

**Intellectual
Property for
Physicists**

or

“I found it on the Internet and I can use it, right?”

Celia M. Elliott
University of Illinois
cmelliot@illinois.edu

© 2023 The Board of Trustees of the University of Illinois
All rights reserved.

Today, we’ll talk about the various legal protections for intellectual property, in particular your obligations in regard to copyright law.

Scientists must understand the distinction between copyright infringement, which violates the law, and plagiarism, which violates professional ethics.

Disclaimer: I cannot provide definitive answers to intellectual-property questions—that far outstrips my expertise. My purpose today is to make you aware of the issues so that you will know to seek help from legal experts when you need it.

As we speak, Georgia State University (GSU) is being hauled into court again (for the third time) by several major academic publishers (Cambridge, Oxford, and Sage) over the extent to which copyrighted materials were uploaded and distributed via GSU’s electronic reserve system. (Cambridge University Press et al. v. Patton et al.) The publishers alleged that GSU, which hosted more than 6700 separate copyrighted works for more than 600 classes, committed direct copyright infringement and asked for draconian penalties. In a lengthy (>350 pages), complicated decision in May 2012 yes, **11 years ago**), the courts ruled mainly for GSU. The plaintiffs promptly appealed, and the case is now dragging through the appellate courts. The cost in legal fees to all parties is staggering. (q.v. <http://libguides.law.gsu.edu/gsucopyrightcase>).

First, understand the law

Under US law, “intellectual property” is a work or invention that is produced from human intelligence and creativity

US law protects the owner of intellectual property in the same way it protects the owner of any other form of property

- **A property owner has the right to control and profit from the use of his or her property**
- **No one can take your property without lawfully buying it or by “due process” (court action)**

2

In US law, intellectual property is considered the same as any other form of property. No entity can take an owner’s property without lawfully buying it (and paying the price the owner agrees to) or by “due process,” whereby a court orders the property to be transferred from the owner to another party (including a government entity).

What is protected by law is the property owner’s right to control the property and profit from its use.

Intellectual property comprises two separate kinds of rights—industrial property rights (patents, trademarks, service marks) and copyright (works of authorship).

First, understand the law

Copyright © protects original works of
“authorship” or “expression”

Trademark™ ® or (**service markSM**) protects
words, phrases, symbols, or designs that
identify the *source* of goods or services

Patent protects ideas, discoveries, devices,
processes, and methods that are *new, useful,*
and *not obvious*

**TIP: Case law establishes ownership rights to intellectual
property and provides remedies to those whose property is taken
without their consent, even if they do not suffer monetary loss.**

3

Copyright protects “works of authorship,” which include any form of artistic or creative expression of ideas, once it is “fixed in tangible form.”

Trade and service marks protect the words, phrases, symbols, or designs that identify the source of goods or services and distinguish them from another entity’s goods or services.

Patents protect inventions—any device, method, composition, or process made by a human being, provided it is *new, useful,* and *not obvious*.

Today, we are going to look specifically at copyrights.

What is the difference between copyright infringement and plagiarism?

Short answer: **\$\$\$\$**

Copyright infringement—an author's work is reused or republished without permission of the copyright holder, regardless of attribution

Plagiarism—an author's work is presented as someone else's original work or reused without attribution

TIP: Copyright infringement is illegal; plagiarism is unethical. Both are career suicide.

4

Proper credit of the source is not sufficient to avoid charges of copyright infringement; explicit permission must be granted by the owner of the copyright to reuse copyrighted material.

Copyright holders may also require payment of a fee to reuse copyrighted materials.

Copyright law for printed materials is well established—electronic and digital is evolving

Copyright owner has the *exclusive* right to reproduce, distribute, sell, or *adapt* a work

Once a work is “committed to form,” a copyright exists in favor of the author—no “registration” by a govt agency is required for a copyright to exist

Scientists transfer copyright to the publisher when a journal article is printed

Mere ownership of a book, painting, image, or recording does not give the possessor copyright (thus it may not be reproduced, distributed, or adapted without permission)

5

Once the narrative is written down, the painting is painted, the camera shutter snaps, the saxophone plays—a copyright of those words or images or sounds exists in favor of the creator. Intellectual property does not have to be “registered” with any government agency for a copyright to exist.

