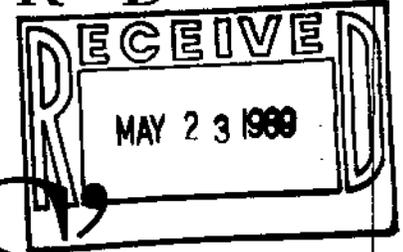


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# T H E E L E C T R O N I C L U M B E R Y A R D AND BUILDERS RIGHTS



## TECHNOLOGY, COPYRIGHTS, PATENTS, AND ACADEME

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Expressed ideas are the two-by-fours and nails of the information age. Useful pieces of intelligence, whether a paragraph from an online scholarly journal, two seconds of television, the recording of a spoken sentence, or a handy sub-routine in Cobol are taken from the electronic lumberyard and assembled into other information products. This reprocessed information takes the form of computer programs, databases, electronic mail, and word-processed articles like this one. The new products serve science, government, business, and education.

Builders pay the real lumberyard only what it costs to induce sawmills to make two-by-fours and foundries to make nails. After the suppliers' costs are paid for, builders can turn the materials into anything they want. But those of us who want to make something out of expressed information must pay not only what it takes to induce its creation but whatever greater price is demanded by the holder of a copyright monopoly. We are frustrated by the chore of identifying the Paul Bunyans and village blacksmiths who "own" the original work from which

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The legal system of copyright may have worked tolerably well in the era of print. But, as we will see, in order to take advantage of electronic technology, society needs less encumbered and cheaper access to expressed ideas. If we applied our outdated copyright rules to the real lumberyard, no house would get built. In the information age, economic success will go to those nations that best succeed in promoting creativity without inhibiting the incorporation of expressed ideas into other products.

**T**hose of us in universities must help devise the new ways to encourage the creation and use of ideas. We are greatly affected by the laws of intellectual property because information is what universities create, store, and distribute. Also, we know how to promote creativity without requiring user charges; one model for reform might be the system by which scholars who create basic truths are recognized and supported. And it is our duty to place the goals of society before private, commercial goals. We could bring the public interest into the discussion of what the new system of intellectual property rights should be.

Or, at least, that is what university faculty and administrators might do. But are we now, instead, promoting business interests rather than social interests? Society now needs to design afresh a system of rights and duties that would assure that electronic technology does not inhibit, but enhances the opportunity for expression and the freedom to use ideas. But instead of devoting time and resources to this task, we seem to be expending effort to cash in on the intellectual property we claim to own.

#### Creation and Use

The balance between the costs of creation and the price of use: Patent and copyright laws have the social purpose of balancing incentives for creativity with dissemination of intellectual creations.

For most kinds of property, the balance between creation and use is

achieved not by legislated laws, but by the laws of economics. The free market assures that a user will pay a price that covers the producer's costs, but no more. If a producer were to charge more, a competitor would enter the market and sell the same thing for less. So, under competitive conditions, if a product is worth more to a purchaser than its price, that extra value is passed along. Society as a whole benefits; consumers get a bargain and goods win world markets.

Intellectual products, however, have special characteristics that have justified legislative intervention in the market. For without government protection, there might not be anything for the intellectual producer to sell. When an idea became known, it could be freely used; when an idea was expressed, that expression could be freely copied. So the law turns intellectual products into property—the expressions of ideas are made property by copyright law, and certain ideas themselves are made property by patent law. And once there is intellectual property, users and copiers can be charged fees.

A second reason for the law to confer special rights to intellectual property—and a reason for letting the creator charge more than the direct cost of coming up with an intellectual product—is to permit creators to recover some of the cost of struggling with other ideas or expressions that died aborning. If the law is well designed, the returns on the monopolies granted for successful intellectual products should, at the margin, equal—but not exceed—the incentives it takes to induce both the successful and the unsuccessful creative efforts taken together.

The goal of this legislative balancing act is explicitly recognized in the language with which the Constitution empowers Congress "to promote the progress of science and the useful arts, by securing for limited times for authors and inventors the exclusive right to their respective writings and discoveries."

