



Dædalus

Journal of the American Academy of Arts & Sciences

Spring 2002

on intellectual
property

Richard A. Posner	The law & economics of intellectual property
James Boyle	Fencing off ideas 13
Carla Hesse	Intellectual property, 700 B.C. – A.D. 2000 26
Arthur Goldhammer	On Diderot & Condorcet 46
Diderot	Letter on the book trade 48
Condorcet	Freedom of the press 57
Roger Chartier	Property & privilege in the republic of letter
Adrian Johns	Pop music pirate hunters 67
Daniel J. Kevles	Of mice & money 78
Rebecca S. Eisenberg & Richard R. Nelson	Public vs. proprietary science 89
Marcia Angell & Arnold S. Relman	Patents, profits & American medicine 102

poetry

Paul Muldoon	Unapproved road 112
--------------	---------------------

fiction

Frederick Busch	The rescue mission 115
-----------------	------------------------

notes

Wendy Doniger	on the <i>Kamasutra</i> 126
Leo Breiman	on McCarthyism at Berkeley 130
W. G. Runciman	on Darwinism & sociology 133
Roald Hoffmann	on poetry & science 137

letters

on terrorism & evil, the concept of race, the virtues of inequality &c.	141
---	-----





Inside front cover: "A PIRATE CRAFT.
THE ROGUES! THIS OUGHT TO SINK 'EM."
From *Punch*, July 4, 1906, page [11]. See
Adrian Johns on *Pop music pirate hunters*,
pages 67 – 77.

James Miller, Editor of *Dædalus*

Phyllis S. Bendell, Managing Editor and
Director of Academy Publications

Sarah M. Shoemaker, Associate Editor

Board of editors

Steven Marcus, Editor of the Academy

Russell Banks, Fiction Adviser

Rosanna Warren, Poetry Adviser

Joyce Appleby (U.S. history, UCLA), Stanley Hoffmann (government, Harvard), Donald Kennedy (environmental science, Stanford), Martha C. Nussbaum (law and philosophy, Chicago), Neil J. Smelser (sociology, Berkeley), Steven Weinberg (physics, University of Texas-Austin); *ex officio*: Patricia Meyer Spacks (President of the Academy), Leslie Cohen Berlowitz (Executive Officer)

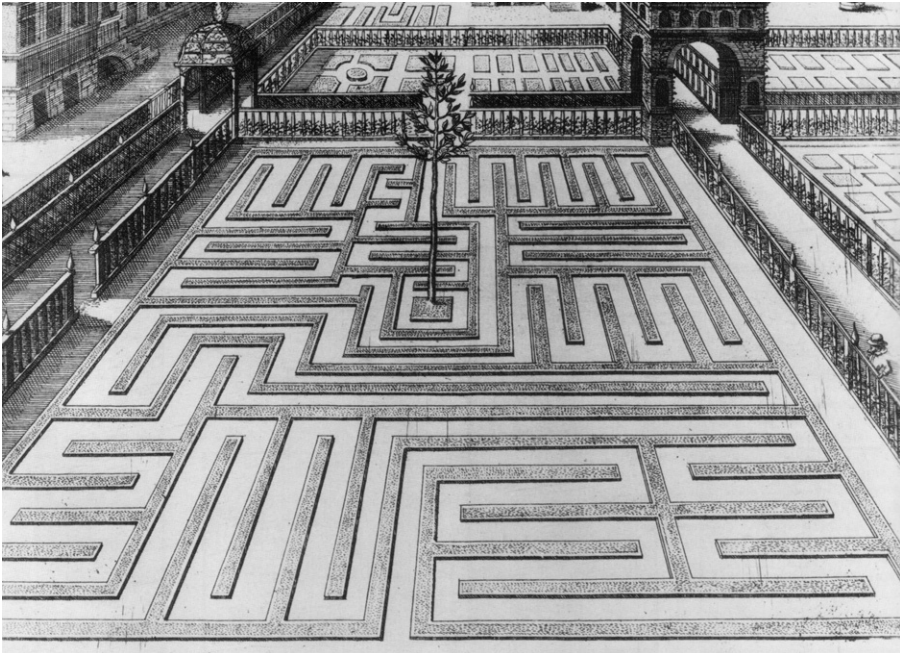
Editorial advisers

Michael Boudin (law, U.S. Court of Appeals), Wendy Doniger (religion, Chicago), Clifford Geertz (anthropology, Institute for Advanced Study), Carol Gluck (Asian history, Columbia), Stephen Greenblatt (English, Harvard), Thomas Laqueur (European history, Berkeley), Alan Lightman (English and physics, MIT), Steven Pinker (neuroscience, MIT), Diane Ravitch (education, NYU), Richard Shweder (human development, Chicago), Frank Wilczek (physics, MIT)

Dædalus is designed by Alvin Eisenman

Dædalus

Journal of the American Academy of Arts & Sciences



Design for the hedge maze is by Johan Vredeman de Vries, from *Hortorum viridariorumque elegantes et multiplicis artis normam affabre delineatae* (Cologne, 1615).

Dædalus was founded in 1955 and established as a quarterly in 1958. The journal's namesake was renowned in ancient Greece as an inventor, scientist, and unriddler of riddles. Its emblem, a maze seen from above, symbolizes the aspiration of its founders to “lift each of us above his cell in the labyrinth of learning in order that he may see the entire structure as if from above, where each separate part loses its comfortable separateness.”

The American Academy of Arts & Sciences, like its journal, brings together distinguished individuals from every field of human endeavor. It was chartered in 1780 as a forum “to cultivate every art and science which may tend to advance the interest, honour, dignity, and happiness of a free, independent, and virtuous people.” Now in its third century, the Academy, with its more than four thousand elected members, continues to provide intellectual leadership to meet the critical challenges facing our world.

Dædalus Spring 2002
Issued as Volume 131, Number 2

© 2002 by the American Academy
of Arts & Sciences.

*Fencing off ideas: enclosure & the disappearance of
the public domain*

© 2002 by James Boyle

Pop music pirate hunters

© 2002 by Adrian Johns

*Of mice & money: the story of the world's first
animal patent*

© 2002 by Daniel J. Kevles

Unapproved road

© 2002 by Paul Muldoon

The rescue mission

© 2002 by Frederick Busch

Library of Congress Catalog No. 12-30299.

ISBN 0-87724-033-7

Editorial offices: *Dædalus*, Norton's Woods,
136 Irving Street, Cambridge MA 02138.
Phone: 617 491 2600. Fax: 617 576 5088.
Email: daedalus@amacad.org.

Dædalus (ISSN 0011-5266) is published quarterly by the American Academy of Arts & Sciences. U.S. subscription rates: for individuals - \$33, one year; \$60.50, two years; \$82.50, three years; for institutions - \$49.50, one year; \$82.50, two years; \$110, three years. Canadian subscription rates: for individuals - \$42, one year; \$78.75, two years; \$109.50, three years; for institutions - \$60, one year; \$102, two years; \$138.50, three years. All other foreign subscribers must add \$7.00 per year to the price of U.S. subscriptions. Replacement copies for damaged or misrouted issues will be sent free of charge up to six months from the date of original publication. Thereafter back copies are available for the current cover price plus postage and handling.

GST number: 14034 3229 RT.

Dædalus publishes by invitation only, and assumes no responsibility for unsolicited manuscripts. The views expressed are those of the author of each article, and not necessarily of the American Academy of Arts & Sciences.

All subscription orders, single-copy orders, and change-of-address information must be sent in writing to the *Dædalus* Business Office, 136 Irving Street, Suite 100, Cambridge MA 02138.

Newsstand distribution by Eastern News Distributors, Inc., 2020 Superior Street, Sandusky, OH 44870; Telephone: 800 221 3148.

Periodicals postage paid at Boston MA, and at additional mailing offices.

Postmaster: Send address changes to *Dædalus*, 136 Irving Street, Suite 100, Cambridge MA 02138, U.S.A.

If you wish to reprint an article from *Dædalus* in another publication or to reproduce an article for classroom or other use, please send a written request to: Permissions Manager, *Dædalus*, 136 Irving Street, Cambridge MA 02138. Permission can be granted in most cases; charges vary according to use of the copyrighted materials. If you have any questions, call 617 491 2600 and speak to the permissions manager.

Printed in the United States of America by Cadmus Professional Communications, Science Press Division, 300 West Chestnut Street, Ephrata PA 17522.