Creators *may* register their copyrights with the U.S. Copyright Agency (<http://copyright.gov>), but such registration is voluntary. However, if you wish to enforce a copyright in a court of law, you must register the copyright with the US federal government.

When a journal publishes a scientific article, the author(s) assign their rights to the publisher. Thus, an author may not reproduce even his or her own published work without explicit permission of the publisher.

Q. What is protected by copyright?

A. “expression”

- **Written material, published or unpublished**
- **Artwork, photographs, illustrations**
- **Charts, tables, graphs**
- **Music and musical performances**
- **Performance art (e.g., dance, drama, improv)**
- **Computer software, including screen shots**
- **Reproductions of brand-name goods**
- **Logos (including govt and n-f-p logos)**

TIP: Assume that anything that is printed on paper, shows up on your monitor, or is played on some kind of instrument or electronic device is copyrighted.

6

Virtually any intellectual expression is subject to copyright law and may not be used, reproduced, altered, or distributed without the copyright holder’s permission.

Who owns a copyright?

The author or creator

Those to whom the author transfers copyright

Those deriving their rights through the author

An employer or sponsor

**A work specially ordered or commissioned
("work for hire")**

**Authors of a joint work are co-owners of the
copyright, unless an agreement was made to
the contrary**

***TIP: The UI owns all intellectual property created by any
University employee in the performance of his or her duties or
created by anyone, including students and others, using
University facilities, equipment, or funds***

7

Under US law, intellectual property created by an employee is owned by the employer.

The University of Illinois grants some limited exceptions to the *General Rules*:

1. Copyrights in traditional academic works, such as scholarly publications or course notes. "Copyrights in traditional academic works made by initiative and for traditional academic purposes are owned by the authors. Examples include manuscripts, curriculum, books, lectures, and teaching materials for faculty, as well as class notes, reports, papers, and theses for students."
2. Copyright ownership and invention ownership may be different. While the authors own the copyright in a manuscript or paper describing an invention, the University owns the underlying invention or software described in the paper.
3. The University owns all original records of research, including laboratory notebooks.

Q. What is the “public domain”?

A. Works that are not restricted by copyright and do not require a license, fee, or permission to use

Works for which the copyright has expired

Works that have been assigned to the public domain by their creators (usually software or images)

Things that were never eligible for copyright

8

After a copyright, trademark or service mark, or patent expires, ownership of the intellectual property passes to the “public domain” in US law and is no longer subject to private ownership. Thus, you may reprint Newton’s original works in their entirety, *verbatim*, and sell them or perform Mozart’s *Eine kleine Nachtmusik* from the original score and charge admission, without violating copyright.

However, reproducing somebody else’s version of *The Principia*, which modernized Newton’s 18th-century spelling and added useful illustrations, or performing a later composer’s arrangement of Mozart, may indeed be an infringement of copyright.

The term of a US copyright is the author’s life plus 70 years, unless extended.

For corporate works, anonymous works, or works for hire, the term of copyright is 95 years from the date of publication or 120 years from the date of creation, whichever expires first.

Where can I find public domain works?