But while the purpose of the law is to create the balance dictated by sound economics, the copyright law itself does not speak in those terms. Instead, the copyright legislation of today carries forward a concept that preceded the Constitution, a concept derived from

## Are Plato and the Parthenon Copyrighted?

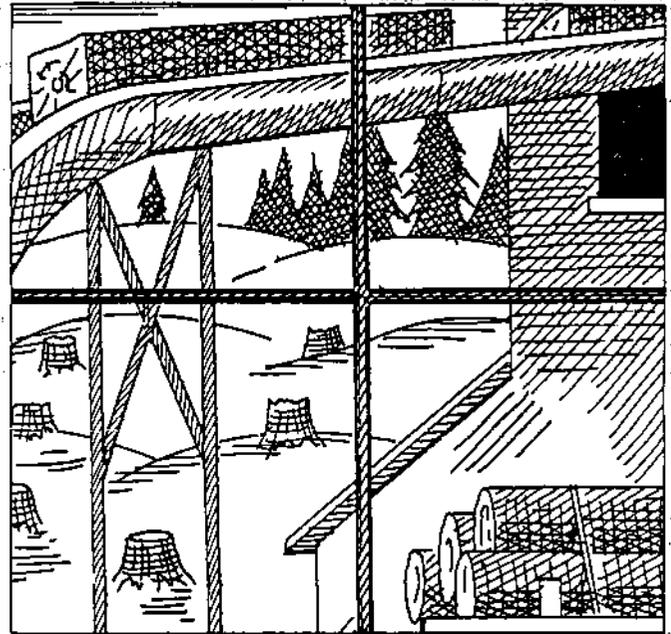
Over a period of 10 years, the University of California at Irvine, with support from the National Endowment for the Humanities and others, transcribed onto a single optical computer disk almost all the preserved written works of ancient Greece in Greek. Included was everything written before A.D. 600 that consisted of a sentence or more. The corpus, called the *Thesaurus Linguae Graecae* (TLG) contained 60 million words, or 60 times as much as Shakespeare wrote. With the help of a disc player and a personal computer, the TLG disc can be searched from the desk of a scholar.

While the ancient Greek texts themselves are, of course, not protected by copyright, the modern versions that reflect years of scholarly editing are. (That is, if they were published since about the turn of the century.) The University of California wrote the publishers of the editions being copied onto the disc, informing them of the TLG project and its scholarly purpose. No copyright consent was sought, and none was obtained. And so far, there have been no complaints.

Just three years ago, the Perseus Project, rooted in Harvard and Boston Universities, with the help of the Annenberg/CPB project, began to build another large database about ancient Greece—this one to include both texts and images. This multi-media material would use computer power to permit quick cross-referencing and would be designed for scholarship and teaching.

The developers and funders felt that the ultimate wide distribution of the Perseus materials could not be based on materials for which there was uncertain copyright permission. So, the same classical works were once again keyed into digital form. And mostly older editions were used, on which copyright had expired, making them in the public domain.

The Loeb Library, a part of Harvard University, holds copyright to editions of many of the Greek texts. Royalties from the sales of Loeb classics help fund graduate students in classics at Harvard. Should Harvard charge for the inclusion of Loeb works in Perseus? Would inclusion in Perseus be a valuable way of distributing knowledge



that would cost the university only its forgone monopoly profits?

Meanwhile, the visual side of the Perseus project was also facing copyright problems as it contemplated the task of placing images on a videodisc, ultimately some tens of thousands of them—pictures of sculpture, architecture, vases, maps, satellite Landsat images, etc. Again, the ultimate objects that represented the knowledge sought to be captured

were not protected by intellectual property rights, but rights to the photographs of those objects were held by museums, government agencies, publishers, and individual photographers all over the world. The first question asked by a museum when its image was sought to be reproduced during the prototype period of Perseus development was, how much does the Fogg Museum at Harvard charge?

—Francis Dummer Fisher

the days when the sovereign wanted to censor the expression of ideas. That concept is the restriction of copying. Judges are not directed by the copyright law to ascertain how much money is needed to induce creation. Instead, they are asked whether a particular action constitutes substantial copying.

Creators and users actively litigate the meanings of "copy," "expression," and "idea" as though the terms were rooted in principle. They are not. Yet, from a haphazard series of cases involving the making of copies—and without confronting directly the issue of needed incentives—courts produced, almost as a by-product of their decisions, a market response that gave to creators an amount of funds that seemed about

right. ("About right" meaning that as a society we felt we were promoting adequate production and distribution of ideas.)

Even judicial interpretation of "fair use," a limited exception to copyrights permitting scholarly use, classroom distribution, and quotation in reviews, has been *ad hoc*. Courts have mostly not judged "fair use" with the broad balance of creativity and dissemination in mind, although an argument for their doing so has recently been elaborated (William W. Fisher III, "Reconstructing the Fair Use Doctrine," 101 *Harvard Law Review* 1661, June, 1988).