The typeface is Cycles, designed by Sumner Stone at the Stone Type Foundry of Guinda CA. Each size of Cycles has been separately designed in the tradition of metal types.

Computer applications run by Peter Johnson of RIS, Yale University.

Richard A. Posner

*The law & economics of
intellectual property*

Legal disputes over intellectual property have exploded in recent years. No field of law is in greater ferment. And in no field of law have judges and scholars experienced more difficulty recently in getting their bearings.

The increase in intellectual property litigation was made inevitable by the rise of the information economy, an economy built on intellectual property – which is now, incidentally, America’s largest export. Recognition of the importance of intellectual property in the current American scene is one of the things that lie behind the seemingly relentless expansion of intellectual property rights in modern law.

Two illustrations of that expansion: the copyright term has been repeatedly enlarged in recent years, to the point where copyrights are as a practical mat-

ter nearly perpetual. And the new “business method” patents create the potential for inventors of new methods of doing business to obtain enormous monopoly power (imagine if the first person to think up the auction had been able to patent it); such patents also create a reward greatly in excess of the cost of the invention.

The emergence of new technologies has further caused the law to lose its bearings, and this in two respects. First, one of the most important of these new technologies, computer software, is characterized by high monopoly potential conjoined with an extreme disparity between the cost of creation and the cost of making and distributing copies, which indeed approaches zero whenever the copy is made electronically and is distributed over the Internet. Property rights in software may enable its creators to reap enormous profits by charging prices that inhibit distribution, while denying property rights may, in the interest of discouraging excessive investment in software creation and of maximizing distribution, kill the goose that lays the golden eggs by depriving the creators of software of the profit opportunities needed to finance that creation. That is the essential dilemma in crafting a sensible, efficient regime of intellectual property rights.

Richard A. Posner is a judge on the U.S. Court of Appeals for the Seventh Circuit and also teaches at the University of Chicago Law School. A Fellow of the American Academy since 1982, Judge Posner has played a key role in the law and economics movement. A prolific author, he has tackled a wide variety of topics, from sex and the law to the disputed presidential election of 2000. His many books include “Economic Analysis of Law” (5th edition, 1998) and, most recently, “Public Intellectuals: A Study of Decline” (2002).

Second, the products of the new technologies are sometimes hard to fit into the law's pigeonholes. Computer software is a kind of text, which implies that copyright is the proper regime; a kind of machine, which implies that patent is the proper regime; and a kind of algorithm, which traditionally has not been protected by either body of law. In biotechnology, the creation of new forms of life by genetic engineering poses acutely the question of just what should be regarded as patentable technology.

A further example of how new technologies can confound legal classifications is again drawn from computer software. Software manufacturers increasingly are bypassing the limitations (discussed below) on the duration and scope of copyrights by selling directly to their customers, pursuant to contracts that limit the customer's rights in the software more tightly than copyright would do. The significance of intellectual property rights, as of rights to physical property, is that they are enforceable against strangers. A trespass is enjoined even if the trespasser never promised not to enter your land. But if the only people who have access to your property happen to be people with whom you have a contract, you can regulate their access by means of contract and forget about property law.

The information economy and its associated novel technologies arose against the background of a mature system of intellectual property law, one that had evolved over centuries out of ancient concepts developed to deal with tangible property. To understand the law of intellectual property, and the muddle we're now in, you must first understand the law of physical property and the social objectives of that law.

When lawyers speak of a "property right," say to a parcel of land, they mean

simply that the holder of the right is entitled to invoke the aid of the state to prevent anyone from entering upon the land without his consent. There are all manner of qualifications of this right (eminent domain, for example – the landowner can't prevent the government from taking his land for a public use, although he can insist that the government pay him just compensation for the taking), but they can be ignored.

What cannot be ignored is why property rights are granted – what social functions they serve. Two are paramount. First, without exclusive rights to the use of tracts of land or other valuable physical objects, these properties would be overused – if anyone has the right to graze his cattle on a pasture, the pasture will be overgrazed and hence depleted prematurely, because each cattle owner will tend to ignore the costs that the grazing by his cattle imposes on the other users of the pasture. Second, without exclusive rights, there will be insufficient incentives to invest in improving property: if you cannot be assured of being able to reap where you have sown, you won't sow, and the land will lie fallow.

It is understood, however, that the social benefits of property rights must be balanced against the costs. When property has little value relative to the costs of creating or enforcing a property right, the right is withheld. Here is a homely example: owners of shopping centers do not charge a price for parking in the shopping center's parking lot. In effect, the owner declines to enforce his property right in the lot, treating it instead as the common property of the shopping center's customers, like a common pasture. This is because charging a fee for entry to the lot, while it would have an economizing effect (the lot could be smaller if access to it were rationed by

price, just as tolls limit highway traffic), would cost more than it would be worth; part of the cost would be discouraging people from shopping at the center.

We can follow these themes into the law of intellectual property, but with important qualifications. One is that, in contrast to the grazing example, the use of intellectual property by one person usually doesn't diminish its value to other users. That's because the copies of such property can be multiplied indefinitely at little added cost. If I read a book, I do not deprive others of the use of the intellectual property constituting that book, because they can buy and read other copies without interfering with me. Indeed, widespread use of intellectual property can actually increase the value of the property; in effect, additional copies have negative cost, when the value they confer is taken into account. A popular book or movie becomes a focus of discussion; the more popular it is, the more "copies" of it (in effect) there are, the greater the value.

There is an interesting exception, however, concerning what is called the "right of publicity," confusingly classified as part of the "right of privacy." A person has a right not to have his name or likeness used for advertising or other commercial purposes without his consent. This is a right particularly valued by celebrities. Should there be such a right? Does it have useful incentive effects, comparable to the effect of granting property rights to land to create the incentive to cultivate the land? And even if it does, what should happen when the celebrity dies? Should the right die with the celebrity, on the theory that he will no longer be "incentivized" by it to cultivate his image and that therefore anyone should be free to use his name and likeness in advertis-

ing? The answer is No, for the same reason that property rights are recognized even in "natural" pastures, that is, pastures not created or improved by investing, unlike ordinary farmland: there would be overuse. The advertising value of the celebrity would be reduced if the celebrity's name and likeness could be attached to an indefinite number of different products. There can be "congestion" even of intellectual property. And this is true whether or not the celebrity is still alive.

Still, in general, the use of intellectual property by one person does not reduce the value of its use by another. Stated differently, the marginal cost of intellectual property – the cost of adding one more user of it – is very low. As I noted earlier, it is essentially zero in the case of computer software, which can be delivered to a new user over the Internet – and it can even be negative.

This has led some students of intellectual property to think it would be desirable to make such property available for free to anyone who wanted to use it, since, in general, optimum output is achieved by equating price to marginal cost, and in the case of much intellectual property this means setting the price at (or only trivially above) zero – or even subsidizing distribution.

But as is now well understood, such a policy would be disastrous. It would kill the incentive to create the intellectual property in the first place, outside of the relatively rare cases in which the creators have powerful nonmonetary incentives to create such property, or in which its creation is financed other than by sale or lease of the property (by taxation, for example, or charitable donation – such as the patronage of authors by wealthy people, in the old days). We need not suppose that most creative people are greedy to realize that if they can-

not obtain a pecuniary benefit from producing intellectual property they will not be able to finance the costs (including the costs of their time) required to produce it.

And so the state defines, recognizes, and enforces property rights in intellectual property. The most important such rights are copyrights and patents, the former a property right in expression, the latter a property right in useful ideas. A third very common form of intellectual property, trademarks, is misnamed, and I will not discuss it extensively. Trademarks are merely identifiers, designed to protect consumers from being misled regarding the origin or quality of particular products or services. There are many interesting legal and economic issues concerning trademarks, but they are not centrally issues of property. Also of importance in the broad domain of intellectual property is the right of publicity, which I've already mentioned, and trade secrets, which are an alternative to patents as a method of protecting innovations from being copied without compensation to the inventor. But I will not discuss trade secrets.

Copyrights and patents are both limited in duration, unlike rights in physical property, and an initial question is why? There are several answers, and they point to the fundamental differences between physical and intellectual property.