Internet Archive (millions of free books, movies, software, music, websites, and other media)

<https://archive.org/>

Project Gutenberg (>53 000 free ebooks)

<http://www.gutenberg.org/>

Smithsonian Institution Public Domain Pages

<https://www.flickr.com/photos/Smithsonian>

New York Times Public Domain Images

https://commons.wikimedia.org/wiki/Category:Public_Domain_Images_from_the_New_York_Times

Project LibriVox (free audiobooks)

<https://librivox.org/>

9

Some things cannot be copyrighted

Titles, names, short phrases, slogans

Familiar symbols or designs

**Ideas, procedures, methods, systems, concepts, principles, discoveries—
*as distinguished from a description, explanation, or illustration of same***

Works consisting entirely of information that is common property and containing no original authorship

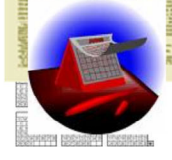
Public domain materials

All official U.S. government publications

Materials for which copyright has expired



superconductivity



10

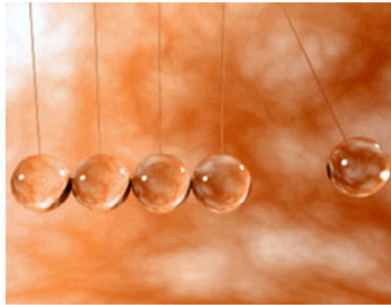
Ideas, procedures, methods, concepts, and processes are protected by **patent**. As in copyright, items protected by patent may not be reproduced, disseminated, or adapted without permission from the patent holder. Same goes for trademarks and service marks.

Most materials appearing in US government publications or on government websites (URLs ending in .gov or .mil) are assumed to be in the public domain and thus not subject to copyright. However, individual images might be copyrighted by the artist or photographer and should not be used without permission.

Companies are particularly sensitive about the unauthorized use of their service marks or trademarks. Just because they put it on their website for the world to see does NOT mean that you can grab it and put it on something of yours.

When in doubt, **ask permission**.

What if I change it?



original artwork



my adaptation

Copyright owner has *exclusive* right to reproduce, distribute, sell, or adapt a work

TIP: My adaptation would be copyright infringement.

11

Copyright not only protects the original form of the property, it also restricts *to the copyright owner* the right to adapt the work.

How do I obtain permission to use copyrighted material?

Send a written request to the *publisher* of the material you wish to use

Identify the material you wish to republish

Answer the following questions:

- Format for the republished material (e.g., print, online, *thesis*)
- How much of the article will be republished
- The title of the proposed new article and name of the publication
- The name of the new publisher
- Whether a fee will be charged for the new pub

Request permission early and expect delays

12

It is a courtesy to inform the author that you plan to use his work, but you **must** get formal permission from the copyright holder, who is unlikely to be the original author, for published work.

The questions to be answered are for APS journals; other journals may have different requirements. Check a copy of the journal for instructions for “permissions.”

Some journals may ask you to estimate the circulation figures for the new publication (how many people are expected to receive it).

Once permission is granted, the publisher will send you a letter specifying all guidelines and regulations with which the new publication must comply. You will also be told of any fee that is required and where and how to remit it.

More information about copyright for APS journals:

<http://journals.aps.org/copyrightFAQ.html>.

Giving credit

Whether or not permission is needed for its use, acknowledge all material taken from other sources

The copyright owner may specify the form or location of the credit line

Indicate that the material is being used with permission

**From Brown, *The Best Book in the World*, 4th ed.
Copyright © 2010 Atlantic Monthly Press. Reprinted
by permission of Atlantic Monthly Press.**

13

What about redistributing copyrighted materials?

The APS journals now allow the *author* of a paper to post it on his/her website, *provided*

- the paper is not modified from the printed version
- the original publication is cited
- a fee is not charged

Redistributing copies of other people's papers is copyright infringement

Most other journals do not allow any form of redistribution of their copyrighted articles

14

Whether or not a person *profits* from the distribution of copyrighted material is not the issue; giving away copyrighted material is still an infringement of copyright.

“Intent to infringe is not needed to find copyright infringement. Intent or knowledge is not an element of infringement, and thus even an innocent infringer is liable for infringement; rather innocence is significant to a trial court when it fixes statutory damages, which is a remedy equitable in nature.” (Northern Florida District Court of Appeals)

What about “fair use”?