Our intellectual property law's focus on copying makes it easy for owners of intellectual property to forget the under-

lying rationale for their rights. Owners tend to shift the purpose of intellectual property laws, from incentives for creativity to protection of their property rights. For instance, the American Copyright Council, an industry group of copyright owners, states as one of its tenets:

Any exception to the rights of copyright owners must not conflict with, impair, or inhibit incentives for the creation and distribution of copyrighted works or their actual or potential markets.

The emphasis is mine; the confusion is the council's. For there is no economic justification for maximizing monopoly rights, nor for receiving any more money than what it takes to promote the creation and distribution of the in-

Intellectual property society wants to have. To base the royalty for copyrights on what the market will bear, or on the "rights" of owners, reveals circular reasoning. The market and the rights derive from the copyright.

The confusion is dramatic when owners of copyright or patents speak of huge "losses" represented by payments which, but for illicit use, might have been exacted under their monopolies, even if the amount sought is much greater than what is needed to fire the engine of creation. Of course, if the intellectual property law is taken as given, these are real losses, but they provide no guide in setting the rights that the law should confer.

### Upsetting the Balance

There are four ways the new technology upsets the balance of the old law and lets creators extract more value from users.

Because copyright law attempts to give rise to the economically appropriate incentive *indirectly*, by protecting against unlicensed copying, the reasonableness of the law depends on the technology by which copies are made. Our law is based on the printing press, although ingenious construction of "copying" by courts, and *ad hoc* amendments by Congress, have struggled to adjust the law to cover phonograph, radio, cinema, television, ballet, and the Xerox machine.

But, as we will see in the sections that follow, the radical shift in the way information is now handled by computers, videodiscs, holography, and other electronic devices stretches the law beyond its elastic limit:

- The free use of ideas, independent of the form in which they are expressed, is permitted by law, but it is harder to separate them out from electronic expressions than from print.

- When you want to re-use an electronic expression you own, you tend to have to copy it.

- Information has greater utility in electronic form than in print, and it is put to more purposes in the information age than in the age of the book.

- Electronic technology facilitates the re-use of bits and pieces of data in ways original creators never contemplated.

Let us examine more closely these ways the new technologies, under existing law, extend creators' control. The result may be to return to creators more money than needed to maintain a desirable level of creation and to burden unnecessarily the flow of information and ideas.

1) Ideas, formerly usable without payment, are increasingly included within "expressions."

One way the copyright law up to now has sought to balance the interests of society between creation and distribution of intellectual property is to grant creators rights to the way ideas are expressed, while permitting others the free use of the ideas themselves. An author of a cookbook can obtain rights to the way a recipe for angelfood cake is expressed, but the rest of us can freely use the author's idea of how to bake such a cake. (Certain ideas, if useful, can become the property of their inventors, if the ideas are incorporated into a tangible object and are also novel. Rights to such ideas are granted as patents and endure for much shorter periods of time than the duration of copyright—17 years compared to 75 years or more. If you were the first person to think of using egg whites as a cake base, you might get a patent on the puffing process. You could probably get a patent on an altogether new type of angelfood cake pan, if it worked. The negative proof—that no one has previously thought up your idea—is hard, and it can take years to process an application for a patent. While many of the points in this paper apply to both patents and copyrights, the focus is on the latter.)

In today's electronic world, more and more expressions have value not so much because of the exact form of their expression, but because of the content message that is being expressed. Yet in the new media, the boundary between idea and expression is fuzzy; it is harder than before to extract the ideas for free use.

Take computer software. The concept of  $2 + 2 = 4$  is not only an expression, it is also an idea. While we do not know who first expressed it, we all use it freely. The algorithms of computer programs are similar, although more complicated, idea-laden mathematical

truths. Creators claim rights to them as expressions, saying, "You are free, of course, to use the underlying idea if you can do so without using the expression, but you will find that hard to do, and, if you use the expression, you must pay for our permission."