One answer is the tracing problem, which looms large in the definition and enforcement of intellectual property generally. Items of physical property are visibly distinct; this is true even of adjacent parcels of land, once the boundary has been mapped and fenced. But one piece of intellectual property is not visibly distinct from others; it is identified only by comparison with others. Two copies of the same book are physically distinct, but the intellectual property

contained in them is identical. Worse, two different books may be sufficiently similar to raise a question of whether the intellectual property in one was appropriated by the author of the other. If copyright were perpetual, James Joyce or his publisher would have become embroiled in litigation with the heirs of Homer over whether *Ulysses* infringed the *Odyssey*, and Leonard Bernstein with the heirs of Ovid over whether *West Side Story* infringed *Pyramus and Thisbe* (not to mention *Romeo and Juliet* and *A Midsummer Night's Dream*, themselves arguably infringements of Ovid's story). If patents were perpetual, heirs of Leonardo da Vinci would be litigating over rights to basic aircraft technology.

The tracing problem is more serious for copyrights than for patents. The Patent and Trademark Office contains descriptions of patents classified by subject matter, and it is feasible though often difficult to search through these descriptions and identify the patents that a proposed new patent may infringe. But it is impossible as yet to search through the entire body of copyrighted materials. That is one reason why copyright protection is more limited than patent protection. A copyright is infringed only if it is copied; if it is duplicated innocently, there is no infringement. A patent is infringed by being duplicated, even if the duplication was innocent – a case of independent discovery.

Even in the case of copyright, however, the tracing problem is really rather superficial. If copyright owners were required to renew their copyrights periodically by filing a notice of renewal in a public registry, it would be simple enough for creators of new intellectual property to determine whether a given work was in the public domain.

There is a more serious concern with giving the owner of intellectual property

too expansive a right. If copyright were perpetual, Ovid's heirs would probably win their suit against Leonard Bernstein; Shakespeare's heirs certainly would (*West Side Story* is based directly on *Romeo and Juliet*) – except they might lose in turn to Ovid's heirs! This means that cutting off copyright protection after a specified period shorter than eternity not only limits tracing costs, but also reduces the pecuniary gain to the owner of the copyright.

There are two reasons why that might be a good thing. First, intellectual property presents a more serious problem of what economists call “rent seeking” than physical property does. A “rent,” in economics, is not a rental; it is an excess of revenue over cost. It is pure profit, which is to say profit in excess of the cost of capital (which is not “profit” in an economic sense but merely another cost of doing business). Rent seeking can be bad from a social standpoint because it can lead to excessive investment.

An example is a hunt for buried treasure. If the treasure has a value of \$10 million, which will be awarded to the first finder, there will be a race to be first that may eat up the entire profit. Suppose that the cost to a particular finder of finding the treasure by April 1, 2002, would be \$1 million. Would-be finders might incur much greater costs in vying to find it sooner – for example, a finder who was confident that by expending an additional \$8 million he could win the race by finding the treasure on March 31 would consider the expenditure worthwhile, since it would yield him a profit of \$1 million. But the additional cost incurred to win the race would be wasted from a social standpoint, because the social benefit of finding the treasure a day earlier would be negligible.

The problem of rent seeking is no longer acute in the case of the historical-

ly most important form of property, land, because virtually all land is owned. (The situation was quite otherwise in the age of exploration and discovery of new continents.) There would be no rent-seeking problem in the buried-treasure example if someone owned the treasure and were merely offering a reward to the finder – the owner would set the reward at a level designed to obtain the finding service at least cost.

But, as noted, the problem of rent seeking is acute in the “land grab” phase of development – and that is the phase we're perpetually in with regard to intellectual property. For remember that intellectual property is created rather than found, which means that if rights to intellectual property are defined too broadly, the rents generated by them will be so great that excessive resources will be drawn into efforts to be the first to create a valuable piece of intellectual property and thus to obtain the property right to it. Limiting the duration of the property right is one way of cutting down its value to the owner and thus reducing the amount of rent seeking.

But, once again, this concern must not be exaggerated. Because of discounting to present value (that is, the preference for money now over the same sum of money years or decades hence), the difference in value to the creator of intellectual property of, say, a seventy-five-year term and a thousand-year term would actually be very slight, because the present value of a dollar not to be received for seventy-five years (or one hundred or one thousand years) is very slight.

A second reason for wanting to limit the potential reward to owners of intellectual property rights is the previously noted effect of those rights in limiting the distribution and hence use of intellectual property. The fees that the owner of intellectual property charges for its

use deflect some users to other products that may cost society more to produce (remember that the marginal cost, the cost of adding one more user, of intellectual property is often close to, at, or even below zero), resulting in a loss of efficiency. Some of those users, moreover, may be other creators of intellectual property, so that expansive intellectual property rights may actually reduce the creation of intellectual property – an important and counterintuitive point to which I'll return.

Against all this must be weighed the incentive effects of allowing the property owner to obtain revenue from property that may have cost him a great deal to create. But it doesn't follow that he has to be able to collect fees *in perpetuity* in order to recoup his investment. Perpetual fees may result in a reward that exceeds the cost of creating the property in the first place, thus resulting in a needless restriction of the use of the property along with the wasteful expenditures caused by rent seeking.

It is true, as I have said, that because most people discount future income steeply, the excess reward that perpetual fees would confer on creators of intellectual property is somewhat illusory. Few people will work harder today to generate some additional income to their heirs (if any) a century hence. But this means that perpetual fees have very little upside in creating incentives for the creation of intellectual property; the tracing costs, and the effect of perpetual copyright in complicating the use of existing intellectual property as an input into new intellectual property, become decisive objections to perpetual rights.

Disregarded in this analysis, however, is the point made earlier in connection with the right of publicity – the potential congestion cost if valuable property is unowned. For example, if anyone can

use the character of Mickey Mouse, the public may become tired of him, and his value may drop to zero. Suppose, moreover, that to create a demand for an old expressive work requires a current investment. What publisher would incur the expense and risk of developing a demand for an eighteenth-century author whose works were long out of copyright if the publisher acquired no property right in the works, so that if his expenditures succeeded in creating a demand for them, any other publisher could publish the works without incurring the expense that he had incurred? In both the Mickey Mouse case and in this case, there is overuse because of lack of property rights, but in the first case it leads to the value of the intellectual property plummeting, and in the second case it impairs the incentive to invest in intellectual property.

The solution might be a system of indefinitely renewable copyrights. The initial grant might be for twenty-five years, renewable thereafter every five years. A stiff fee would assure that most works returned to the public domain. But those works requiring continuing investment or careful management to avoid consumer exhaustion would continue to be owned property.

Copyrights and patents are limited in other ways besides duration. The copyright owner is permitted to copyright only the expressive dimension of the work and not the basic ideas or motifs. Even if copyright were perpetual, Homer's heirs could not demand a royalty for every epic poem written, since the idea of the epic poem (or of rhyme or particular rhyme schemes, or of a story of a war to recover an abducted beauty) would be considered to fall on the idea side of the idea/expression divide. Similarly, patents are limited to ideas that are useful (in the sense of practical, utilitari-

an), novel, and nonobvious, and so are not available for the fruits of basic research, such as Euclidean geometry, Planck's constant, or $e = mc^2$.

If basic scientific findings were patentable, the tracing problem would be particularly acute. Even more important, patents on basic research would sometimes generate grossly excessive revenues, relative to costs, which in the case of much basic research are low.

Similarly, if valuable applications of scientific theory (as distinct from basic research) – “inventions” or new technology – could be patented in perpetuity, one untoward result would be to limit the use of inventions, and another might be to draw excessive investment into innovation. Bear in mind that the patent process, like my hypothetical hunt for buried treasure, is a race. Whoever crosses the finish line first, if only by a day, receives the entire value of the patent, not the value of accelerating the invention by one day. So we want to make sure that the rewards of owning a patent are not so huge that they operate to suck a disproportionate fraction of society's scarce resources into efforts to accelerate the pace of invention.

As for allowing basic ideas, themes, motifs, character types, and so forth to be copyrighted, the effect in increasing the incentives to create new literature, art, and entertainment by increasing the financial rewards would be more than offset by the effect in discouraging that creation by forcing every new writer to negotiate permission with the heirs of long-deceased predecessors. Literature, art, and entertainment to a great extent play variations on a rather simple, stock set of themes, plots, character types, and so forth. The distinction, the quality, of creative expression lies precisely in the variations, and we want to encourage these by permitting the creators to draw freely on the stock.