Section 107 of the US Code lists various purposes for which reproduction and distribution of copyrighted work is “fair”

- criticism or comment
- news reporting
- teaching
- scholarship
- research

Fair use allows limited use of copyrighted material without obtaining permission

What you think *sounds* fair may not be “fair use” according to the law

15

The term “fair use” originated in US jurisprudence. While many other countries recognize similar exceptions to copyright protection, only the United States and Israel fully recognize the concept of fair use.

Under US law, copyrighted material *may* be reproduced or distributed without penalty solely for the purpose of educating or informing.

What you think sounds “fair” may in fact not be fair under the legal definition. Reason and logic are often poor predictors of whether or not you’ll get sued.

Section 107 sets out four factors to be considered to determine “fair use”

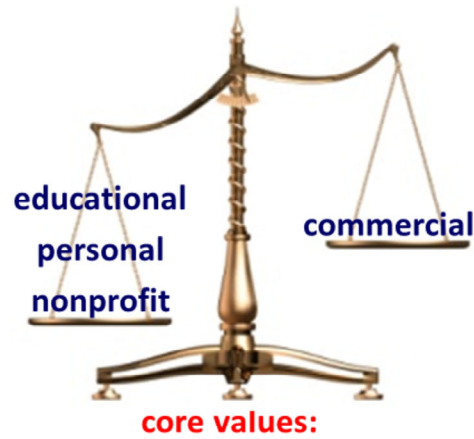
- 1. the purpose and character of the use, including whether it is for commercial or nonprofit educational uses**
- 2. the nature of the copyrighted work**
- 3. the amount and substantiality of the portion used in relation to the whole**
- 4. the effect of the use on the potential market for or value of the copyrighted work**

TIP: The only way to determine definitively if something is “fair use” is if a federal judge says so

16

A judge is tasked with considering these four factors, in this order, in determining whether a copyright has been infringed.

#1—What is the purpose and character of the use?



criticism, commentary, news reporting,
parody or satire, “transformative” factor
(scholarship, research, education)

} most
highly
protected

17

Uses on the left tip the balance in favor of fair use. Examples of fair use include scholarly activities (commentary, criticism, research, teaching, library archiving) and news reporting.

Uses on the right tip the balance in favor of the copyright owner, i.e., requiring permission for use.

“Core values” (center list) are those most highly protected by the courts and are thus weighted in favor of fair use, even if the copyrighted material is being used for commercial purposes.

“Transformative” use addresses the issue of whether a copyrighted work has been fundamentally changed from the original by adding new meaning or expression. (*Salinger v. Colting*, 641 F. Supp. 2d 250 (S.D. N.Y. 2009)).

A good explanation of the four-factor fair use test may be found at <http://fairuse.stanford.edu/overview/fair-use/four-factors/>.

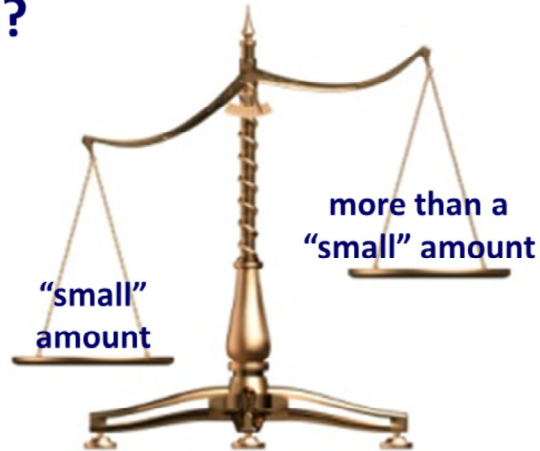
#2—What is the nature of the work being used?



18

Uses on the left tip the balance in favor of fair use.
Uses on the right tip the balance toward requiring permission.
Center factors don't have much effect.

#3—How much of the work will be used?