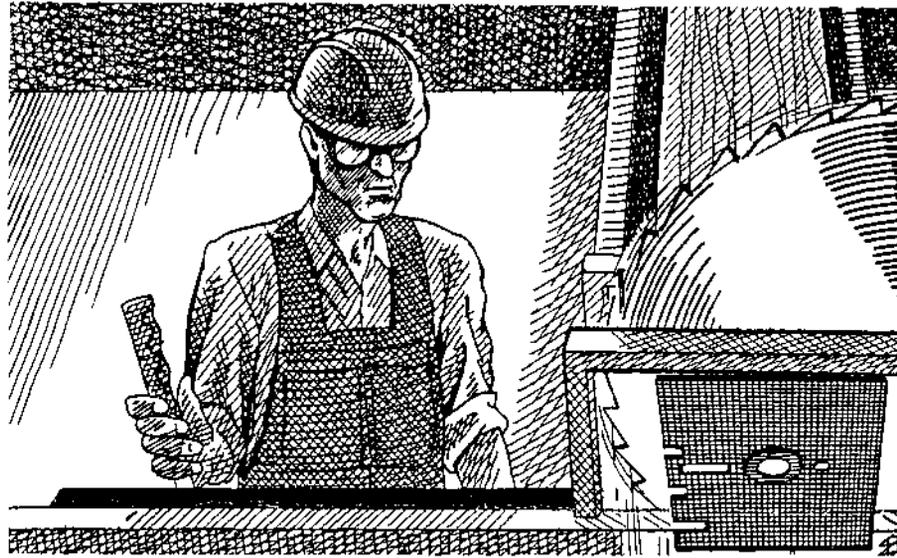
Courts once permitted the free copying of an expression if that was the only way the underlying idea could be used. But the Apple Computer company has successfully blocked the use of the idea of how its central operating system works even though the Franklin Computer company pointed out how stilted any attempt would be to express the idea in other algorithms.

Today, innovators are claiming copyright monopolies on the form of a spreadsheet, on the division of the computer screen into several "windows," on "pull-down menus"—in each case, hanging their claims on the "look and feel" of the way the ideas are expressed, but, in fact, controlling the dissemination of the underlying ideas. And, perniciously, some of these ideas are also being claimed as patents. If patents are granted, they will completely bar the free use of the ideas, even if someone else thought them up independently and expressed them differently!

Ideas and expressions tend to merge more completely in images than in writings. The idea that the sun rises can easily be separated out from the poignant expressions Shakespeare puts in the mouth of Romeo as he tells Juliet he must be on his way to Padua. Not that we would turn to *Romeo and Juliet* for ideas about astronomy; the play's value clearly lies in expression.

But suppose you want to include in a database on Athens something that gives an accurate idea of what the Parthenon looks like today. You do not care which specific photograph is used, but you do not see how to make the idea of this unique and important structure available to others without using someone's expression of it.

The idea of clearing files from the Apple Macintosh Computer is associated with the trashcan icon into which they may be disposed. Apple Computer, Inc. claims copyright on the trashcan. But the image has become the idea, in the sense that a different image intro-



duced in another program would raise the question of whether some different computer action were intended.

The merger of ideas into images preceded, of course, the new technology. But the difficulty of separating out ideas embedded in images is more serious in today's world where so much information is represented in pictorial form. In the era of the eye, freedom to use the ideas of images is blocked by a law rooted in print.

2) It is now harder to use an expression without copying it.

The original balance between creation and distribution in the copyright law put no limit on either the use of the underlying idea, nor on the use of the copyrighted property itself—just so long as there was no copying. We could not only use the idea of the angelfood recipe to bake a cake, but the recipe itself could be used in the sense of being re-read, many times, by ourselves and by anyone else to whom we gave or sold our cookbook, without increasing the payments due the creator.

When the reading of a created work is undertaken electronically, as in the execution of a piece of software, or in bringing a piece of data to a computer screen, it is hard to say that the expression has not been "copied" in some way. Holders of copyrights are quick to point this out as they seek to extend property protection for activity for which no compensation was formerly due. Again, we are hung up on defining "copy" rather than arranging adequate incentives to creativity.

3) Technology permits new uses to which a whole work can be put.

In the information age, expressions have more value because they are more useful. Novels, movies, and phonograph records are aesthetic and entertaining; computer programs are critical to commerce.

*The New York Times* recently summarized how American companies were taking advantage of this new utilitarian value by dusting off old patents and copyrights and seeking to cash in on them. One computer lawyer was quoted as saying, "If you have good patents, litigation is a better way of making money than selling products" (July 3, 1988, Section III, p. 1).

Intellectual expressions, moreover, gain value not only because they are more utilitarian, but also because technology increases their modes of use. In electronic format, expressions are more easily stored and transferred than in print. For example, newspaper publishers have long cut up their papers and filed the clippings in "morgues" for in-house use. Now, when the corpus of old editions is stored electronically, 60 U.S. newspapers sell to outsiders electronic access, according to *Editor and Publisher* (Sept. 10, 1988). Such new ways of using information surely exceed what creators contemplated.

4) Bits and pieces—technology makes valuable the reassembling of parts of works in unexpected new ways.

The calculation implicit in the present law that the returns from copying

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intellectual property would suffice to encourage creativity assumed that sufficient revenue would come from payments made for copying an entire work, whether a book, a play, a song, a movie, or the like. To be sure, works that were derivative of protected works were also protected, but derivative works were generally adaptations of the entirety or a large portion of it. For instance, a translation into Swedish of *Peyton Place* would be protected by a copyright on the English version.

But now the new technology makes it much easier to use pieces of a work. It is easy to search an enormous database and locate the exact piece of information that could be usefully combined into a new product. The combining is made easier because the pieces of expressed ideas to be combined are already in the same electronic format as the new product. Indeed, as discussed later, the pieces may be used simply by being pointed at by the re-creator.

These new re-uses may bear little connection with the idea or expression conceived by the original creator. Someone might be compiling a database of thousands of images of neoclassical architecture and want to clip from the movie version of *Gone With the Wind* one frame showing the Tara mansion—a use of the book that was certainly not contemplated by Margaret Mitchell when she wondered whether it would be worth her time to write a novel. Nor was it within the scope of the possible derivative or residual uses of the film that MGM had in mind. But present law illogically requires copyright permission for such new and unanticipated derivative uses made possible by electronic technology.

Many computer software programs are similarly built up out of pieces of other programs. Whole systems of software, like Apple's Hypercard, are now designed to take advantage of incremental growth and multiple "authors."

Charges for the right to re-use bits and pieces of expressions in new and unanticipated combinations may not only be unnecessary to promote the original creation, but may also dampen re-creations for two additional reasons.

First, the owner of the rights to the expressed idea of which one piece is used tends to have in mind a level of charge

that relates to the original product and not to its use in combination with many others. A photographer may think of the value of copying one photograph in terms of its reproduction along with a few others in a magazine and expect to charge the going rate—a couple of hundred dollars. But if that photograph is to be stored on a video disc along with tens of thousands of others, and maybe never called to the screen, such a price for each photograph used would stifle the new product.

The second and, in some way, reverse problem, occurs when the new combination is more valuable than the sum of its parts. This provides the owners of the parts, if they are holders of copyright monopolies, an occasion to hold up the producer of the combined product by seeking a payment geared not to what would induce the original product, but rather to the value of the new combination. Permission to use a poem in an anthology works to the advantage of the poet whose poetry may thereby get a boost. But the bits and pieces of the new information for which permission needs to be obtained will bear little relationship to the original form of expressed idea, and originators will feel no comparable pressure to moderate monopolistic profits.

### Illicit Copying and Fair Use

While electronic technology helps increase payments to copyright holders, it may also reduce them by making it easier to make copies of expressed ideas without permission or payment. And some copyright holders lower prices to reduce the economic incentive to cheat. Whether the revenue lost through illicit copying today offsets the additional charges copyright holders can levy based on new uses seems doubtful, but the evidence is thin.

Many who are engaged in illicit copying feel certain they represent an "extra" use, one unrelated to the motivation that brought the intellectual property into being. *The New York Times* will continue to be published and supported by advertisers, I conclude even if I don't pay it for including a clipping in my textbook on American government.

The copyright law has responded in part to the new ease of copying and the popular attitude towards its legitimacy by expanding the "fair use" exemptions. Illicit copying and expanded fair use of copies, therefore, should be considered together as causing reductions in the payments otherwise due creators.

The following diagrams summarize the discussion so far, showing how charges are levied against those who copy and use intellectual property in order to produce the money needed to induce its creation.