A complication is created by the merger of “idea” and “expression” in some forms of modern art, such as Andy Warhol's *Brillo Box*, a work of art that is such not by virtue of any novel or distinctive expression – it is indistinguishable from an ordinary box of Brillo – but solely by virtue of its being treated as art by collectors and museums. In effect, this kind of art is simply the idea of treating an everyday object as a work of art.

I have thus far depicted the basic challenge in the fine-tuning of intellectual property rights as striking the right balance between the interest in encouraging the production of intellectual property and the interest in promoting its widespread use, though I have noted some other concerns as well (such as overinvestment and tracing costs).

But one of the most interesting characteristics of intellectual property, which differentiates it sharply from physical property, is that – paradoxically – limiting intellectual property rights may often be necessary to maximize the creation of intellectual property – in which event the conflict between the creation interest and the use interest disappears. I have given examples of this important point already. Consider now the “fair use” doctrine of copyright law, which permits in specified circumstances some copying of a copyrighted work without having to obtain the owner's consent. An example is quoting from and summarizing a copyrighted book in a review of the book. Suppose such copying required the consent of the book's author or publisher. Then book reviews would lack credibility, since readers would know that the reviewer had a strong incentive to review the book favorably lest publishers refuse to consent to his quoting from subsequent books, or charge him an exorbitant fee for permission to quote. Publishers and authors as a group (though maybe not the publishers and

authors of the worst books) would be hurt by a system that deprived readers of the information contained in reviews by people not beholden to the publisher. The publishing industry would lose the most credible form of advertising of its wares.

Similarly, but more fundamentally, anyone familiar with the practices of both authors and inventors knows that most intellectual property, even of a distinctly innovative sort, builds heavily on previous intellectual property (*Ulysses* is again an example). The existing stock of ideas and expression is, to a great extent, the raw material from which new intellectual property is fashioned.

The cheaper a producer's raw materials, the cheaper the final product and so the greater the output. If Joyce had had to negotiate with Homer's heirs over the use of material from the *Odyssey* in his book, it would have taken him longer to write the book; if negotiations had broken down, he might not have been able to write it at all.

We want, therefore, a process by which intellectual property, having been legally protected in order to create the proper incentives, can eventually be returned to the public domain, there to be available as cheap raw material for future creators of intellectual property. This is another important reason for limiting both the duration of intellectual property rights and their scope.

The economic analysis sketched in this paper is simple, largely intuitive, commonsensical, and, I venture to suggest, fairly uncontroversial. To summarize it, granting property rights in intellectual property increases the incentive to create such property, but the downside is that those rights can interfere with the

creation of subsequent intellectual property (because of the tracing problem and because the principal input into most intellectual property is previously created intellectual property). Property rights can limit the distribution of intellectual property and can draw excessive resources into the creation of intellectual property, and away from other socially valuable activities, by the phenomenon of rent seeking.

Striking the right balance, which is to say determining the optimal scope of intellectual property rights, requires a comparison of these benefits and costs – and really, it seems to me, nothing more. The problems are not conceptual; the concepts are straightforward. The problems are entirely empirical. They are problems of measurement.

In addition, we do not know how much intellectual property is in fact socially useful, and therefore we do not know how extensive a set of intellectual property rights we should create. For all we know, too many resources are being sucked into the creation of new biotechnology, computer software, films, pharmaceuticals, and business methods because the rights to these different forms of intellectual property have been too broadly defined.

Unfortunately, the empirical problems are acute – and little progress has been made as yet toward their solution. We urgently need more empirical evidence. The task is daunting, for it requires that we be able to estimate both the social gains from additional intellectual property of different types and the social costs of trying to induce the creation of the additional intellectual property by means of adjustments in the regime of intellectual property rights.

James Boyle

Fencing off ideas: enclosure & the disappearance of the public domain

*The law locks up the man or woman
Who steals the goose from off the common
But leaves the greater villain loose
Who steals the common from off the goose.*

*The law demands that we atone
When we take things we do not own
But leaves the lords and ladies fine
Who take things that are yours and mine.*

*The poor and wretched don't escape
If they conspire the law to break;
This must be so but they endure
Those who conspire to make the law.*

*The law locks up the man or woman
Who steals the goose from off the common
And geese will still a common lack
Till they go and steal it back.*

This poem is one of the pithiest condemnations of the English enclosure movement, the process of fencing off common land and turning it into private

James Boyle is a professor of law at Duke Law School. He is the author of "Shamans, Software, and Spleens: Law and the Construction of the Information Society" (1996) and numerous law-review articles about intellectual property law and legal and social theory. He is currently working on a book about the public domain. His work can be found at <<http://james-boyle.com>>.

© 2002 by James Boyle

property. (Although we refer to it as "the enclosure movement," it was actually a series of enclosures that started in the fifteenth century and went on, with differing means, ends, and varieties of state involvement, until the nineteenth.) The poem manages in a few lines to criticize double standards, expose the artificial and controversial nature of property rights, and take a slap at the legitimacy of state power. And it does it all with humor, without jargon, and in rhyming couplets.

Sir Thomas More went further, though he used sheep rather than geese to make his point. He argued that enclosure was not merely unjust in itself, but harmful in its consequences. It was a *cause* of economic inequality, crime, and social dislocation.

Your sheep that were wont to be so meek and tame, and so small eaters, now, as I hear say, be become so great devourers and so wild, that they eat up, and swallow down the very men themselves. They consume, destroy, and devour whole fields, houses, and cities. For look in what parts of the realm doth grow the finest and therefore dearest wool, there noblemen and gentlemen... leave no ground for tillage, they enclose all into pastures; they throw down houses; they pluck down towns, and leave nothing standing, but

only the church to be made a sheep-house. ... Therefore that one covetous and insatiable cormorant and very plague of his native country may compass about and enclose many thousand acres of ground together within one pale or hedge, the husbandmen be thrust out of their own.

The enclosure movement continues to draw our attention. It offers irresistible ironies about the two-edged sword of “respect for property” and lessons about the role of the state in making controversial, policy-laden decisions to define property rights in ways that subsequently come to seem both natural and neutral.

Following in the footsteps of Thomas More, critics have long argued that the enclosure movement imposed devastating costs on one segment of society. Some of these costs were brutally and relentlessly “material” – for example, the conversion of crofters and freeholders into peons, seasonal wage-laborers, or simply, as More argued in *Utopia*, beggars and thieves. But other harms were harder to classify: the loss of a form of life, and the relentless power of market logic to migrate to new areas, disrupting traditional social relationships, views of the self, and even the relationship of human beings to the environment.

A great many economic historians have begged to differ. As they see the matter, the critics of enclosure have fallen prey to the worst kind of sentimentality, romanticizing a form of life that was neither comfortable nor noble, and certainly not very egalitarian.

From an economist’s point of view, the key fact about the enclosure movement is that it *worked*: this new property regime allowed an unparalleled expansion of productive possibilities. By transferring inefficiently managed common land into the hands of a single owner, enclosure averted one aptly named

“tragedy” of the commons: overuse. It also created incentives for large-scale investment, allowed control over exploitation, and in general ensured that the resource would be used efficiently. Unless the feudal lord knew that the fruits of his labor would be his alone, he would not have invested in drainage schemes, the purchase of sheep, or the rotation of crops in order to increase the yield of his acreage.

Strong private-property rights helped to avoid the tragedies of both overuse and underinvestment. As a result of the enclosure movement, fewer Englishmen starved: more grain was grown, and more sheep were raised. If the price of this social gain was a greater concentration of economic power in fewer hands and despoliation of the environment, so be it. Those who weep about the terrible effects of private property should realize that it literally *saved lives*. Or so say the economic historians.

This is a debate of more than antiquarian interest, for we are in the midst of a new kind of enclosure movement, this one aimed at exploiting a new and intangible kind of commons – call it a “commons of the mind.”¹ Once again, things that were formerly thought to be uncommodifiable, essentially common, or outside the market altogether are being turned into private possessions under a new kind of property regime. But this

1 The analogy to the enclosure movement has been too succulent to resist. To my knowledge, Ben Kaplan, Pamela Samuleson, Yochai Benkler, David Lange, Christopher May, and Keith Aoki have all employed the trope, as I have myself on previous occasions. For a particularly thoughtful and careful development of the parallelism see Hannibal Travis, “Pirates of the Information Infrastructure: Blackstonian Copyright and the First Amendment,” *Berkeley Tech. Law Journal* 15 (2) (Spring 2000): 777.

time the property in question is intangible, existing in databases, business methods, and gene sequences.

Take the human genome as an example. The opponents of “enclosure” have claimed that the genome “belongs to everyone,” that it is literally “the common heritage of humankind.” They say that the code of life ought not and perhaps in some sense *cannot* be owned by an individual or a corporation. When patents have been granted for stem cells and gene sequences, critics have mused darkly about the way in which the state is simply handing over monopoly power to private parties, potentially thwarting future research and innovation. The new monopolists have names like Geron, Celera, and Human Genome Sciences, and their holdings are in the form of patent portfolios rather than oil wells or steel plants.

Alongside these reports about the *beneficiaries* of the new property scheme run news stories about those who were not so fortunate, the commoners of the genetic enclosure. Law students across America now read *Moore v. Regents*, a California Supreme Court case deciding that poor Mr. Moore had no property right to a cell line derived from his spleen. In this case, the court decided that giving property rights to “sources” would make it more difficult for scientists to share cell lines with fellow researchers – reading the decision, one can almost picture the Styrofoam coolers criss-crossing the country by Federal Express in an orgy of altruistic flesh swapping. Yet this fear of the pernicious effects of property rights did not last for long. In another portion of the opinion the court speaks approvingly of the patent granted to the doctors whose inventive genius created a billion-dollar cell line from Mr. Moore’s “naturally occurring raw material.” Like the com-

moners, Mr. Moore finds that his naturalistic and traditional property claims are portrayed as impediments to innovation. Like the beneficiaries of enclosure, the doctors are granted a property right to encourage efficient development of a wasted resource.

Of course, like the first enclosure movement, this new one has its defenders. To the question “should there be patents over human genes?” the answer will be “private property saves lives.” Only by extending the reach of property rights can the state guarantee the investment of time, ingenuity, and capital necessary to produce new drugs and gene therapies. Private-property rights are a necessary incentive to research; economists need only worry about how to allocate these rights most efficiently. Or so say the advocates of private-property rights.

The genome is not the only area to have been partially “enclosed” in the past decade. In recent years, intellectual property rights have been dramatically expanded in many different fields of human endeavor – from business-method patents to the Digital Millennium Copyright Act, from trademark antidilution rulings to the European Database Protection Directive.

In 1918, the American jurist Louis Brandeis confidently claimed that “[t]he general rule of law is, that the noblest of human productions – knowledge, truths ascertained, conceptions, and ideas – become, after voluntary communication to others, free as the air to common use.” At the time that Brandeis made that remark, intellectual property rights were the exception rather than the rule; it was widely agreed that ideas and facts must always remain in the public domain. But that old consensus is now under attack. Long-standing limits on the reach of intellectual property – the

antierosion walls around the public domain – are being eaten away each year.

The annual process of updating my syllabus for a basic intellectual property course provides a nice snapshot of what is going on. I can wax nostalgic looking back to a five-year-old text, with its confident list of the subject matter that intellectual property rights *couldn't* cover, the privileges that circumscribed the rights that did exist, the length of time before a work fell into the public domain. In each case, the old limits have recently been changed or challenged.

Patents are increasingly stretched out to cover “ideas” that twenty years ago all scholars would have agreed were unpatentable: the so-called business method patents, which cover such “inventions” as auctions or accounting methods, are an obvious example. Most troubling of all are the attempts to introduce intellectual property rights over mere compilations of facts. If Anglo-American intellectual property law had an article of faith, it was that unoriginal compilations of facts would remain in the public domain. This was “no mere accident of a statutory scheme,” as the Supreme Court once put it: protecting the raw material of science and speech is as important to the next generation of innovation as the intellectual property rights themselves. The system would offer a limited monopoly for an invention or an original expression of ideas, but the monopoly was to be tightly confined to the layer of invention or expression. The facts below, or the ideas above, would remain free for all to build upon. Even the stuff that could be protected by intellectual property – the drug or the poem, say – was supposed to pass into the public domain after a certain number of years. As Jefferson and Macaulay both observed, intellectual property rights were necessary evils. They should

be strictly limited in both time and extent.

Today, these traditional assumptions about intellectual property law are under attack. Some of the challenges are subtle. In patent law, stretched interpretations of novelty and nonobviousness allow intellectual property rights to move closer and closer to the underlying datalayer; gene sequence patents come very close to being rights over a particular discovered arrangement of data – C's, G's, A's, and T's. Other challenges are overt; the European Database Directive does (and the various proposed database bills in the United States would) create proprietary rights over compilations of facts, often without even the carefully framed exceptions of the copyright scheme, such as the usefully protean category of “fair use.”

The older strategy of intellectual property law was a “braided” one: thread a thin layer of intellectual property rights around a commons of material from which future creators would draw. Even that thin layer of intellectual property rights was limited so as to allow access to the material when the private-property owner might charge too much, or just refuse; fair use allows for parody, commentary, and criticism, and also for “decompilation” of computer programs so that Microsoft Word's competitors can reverse-engineer its features in order to make sure that their program can convert Word files. (Those who prefer topographical metaphors might imagine a quilted pattern of public and private land, with legal rules specifying that certain areas – beaches, say – can never be privately owned, and accompanying rules giving public right of way through private land if there is a danger that access to the commons might otherwise be blocked.)

From the inception of intellectual

property law in the eighteenth century until quite recently, protection of the public domain – the intangible commons – was one fundamental goal of the law in most nations. In the new vision of intellectual property, however, property rights should be established everywhere; more is better. Expanding patentable and copyrightable subject matter, lengthening the copyright term, giving legal protection to “digital barbed wire,” even if it is used in part to prevent fair use: each of these can be understood as a vote of no confidence in the productive powers of the commons. We seem to be shifting from Brandeis’s assumption that the “noblest of human productions are free as the air to common use” to the assumption that any human production left open to free use is inefficient, if not tragic.

So far I have argued that there are profound similarities between the first enclosure movement and our contemporary expansion of intellectual property. Today, as in the fifteenth century, proponents and opponents of enclosure are locked in battle, hurling at each other incommensurable claims about innovation, efficiency, traditional values, the boundaries of the market, the saving of lives, the loss of familiar liberties. Once again, opposition to enclosure is portrayed as economically illiterate; the beneficiaries of enclosure tell us that an expansion of property rights is needed in order to fuel progress. Indeed, the post-Cold War “Washington Consensus” is invoked to claim that the lesson of history itself is that the only way one gets growth and efficiency is through markets; property rights, surely, are the *sine qua non* of markets.

But if there are similarities between the two enclosure movements, there are also crucial differences. The digitized

and networked “commons of the mind,” circa 2002, differs greatly from the grassy and isolated common plots of land that dotted England circa 1400.² Some of the key differences should lead us to question whether stronger intellectual property rights are really either necessary or desirable.

For example, consider the well-known fact that a digital text, unlike a plot of land, can be used by countless people simultaneously without mutual interference or destruction of the shared resource. Unlike an earthly commons, the commons of the mind is generally what economists call “nonrival.” Many uses of land are mutually exclusive. If I am using the field for grazing, it may

2 The differences are particularly strong in the arguments over “desert” – are these property rights deserved, or are they simply violations of the public trust, privatizations of the commons? For example, some would say that we never had the same *traditional* claims over the genetic commons that the victims of the first enclosure movement had over theirs; this is more like newly discovered frontier land, or perhaps even privately drained marshland, than it is like well-known common land that all have traditionally used. In this case, the enclosers can claim (though their claims are disputed) that they discovered or perhaps simply made usable the territory they seek to own. The opponents of gene patenting, on the other hand, turn more frequently than the farmers of the eighteenth century to religious and ethical arguments about the sanctity of life and the incompatibility of property with living systems. These arguments, or the appeals to free speech that dominate debates over digital intellectual property, have no precise analogue in debates over hunting or pasturage, although, again, there are common themes. For example, we are already seeing nostalgic laments of the loss of the immemorial rights of Internet users. At the same time, the old language of property law is turned to this more evanescent subject matter; a favorite article title is “The Ancient Doctrine of Trespass to Websites” (I. Trotter Hardy, “The Ancient Doctrine of Trespass to Web Sites,” *Journal of Online Law* [Oct. 1996]: art. 7).

interfere with your plans to use it for growing crops. By contrast, a gene sequence, an MP3 file, or an image may be used by multiple parties; my use does not interfere with yours. To simplify a complicated analysis, this means that the depredations through overuse that affect fields and fisheries are generally not a problem with intellectual property. (The exceptions to this statement turn out to be fascinating; in the interest of brevity I will ignore them entirely.)