If Factors #1 and #2 tipped the balance more toward fair use, more of the work may be used

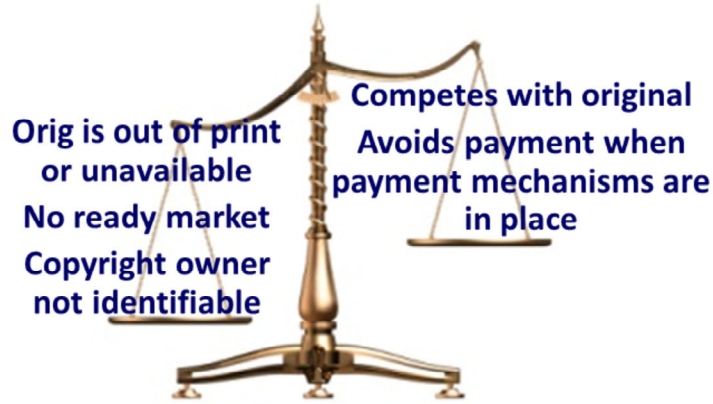
19

Unfortunately, “small” is not defined quantitatively, and “more” of a work (which is also not defined quantitatively) may be used if the first two factors tip toward fair use.

Another consideration is the ratio of used material to the whole. In general, copying 200 words out of 15,000 is more likely to tip toward fair use than copying 50 words out of 250.

#4—What is the effect of this use on the potential market for the material?

After 1, 2, & 3, proposed use is tipping toward fair use



If the use were widespread, *and the use were not fair*, would the copyright owner be losing money?

20

If the copyright holder can establish that it has been financially harmed, or if the use undermines a new or potential market for the copyrighted work, the balance tips away from fair use.

Test your knowledge:

- F** 1. Any use that seems fair must be fair
- F** 2. Acknowledging the source means it's not copyright infringement
- F** 3. The material was never published, so it's not copyright infringement
- F** 4. As long as I don't personally profit, I can give away copyrighted material
- F** 5. It's okay to reproduce up to 300 words, provided I cite the source
- F** 6. The lack of a copyright notice (©) means the work is in the public domain

21

1. As in many other things, logic and reason are not 100-percent congruent with the law. The concept of "fair use" has a specific legal meaning in US jurisprudence that may not conform to what *you* think is fair.
2. Acknowledgment protects you from being accused of plagiarism, not copyright infringement. To avoid copyright infringement, you must receive specific permission from the copyright holder to use the material.
3. As soon as a work is "fixed in form," a copyright exists on behalf of the author. Publication is not required for copyright to exist and be enforceable. Even unpublished works are protected by copyright.
4. If you allow the public to obtain at no cost copyrighted material that would otherwise be sold, even if you don't personally profit from your generosity, you have still harmed the copyright holder's ability to control his/her expression and profit from ownership and have thus infringed copyright.
5. The 300-word rule was an informal arrangement among some New York publishing houses, dating back to the 19th century. It has long been obsolete under US copyright law.
6. The mere creation of a work establishes copyright over it. There is no legal requirement to register or declare copyright for copyright to exist in favor of the author or artist. United States law in effect since March 1, 1989, has made copyright the default for newly created works, and the use of a copyright notice is no longer required under US law.

Some final advice from the US Copyright Office:

**The distinction between “fair use” and
infringement may be unclear and not easily
defined**

**No specific number of words, lines, images or
notes may safely be taken without permission**

**Acknowledging the source of the copyrighted
material does not substitute for obtaining
permission (or keep you out of court—*cme*)**

<http://www.copyright.gov/help/faq/>

22

Other useful resources:

From the United States Copyright Office:

<http://www.copyright.gov/help/faq/>

“Copyright Basics” (U.S. Copyright Office):

<http://copyright.gov/circs/circ01.pdf>

Some final advice from Celia:

Don't use other people's stuff without permission—ever

For illustrations, make your own figures, use images that are in the public domain, or buy images that are royalty-free (e.g., www.istockphoto.com)

Don't stick things up on the Web indiscriminately—doing so is considered “publication” or “distribution” and may constitute copyright infringement



cmelliot@illinois.edu

<http://physics.illinois.edu/people/Celia/>

23

NOTES: