or her own work freely or parsimoniously. The ethical issue arises, however, when distributed work includes the work of others—text, graphics, photos, video, or sound included in the multimedia compilation.

To reiterate the economic/moral duality of copyright compliance, note that, while it takes time and money to legitimately obtain copyrighted material for multimedia use, current social mores tacitly allow copyright infringement, so speedy and cheap resources are at hand for many uses, including multimedia. The multimedia author chooses whether to comply with copyright laws in an attempt to respect other authors and to secure ownership for their own product, or to use and distribute work freely regardless of explicit or implicit ownership. Ultimately, we as authors decide a comfort level in using what is available and in the extent to which we disseminate our own work.

The value of copyright may be expressed either as protection accrued to a copyright owner, or as the ready availability of creative sources to a wide audience. It may be perceived as protecting—or curbing—economic and ethical rights to creative work. Authors and artists working in conventional media are confronted by these dualities of copyright law. In multimedia (by definition a form of publication that is varied in resources and is resource-intensive), single-media copyright issues are already compounded. Copyright issues will increase in complexity and ambiguity as experience, imagination, and technology allow authors to exploit fully the capabilities of multimedia for interaction and change.

By no means is the information presented in this paper to be construed as legal advice;¹³ rather, it is offered because cartographers should understand copyright law and practices as a base for choosing a reasonable level of risk when assembling creative resources for a multimedia work. Familiarity with the law also allows the author to choose the level of control over distribution of his or her own work. Further, such awareness allows cartographers to take a position in the broad copyright debates.

CONCLUSION

Copyright issues will increase in complexity and ambiguity as experience, imagination, and technology allow authors to exploit fully the capabilities of multimedia for interaction and change.

12. The home-videotaping decision is based on copying for noncommercial, time-shifting purposes, so doesn't extend to use in multimedia work (Brinson and Radcliffe 1994).

13. The author, a Ph.D. candidate in geography with academic aspirations, notes that intellectual property lawyer currently is one of the topten career fields, while college professor is one of the ten "career fields to dump" (Kelly 1996, A1).

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