Thus, one cause of tragedy on the earthly commons generally does not arise on the commons of the mind. Overuse is normally not a problem. But what about incentives to create the intellectual resources in the first place?

Here intellectual property, especially in our digitized age, seems at first glance to pose a unique problem. It has long been relatively easy for pirates to produce unauthorized copies of poems, novels, treatises, and musical compositions. In the language of the economists, it has long been difficult, and in some cases virtually impossible, to stop one unit of an intellectual good from satisfying an infinite number of users at zero marginal cost. A familiar conclusion seems irresistible: without an ability to protect their creations against theft, creators will be unable to earn an adequate living. There will be inadequate incentives to create. Thus the law must step in and create a monopoly called an intellectual property right.

This is the standard argument in favor of intellectual property rights, but it has recently acquired a historical dimension, a teleology of expansion over time. After all, in our digitized age, it is easier than ever before for pirates to copy not just a book, but a film, a photograph, a recorded piece of music, a drug formula, a computer program – the list goes on. Surely the historical lowering of copying

and transmission costs implies a corresponding need to *increase* the strength of intellectual property rights.

Imagine a line. At one end sits a monk, painstakingly transcribing Aristotle's *Poetics*. In the middle lies the Gutenberg printing press. Three-quarters of the way along the line is a photocopying machine. At the end lies the Internet. At each stage, copying costs are lowered: Aristotle's text becomes ever more freely and widely accessible; indeed, the complete text is currently available in both Greek and English to anyone with access to the Internet (at <www.perseus.tufts.edu>).

Among some analysts, the assumption seems to be that the strength of intellectual property rights must correspond inversely to the cost of copying. The argument goes something like this: To deal with the monk-copyist, we need no intellectual property right; physical control of the manuscript is enough. To deal with the Gutenberg press, we need the Statute of Anne. But to deal with the Internet, we need the Digital Millennium Copyright Act, the No Electronic Theft Act, the Sonny Bono Copyright Term Extension Act, and perhaps even the Collections of Information Anti-Piracy Act. Why? As copying costs approach zero, intellectual property rights must approach perfect control. And if a greater proportion of product value and GNP is now in the form of information, then obviously we have an independent reason to need strengthened protection. A five-dollar padlock would do for a garden shed, but not for a vault.

Like any attractive but misleading argument, this one has some truth. The Internet does lower the cost of copying and facilitates illicit copying. The same technology also lowers the costs of production, distribution, and advertising –

and dramatically increases the size of the potential market.

Is the “net” result, then, a loss to rights-holders such that we need to increase protection in order to maintain a constant level of incentives? The answer is not self-evident.

A large, leaky market may actually produce *more* revenue than a small, tightly controlled market. What’s more, the same technologies that allow for cheap copying also allow for swift and encyclopedic search engines – the best detection device for illicit copying ever invented. It would be impossible to say, on the basis of the evidence we have, that owners of protected content are better or worse off as a result of the Internet.

My intuition – as well as our historical experience with prior “dangerous” technologies such as the VCR – points strongly to the possibility that copyright holders are better off. In any case, there simply isn’t enough evidence, either to support my intuition or to support the conclusion that as copy costs decline intellectual property rights must be strengthened. Furthermore, given the known static and dynamic costs of monopolies, and the constitutional injunction to encourage the progress of science and useful arts, the burden should be on those requesting expanded intellectual property rights to prove their value.

Another argument commonly offered in defense of granting new intellectual property rights stresses the increasing importance of products that use, embody, or process information in today’s global economy. Perhaps the commons of the mind requires enclosure because it is now such a vital sector of economic activity. The importance of agriculture to the economy was certainly

one of the arguments for the first enclosure movement. (Lovers of Patrick O’Brian’s novels may remember Maturin’s stolid silence in the face of an admiral’s increasingly vehement insistence that enclosure was essential to produce the corn necessary to fight the Napoleonic war.)

Here we come to another big difference between the commons of the mind and the earthly commons. As has frequently been pointed out (by Jessica Litman, Pamela Samuelson, and Richard A. Posner, among others), information products are frequently made out of fragments of other information products; one person’s information output is someone else’s information input. These inputs may be snippets of code, discoveries, prior research, images, genres of work, cultural references, databases of single nucleotide polymorphisms – all can function as raw material for future innovation. And every potential increase of protection over such products also raises the costs of, or reduces access to, the raw material to create new products.

The right balance is difficult to strike. One Nobel Prize-winning economist has claimed that it is actually impossible to produce an “informationally efficient” market.³ Whether or not it is impossible in theory, it is surely a difficult problem in practice. In other words, even if enclosure of the arable commons always produced gains (itself a subject of debate), enclosure of the information commons clearly has some potential to *harm* intellectual innovation. More property rights, even though they supposedly offer greater incentives, do not necessarily ensure greater intellectual

³ Sanford J. Grossman and Joseph E. Stiglitz, “On the Impossibility of Informationally Efficient Markets,” *American Economic Review* 70 (1980): 393.

productivity. Sometimes just the opposite may be true.⁴

My arguments so far have taken as a given the various problems to which modern intellectual property laws have been a response. I have discussed the extent to which the logic of enclosure works for the commons of the mind as well as it did for the arable commons, taking into account the effects of an information society and a global Internet. Remember that when I speak of enclosure, I am talking about *increases* in the level of rights: protecting new subject matter for longer periods of time, criminalizing certain technologies, making it illegal to cut through digital fences even if they have the effect of foreclosing previously lawful uses, and so on.

What I have *not* yet done is ask whether the brute fact of the Internet actually unsettles old assumptions and forces us to reconsider the need for incentives – at least in certain areas. But this is a question that cannot be evaded.

For anyone interested in the way that computer networks may embody a new mode of collaborative production, an exemplary case to study is the open-source software movement.⁵ This soft-

ware is released under a series of licenses, the most important being the General Public License, or GPL. The GPL specifies that anyone may copy the software, provided the license remains attached and the “source code” for the software always remains available.⁶ Users may add to or modify the code, may build on it and incorporate it into their own work, but if they do so then the new program created is also covered by the GPL. Some people refer to this as the “viral” nature of the license; others find the term offensive. The point, however, is that the open quality of the creative enterprise spreads; it is not simply a donation of a program or a work to the public domain, but a continual accretion in which all gain the benefits of the program on pain of agreeing to give their own additions and innovations back to the communal project.

The open-source software movement has produced software that either rivals or exceeds the productive capacities of conventional proprietary software. Its adoption on the enterprise level is impressive, as are the various technical encomia to its strengths.

But the most remarkable aspect of the open-source software movement is harder to see. It functions as a new kind of social system: many of those who contribute to the movement by writing a part of the software do so as volunteers,

4 For a more technical account, see James Boyle, “Cruel, Mean, or Lavish? Economic Analysis, Price Discrimination and Digital Intellectual Property,” *Vanderbilt Law Review* 536 (2000): 2007, <<http://www.vanderbilt.edu/Law/lawreview/vol536/boyle.pdf>>.

5 Glyn Moody, *The Rebel Code: The Inside Story of Linux and the Open Source Revolution* (Cambridge, Mass.: Perseus Pub., 2001); Peter Wayner, *Free for All: How Linux and the Free Software Movement Undercut the High-tech Titans* (New York: HarperBusiness, 2000). See also Eben Moglen, “Anarchism Triumphant: Free Software and the Death of Copyright,” in the online journal *First Monday* (1999), <<http://emoglen.law.columbia.edu/publications/anarchism.html>>.

6 Proprietary, or “binary only,” software is generally released only once the source code has been compiled into machine-readable object code format, a form that is impenetrable to the user. Even if you were a master programmer, and if the provisions of the Copyright Act, the appropriate licenses, and the DMCA did not forbid you from doing so, you would be unable to modify commercial proprietary software so as to customize it for your needs, remove a bug, or add a feature. Open-source programmers say disdainfully that it is like buying a car with “the hood welded shut.”

without direct remuneration. Here, it seems, we have a classic public good – code that can be copied freely, and sold or redistributed without paying the creator or creators.