The old balance, based on charges for copying, no charges for use and re-use of ideas:

See Diagram 1 below

The present balance, producing a flow of funds that includes not only charges for copying, but also charges based on new values and uses of information that were formerly free, and under conditions where illicit copying is easier and fair use is expanded:

See Diagram 2 below

If it were possible to compute for any work or class of work of intellectual property a net value to the users, we could, in theory, apply to that assessment a compensation rate designed to generate fairly and directly the needed

Diagram 1

$$\begin{array}{l} \$ \text{ needed as an} \\ \text{incentive for} \\ \text{creativity} \end{array} = \begin{array}{l} \$ \text{ charges} \\ \text{for} \end{array} \left\{ \begin{array}{l} \text{all} \\ \text{copies} \end{array} - \begin{array}{l} \text{illicit copies} \\ + \\ \text{fair use copies} \end{array} \right\}$$

Diagram 2

$$\begin{array}{l} \$ \text{ needed as an} \\ \text{incentive for} \\ \text{creativity} \end{array} = \begin{array}{l} \$ \text{ charges} \\ \text{for} \end{array} \left\{ \begin{array}{l} \text{all} \\ \text{copies} \end{array} + \begin{array}{l} \text{use of ideas,} \\ \text{re-use of copies,} \\ \text{new values of} \\ \text{information,} \\ \text{unanticipated} \\ \text{derivative uses} \end{array} - \begin{array}{l} \text{illicit copies} \\ + \\ \text{fair use copies} \end{array} \right\}$$

incentives for related creative effort, just as a tax rate is applied to real estate assessments to raise the money needed to meet the costs of municipal government.

Such a direct charge for use rather than copying has been worked out for the use of certain sorts of intellectual property. Payments are made to composers and lyricists when musical compositions are broadcast or played on juke boxes. Ted Nelson has suggested that such a system be applied to his prospective universal database of scholarly material, which he calls XANADU (Publications of Project XANADU, 8480 Fredericksburg #138, San Antonio, TX 78229).

But at least three problems probably make any such scheme of direct charges for use unworkable for most intellectual property.

**1) The transaction costs in accounting for use.**

First, most intellectual products come in varying sizes, not reduced so easily to such standard units of measurement as the playing of one LP record to an audience of *X* size. So, general rules of payment would not easily be worked out.

The setting of the value of use and the rate of charges on a case-by-case basis would be cumbersome and could not be left to bargaining between the user and the holder of a monopoly copyright. For the results of such bargaining would greatly favor the monopolist and would burden users more than is required to promote creativity.

On the other hand, to employ public assessors to make valuations of use and set charges would give rise to high and unproductive processing costs. It might not even be possible to determine either usage or parentage of rights as bits of expressions are reassembled into successive generations of products.

Indeed, tracking down the use of bits and pieces of intellectual expressions seems a little like trying to protect conversation. Today's technology would permit us to record all the phrases that pop out of our mouths. At the end of each day we could mail off a tape, or send it in digits over wires, to some central copyright office. Those who wanted to pass on to others what they had heard us say would either have to nego-

tiate permission and a royalty or pay a fee set according to some standard of value. Understandably, we cringe from the thought of such a system because we do not believe that creativity would be much advanced. And we know that applying legal rights to snippets of expressions would be a burdensome bother, whether those expressions are made in the course of oral or electronic conversation.

**2) The impossibility of policing the use of intellectual expressions.**

The second reason for doubting that a computer program, or any other system, could extract incentives from users of electronic data is a practical one. Many experts believe that no technology will be capable of preventing other technologies from gaining uncontrolled access to electronic information. The difficulties in policing the xeroxing of copies of printed material suggest the ease of access everyone will have when information is generally available in digital format. Digits ooze from their containers.

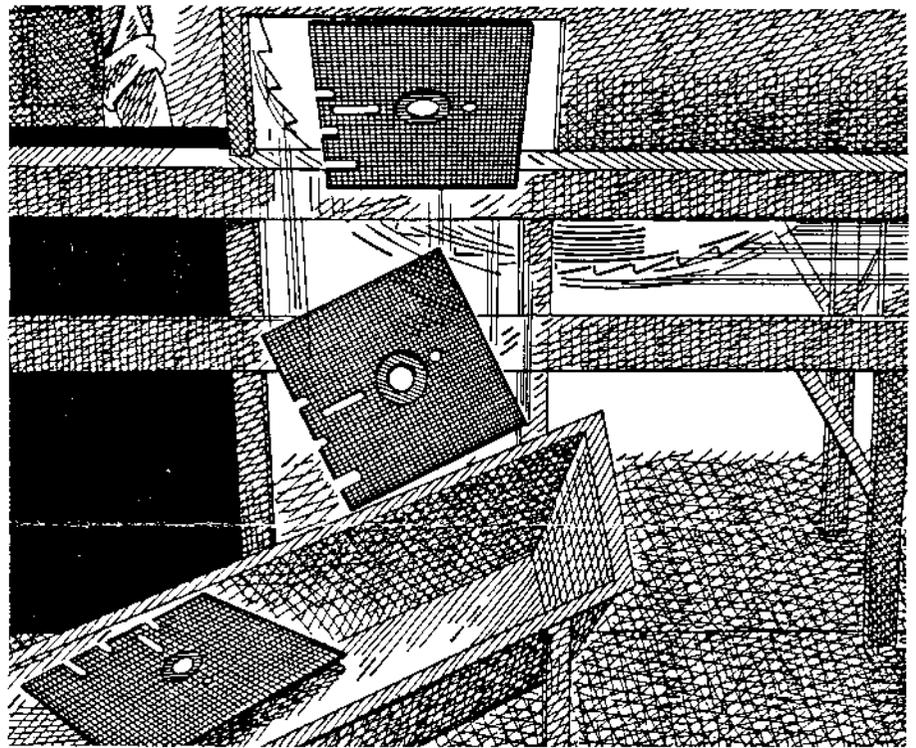
**3) Expression = access = use.**

Direct charges for using intellectual property may be cumbersome and can be evaded. But such a system of promoting creativity may be even more fundamentally flawed. To charge *use* in order to induce *creation* requires that there be a recognizable difference between the two activities. New technology, however, is breaking down that distinction. Before we know it, all intellectual expressions are going to be available to us in some form of a universally available body of knowledge. The same digits will be used for creation, storage, and use. As soon as an idea is expressed, it will be accessible to everyone, and that access will become the new meaning of "use." Knowledge will be shouted in a worldwide voice that will echo forever.

Suppose we are in the new information age and you are considering intellectual expressions in the universal database. You examine one idea and reject it. But you perceive an interesting and novel link between two other ideas. Maybe you leave a message for others so they can consider the relationship you have discovered. Or maybe the technology automatically tracks your path through

**T**o charge *use* in order to induce *creation* requires that there be a recognizable difference between the two activities. New technology, however, is breaking down that distinction.

**I**n the information age, it is likely that commercial interests will gain as much as higher education from a freer access to intellectual expressions and a robust nurturing of new ideas that is not linked to restrictions on their use.



the database and makes your discovered link apparent to everyone as a new piece of information.

In this little example, we could assert that no copies were made, any more than a copy is made of mount Fuji when you look at it. Did you *use* the rejected piece of information? The other two pieces? Was all the information in the database used because it was searched, even though it was not selected? When someone suggests to you that it liberates stereotypes to look at Mount Fuji through your legs, does the suggestion or the glance constitute a derivative use of Mount Fuji? The terminology of printing does not seem to work in an environment of ubiquitous information.

Soon, when images will generally be expressed in digital format, their realization can be considered either creation or consumption. There will be no such thing as a copy, for all viewing of the set of digits in the form of an image will share original quality. To see will be to have.

It will be a while before knowledge is universally accessible in digital form, but electronic databases are ever larger, and more and more tied together by networks. When an image is placed as one of 54,000 on the side of a single video-disc, it is there to be pointed at by a computer program and laser beam. OCLC

now contains more than 17 million bibliographic citations. The databases of the National Library of Medicine contain references to over 5.5 million articles; the text of the abstracts of these articles can also be searched. With the video cassette recording machines, television programs—as soon as they are broadcast—become available for free re-use by viewers. Major efforts are underway to widen the network connections to databases.

Viewing these developments, one thoughtful expert on intellectual property has suggested that charges for creation may be assessed only at the moment for first expression. He writes:

(It may be) that collecting residuals from intellectual work will only be economically practical if the work is continually revised . . . (For) works that never change, the electric publisher may be forced to find ways to collect the bulk of its income up front. If an electronic work has any permanent value, it will *de facto*—if not legally—rapidly enter the international public domain. (Richard Jay Solomon, "Computers & High Speed Telecommunications: The Old Copyright Rules May No Longer Apply to Intellectual Property," *International Networks*, February, 1984.)

#### Incentives to Create

So far, we have focused on the right-hand side of the intellectual property

equation that defines the charges levied on users. But the lefthand side, of course, is even more important; the entire purpose of the system of intellectual property rights is to provide what it takes to induce the creation and expression of ideas.

How much is that? Does the present level of charges cause creators to produce too much, too little, or, by chance, the exact amount of intellectual expression that is socially desirable?