Skeptics, of course, wonder if this mode of production can be sustained. There seem to be inadequate incentives to ensure continued productivity and innovation. *E pur si muove*, as Galileo is reputed to have said in the face of Cardinal Bellarmine’s certainties – “And yet it moves.”

Still, there is no consensus about *why* the system works. Perhaps the open-source software movement is actually a contemporary form of potlatch, in which one gains prestige by the extravagance of the resources one “wastes.” Perhaps it is simply a smart way for a young programmer to build a résumé that will eventually pay off in a conventional job. Or perhaps the movement is driven by what Karl Marx considered an innate aspect of our “species-being”: namely, the urge to create, which drives human beings to labor out of love rather than material need.

Like Yochai Benkler and Eben Moglen, I believe that such speculation is interesting but irrelevant.⁷ My own

7 See Yochai Benkler, “Coase’s Penguin, or, Linux and the Nature of the Firm,” October 2001, unpublished draft, <http://www.law.duke.edu/pd/papers/Coase%27s_Penguin.pdf>. For a seminal statement relying on the innate human love of creativity as the motivation, see Moglen, “Anarchism Triumphant.” “[I]ncentives” is merely a metaphor, and as a metaphor to describe human creative activity it’s pretty crummy. I have said this before, but the better metaphor arose on the day Michael Faraday first noticed what happened when he wrapped a coil of wire around a magnet and spun the magnet. Current flows in such a wire, but we don’t ask what the incentive is for the electrons to leave home. We say that the current results from an emergent property of the system, which we call induction. The question

explanation for why the system works is this:

Assume a random distribution of incentive structures in different people, a global network. Assume also that the costs of transmission, information sharing, and copying approach zero. Assume finally a modular creation process. With these assumptions, it just doesn’t matter why unpaid code writers do what they do; what matters is that a certain number of people *will* do what the unpaid code writers do. One may do it for love of the species, another in the hope of a better job, a third for the joy of solving puzzles, and so on. Each person also has his or her own “reserve price,” the point at which he or she says “now I will turn off *Survivor* and go and create something.” But on a global network, there are a *lot* of people, and with numbers that big, and information-overhead that small, even relatively hard projects will attract a sufficient number of motivated and skilled people to sustain the creative process. For the whole structure to work without large-scale centralized coordination, the creation process has to be modular, with “units” of different size and complexity, each requiring slightly different expertise, all of which can be added together to make a grand whole. I

we ask is ‘what’s the resistance of the wire?’ So Moglen’s Metaphorical Corollary to Faraday’s Law says that if you wrap the Internet around every person on the planet and spin the planet, software flows in the network. It’s an emergent property of connected human minds that they create things for one another’s pleasure and to conquer their uneasy sense of being too alone. The only question to ask is, what’s the resistance of the network? Moglen’s Metaphorical Corollary to Ohm’s Law states that the resistance of the network is directly proportional to the field strength of the ‘intellectual property’ system. So the right answer to the econodwarf is, resist the resistance.”

can work on the sendmail program, you on the search algorithms. More likely, lots of people try to solve the sendmail and search algorithm problems, and their products are judged by the community and the best ones adopted. Under these conditions – an ad hoc mode of production that curiously combines anarchism and entrepreneurialism, Kropotkin and Adam Smith – we *will* get innovation and productivity, without having to rely on the proprietary model.

What's more (and this is a truly fascinating twist), when the production process does need more centralized coordination, some governance that guides how the modular bits are most productively associated, it is at least theoretically possible that we can come up with the control system *in exactly the same way*; distributed production is potentially recursive. Governance processes, too, can be assembled through distributed methods on a global network, by people with widely varying motivations, skills, and reserve prices.

Again, skeptics will have their doubts. One organization theorist I know dismisses the possibility of anarchic coordination as "governance by food fight." Anyone who has ever been on an organizational listserv, or been part of a global production process run by people who are long on brains and short on social skills, knows how accurate that description is. *E pur si muove*.

But, in the language of computer programmers, does the open-source software movement "scale"? Can we generalize anything from this limited example? How many types of production, innovation, and research fit into the model I have just described? After all, for lots of types of innovation and invention one needs hardware, capital investment, large-scale real-world data collection, *stuff* – in all its facticity and infinite

recalcitrance. Maybe the open-source model has solved the individual incentives problem, but that's not the *only* problem. And how many types of innovation or cultural production are as modular as software?

My own guess is that this method of production is far more common than we realize. "Even before the Internet," as some of my students have taken to saying portentously, science, law, education, and musical genres all developed in ways that are markedly similar to the model I have described. "The marketplace of ideas," the continuous roiling development in thought and norm that our political culture spawns, is itself an idea that owes much more to the distributed, nonproprietary model than it does to the special case of commodified innovation that we regulate through intellectual property law. It's not that copyright and patent haven't helped power the rise of modern civilization; it's just that it would be wrong to see them as the only engine of innovation. Indeed, the mottoes of free software development have their counterparts in the theory of democracy and the open society. The open-source movement describes its advantage over closed and secretive systems concisely: "given enough eyeballs, all bugs are shallow." Karl Popper would have cheered.

Furthermore, I suspect that the increasing migration of the sciences toward data-rich, processing-rich models will make it likely that a greater amount of innovation and discovery could follow the distributed, nonproprietary model of intellectual production. Bioinformatics and computational biology, the open-source genomics project at www.ensembl.org, the possibility of distributed data scrutiny by lay volunteers that NASA used on the Mars landing data – all of these offer intriguing

glances of a possible future. And finally, of course, the Internet is one big experiment in distributed cultural production.

My own utopia would include modes of nonproprietary intellectual production flourishing alongside a scaled-down but still powerful intellectual property regime. Of course, my utopia hinges on a hunch about the future. Still, there is some possibility (I might say hope) that we *could* have a world in which much more intellectual production is free – “free” meaning that it is not subject to centralized control, *and* “free” meaning that its products are available without payment. Insofar as this is at least a *possible* future, then surely we should think twice before foreclosing it.

Yet foreclosing this possibility is precisely what lawmakers and government regulators in America are now doing. The point about the dramatic recent expansion of intellectual property rights – in database protection bills and directives that extend intellectual property rights to the layer of facts, in the efflorescence of software patents, in the validation of shrink-wrap licenses that bind third parties, in the Digital Millennium Copyright Act’s anticircumvention provisions – is not merely that they hamper the nonproprietary mode of intellectual production unfairly and without justification. The point is rather that they run the risk of ruling it out altogether.⁸

We have come full circle. As I have shown, we are in many ways in the midst of a second enclosure movement. The opponents and proponents of

enclosure are currently locked in battle, each appealing to conflicting and sometimes incommensurable claims about efficiency, innovation, justice, and the limits of the market.

But *should there be a second enclosure movement?* Do we know that property rights in this sphere will yield the same surge of productive energy that they did when applied to arable land?

I think the answer is a resounding No. We are rushing to fence in ever-larger stretches of the commons of the mind without convincing economic evidence that enclosure will help either productivity or innovation – and with very good reason to believe it may actually hurt them.⁹

As I have argued elsewhere, this process should bother people across the ideological spectrum, from civil libertarians to free marketeers. Researchers and scientists should be particularly worried by what is happening. Up to now, the American system of science, for all its flaws, has worked astoundingly well; changing some of its fundamental premises, such as by moving property rights into the data layer, is not something to be done lightly.

The dangers are particularly acute at the moment for three reasons. First, under the conditions that currently obtain in our digitized commons of the mind, the creation of new intellectual property rights tends, in a vicious circle, to create still further demands for new intellectual property rights. The argument is a little too complicated to lay out

impediments now being erected to distributed, nonproprietary solutions. See also Boyle, “Cruel, Mean, or Lavish?”

8 This point has been ably made by, *inter alia*, Pamela Samuelson, Jessica Litman, Jerry Reichman, Larry Lessig, and Yochai Benkler. Each has a slightly different focus and emphasis on the problem, but each has pointed out the

9 Some of the legislation involved is also constitutionally dubious, under the First Amendment and Art 1 sec. 8 cl. 8 of the Constitution, but that is a point for another paper.

here.¹⁰ But in essence the position is this: once a new intellectual property right has been created over some informational good, the only way to ensure efficient allocation of that good is to give the rights holder the ability to charge every user the exact maximum each consumer is willing to pay, so that the market can be perfectly segregated by price. In order to protect their ability to set prices for digital intellectual property goods, whose marginal cost to produce and distribute in fact approaches zero, the rights holders will inevitably argue that they need even *more* changes of the rules in their favor: relaxed privacy standards, so they can know more about consumers' price points; enforceable shrink-wrap or click-wrap contracts, so that consumers can be held to the term of a particular license, no matter how restrictive; and changes in antitrust rules, to allow for a variety of practices that are currently illegal, such as resale price maintenance and various forms of "tying." Rights holders will also claim that they need technical changes with legal backing: for example, the creation of personalized digital objects surrounded by state-sanctioned digital fences, objects that are tied to particular users and particular computers, so that reading my e-book on your machine is either technically impossible, a crime, or a tort – or possibly all three. My conclusion: extending ever-stronger intellectual property rights is a very slippery slope.