Since knowing what amount of inducements it takes to cause creation is so important in establishing a system of intellectual property rights, one might think the subject would have been studied intensely. Yet, the crucial information about needed incentives—on which the whole system of intellectual property rights ought to rest—is mostly missing, and the few relevant statements from the copyright industry are suspect.

Of course, the needed incentive is different for different information products. Indeed, to the university world, the basic logic of cash incentives for intellectual expressions sounds bizarre. We note that society does not provide any royalties at all on those intellectual expressions that are the most important—basic scientific truths. Einstein received no rights to  $e = mc^2$ . Society has found that, for scholarly research, other inducements—including peer regard and self-motivation—seem to work. And we suspect that the same may be true for much artistic expression.

But in a few commercial industries, it is only the promise of cash return that motivates creativity. Pharmaceutical companies need to be paid to undertake repetitive dull research in the hope that one of the products that emerges will advance health and be profitable—if it can be protected. Moviemakers invest vast sums in producing films in the hope of returns that will be long in coming, and which seem only assured by copyright.

But the claimed need for copyright in the commercial world may be exaggerated. One of the few careful studies of copyright protection in a specific industry concluded that it did not appear that the authorship and publication of trade books would suffer if copyright were abolished (Stephen Breyer, "The Uneasy Case for Copyright," 84 *Harvard Law Review* 281, 1970). We are

struck by the number of computer programs that are contributed by their authors to the public domain, or released free in the form of "shareware" without copyright protection, but with the suggestion that voluntary payments to the originators are warmly received.

Will the new information products of the future more closely resemble drugs and movies or scientific truths? Will the creators we want to motivate more resemble workers in a pharmaceutical industry or professors at a university; movie moguls or computer hackers?

Perhaps in the days of electronic technology, our economic system of private property may not work to maximize the social values of expressed ideas. A socialist economic system may beat us in discovering how to appeal to non-monetary incentives for creation and thereby gain a fast and wide dissemination of useful ideas. The model we have adopted in the West for scholarship would be applied there to the information economy as a whole.

### An Agenda for Higher Education

Ten years ago, the problem of how new technologies should be handled by our intellectual property system was investigated by the National Commission on New Technological Uses of Copyrighted Works (CONTU). At that time, the American Council on Education had a major committee on copyright. Higher education's particular concern was the extent of fair use in the electronic age and the problem of illicit copying on campus.

After a two-year evaluation, CONTU concluded that the time was not ripe for charging forward with a new legislative-based rational system for promoting intellectual creativity. So it punted the problem back to the existing legal arrangements, telling Congress that the old law based on restricting copying could be stretched a bit further to cover electronic products. And Congress stretched. But CONTU recognized that it might be temporizing and urged repeated investigations—a suggestion that neither Congress nor the Copyright office has pursued.

Ten years represents several generations of electronic technology. Another review of our intellectual property system in light of the new technology is

badly needed. We need to weigh more precisely how new conditions burden the use of intellectual expressions. We need to examine whether copying as the point of control lacks force because of enforcement problems and the omnipresence of information without copying, or, alternatively, whether restraints on copying electronic information excessively restrict the transmission of ideas. We need to know what sort of creativity does not require incentive payments from users.

At the moment, the academy's focus is on other aspects of intellectual property and electronic technology: how to assess faculty when print publication is supplanted by the contribution of scholarly bits and pieces to a database; what to charge students when it is possible to deliver knowledge much less expensively and more rapidly in electronic forms; and, generally, how to use technology to promote scholarship and teaching.

As to intellectual property, universities are studying ways by which the products of faculty can be protected under existing rules and sold in order to bring in funds. In 15 years, membership in the Society of University Patent Administrators has grown from 70 to 500.

But those of us in higher education cannot leave to "the copyright industries" the larger question of what new intellectual property rights system our society should have. We should form a committee on information, including members from the American Council on Education, the Research Libraries Group, the Library of Congress, scholarly societies, and other entities dedicated to the public interest in information. The universities and colleges could provide talent for the necessary brainstorming, investigation, and analyses.

The interests of the academy are not in opposition to the interests of the economy. In the information age, it is likely that commercial interests will gain as much as higher education from a freer access to intellectual expressions and a robust nurturing of new ideas that is not linked to restrictions on their use. Everyone gains if there is greater freedom to utilize intellectual expressions in the electronic lumberyard to build information products of the future. □

→ Why? seems highly unlikely to me