Second, the broader the scope of intellectual property rights, the more the characteristics of the Internet that have made it so attractive to civil libertarians – its distributed, anonymous character, its resistance to control or filtering by public or private entities, its global

nature – start to seem like vices rather than virtues. The process of trying to make the Net safe for price discrimination has already begun. Yet as Lawrence Lessig has argued, this is a fundamental political choice that ought to be made deliberately and publicly, not as a side effect of an economically dubious digital enclosure movement. Because of some threats, such as terrorism, we might choose to live in a pervasively monitored electronic environment in which identity and geography, and thus regulability, have been reintroduced. (In my own view, the price is not worth paying.) But to do so on the basis of some bad microeconomic arguments about the needs of the entertainment industry and in the absence of good empirical evidence, and to foreclose some of the most interesting new productive possibilities in the process – well, that would be really sad.

Third, the arguments in favor of the new enclosure movement depend heavily on the intellectually complacent, analytically unsound assumptions of "neoliberal orthodoxy," the "Washington consensus." Convinced that property is good, and that creating more property rights is better, neoliberals are primed to hand out patents on gene sequences and stem cell lines and copyrights on compilations of facts. It would be ironic, to say the least, to let such neoliberal convictions determine the fate of the information commons, the one area where the pros and cons of a property regime need to be most delicately balanced, and also an area where the possible consequences for the public good ought to be vigorously and openly debated.

What is to be done, then? I cannot lay out a full answer here, but I would suggest two broad strategies. First, we ought to insist on considerably better empirical and economic evidence before signing on to the proposals of the second

¹⁰ The full version is given in Boyle, "Cruel, Mean, or Lavish?"

enclosure movement. There are a few serious comparative and historical studies of the economics of innovation, but we need a lot more. Indeed, there should be an annual audit of our intellectual property system, perhaps by the General Accounting Office. What are the costs – static and dynamic – and the benefits of our current intellectual property regime? After all, this is one of the largest industry subsidies given by government (through its granting of patents and copyrights); it deserves the same searching scrutiny that we apply to the recipients of other state subsidies. I am a firm believer in intellectual property rights; properly balanced and judiciously applied, such rights promise us a wonderfully decentralized system for the promotion of innovation. But this is a rational belief in particular rules based on empirical evidence, not an unquestioning faith that any increase in intellectual property rights is automatically good.

Second, we need to make clear the current dangers to the public domain, in the same way that environmental activists in the 1950s and 1960s made visible not only particular environmental threats but the very existence of “the environment” itself. The environmental movement gained much of its political power by pointing out that there were structural reasons why lawmakers were likely to make bad environmental decisions: a legal system based on a particular notion of what “private property” entailed, and a technological tendency to treat the world as a simple, linear set of causes and effects, ignoring the com-

plex interrelationship among natural systems. In both of these conceptual systems, the environment actually disappeared; there was no place for it in the analysis. Small surprise, then, that lawmakers were not able to protect it properly.

We should press a similar argument – as I have done here – in the case of the public domain.¹¹ We should exploit the power of a concept like the public domain both to clarify and to reshape perceptions of self-interest. The idea that there is a public domain – a “commons of the mind” – can help a coalition to be built around a reframed conception of common interest. In the narrowest sense, that common interest might be the realization, spurred by greater attention to intellectual interrelationships, that the freest possible circulation of ideas and facts is important to anyone whose well-being significantly depends on intellectual innovation and productivity – that is to say, every citizen of the world.

The poem with which I began this essay contained some advice: *And geese will still a common lack / Till they go and steal it back.*

I can't match the terseness or the rhyme. But if we blithely assume that the second enclosure movement will have the same benign effects as the first, we may look like very silly geese indeed.

¹¹ An expanded version of this argument can be found in “A Politics of Intellectual Property: Environmentalism for the Net,” *Duke Law Journal* 47 (1) (1997): 87, <<http://www.law.duke.edu/boylesite/intprop.htm>>.

Carla Hesse

*The rise of intellectual property,
700 B.C. – A.D. 2000:
an idea in the balance*

The concept of intellectual property – the idea that an idea can be owned – is a child of the European Enlightenment. It was only when people began to believe that knowledge came from the human mind working upon the senses – rather than through divine revelation, assisted by the study of ancient texts – that it became possible to imagine humans as creators, and hence owners, of new ideas rather than as mere transmitters of eternal verities.

Besides being distinctively modern, intellectual property is a dense concept, woven together from at least three complex strands of jurisprudence – copyright, patent, and trademark – each with its own sources in premodern custom and law, and each with its own trajectory into our own era.

Still, copyright, and the complementary concepts of authors' rights and literary property in continental law – the

focus of this essay – are at the core of the modern concept of intellectual property. It was here in the eighteenth century that the language of “ideas” and “property” first came into contact with one another, and first forged a legal bond. And it was here, too, that the very idea of a property right in ideas was most sharply contested – at the outset, and to the present day.

“From the Heliconian Muses let us begin to sing...” Thus begins Hesiod's *Theogony*, and many other texts of the ancient Greek world. The poet spoke the words of the gods, not his own creations. Knowledge, and the ability to make it manifest to man, was assumed to be a gift, given by the muses to the poet. Alternatively, Plato thought that all ideas were held from birth in the mind, where they had transmigrated from earlier souls. Ancient Greeks did not think of knowledge as something that could be owned or sold. A scribe could be paid fees for his labor, an author awarded prizes for his achievement, but the gift of the gods was freely given. And thus the libraries of the ancient academies were not sold, but were instead transmitted as gifts to the teacher's most worthy successor. Socrates held the Sophists in contempt for charging fees for their learning.

Carla Hesse is a professor of history at the University of California, Berkeley. Her current research interests include legal and cultural aspects of political violence, in particular the French Terror of 1793–1794. She is the author of “Publishing and Cultural Politics in Revolutionary Paris” (1991) and “The Other Enlightenment: How French Women Became Modern” (2001).

A tour of the other great civilizations of the premodern world – Chinese, Islamic, Jewish, and Christian – reveals a striking absence of any notion of human ownership of ideas or their expressions. In the *Lun-Yii*, or *Analects*, compiled in China in the fifth century B.C., the philosopher Confucius is recorded as saying, “I transmit rather than create; I believe in and love the Ancients.” The measure of the greatness of a Chinese scholar was not to be found in innovation, but rather in his ability to render or interpret the wisdom of the ancients, and ultimately God, more fully and faithfully than his fellows. Wisdom came from the past, and the task of the learned was to unearth, preserve, and transmit it. Confucian thought despised commerce and thus also writing for profit; authors practiced their craft for the moral improvement of themselves and others. Reputation, and especially the esteem of future generations, was its own reward, even if it might, incidentally, bestow the worldly gifts of patrons upon its bearer.¹

This is not to suggest that there was no commerce in books in China. In the land that invented movable type, a book trade flourished as early as the eleventh century. Still, Chinese authors had no property right to their published words. The contents of books could not be owned. Not even the particular expressions an author might employ could be claimed as his. Chinese characters were thought

to have come from nature, and no human being could make a claim upon them that would exclude their usage by others. Only the paltry vessel – the paper and ink of a manuscript or a printed book that bore the ideas and expressions – could be bought or sold.²

Throughout the Islamic lands, too, there was no concept of intellectual property for many hundreds of years. All knowledge was thought to come from God. The Koran was the single great scripture from which all other knowledge was derived. A text that embodied the word of Allah, it belonged to no one. There were guardians of its true meaning, to be sure – the great Imams who formed schools at the sites of the most important temples. But the principle means of transmitting Koranic knowledge was oral recitation – from teacher to student, in an unbroken lineage from Muhammad himself to his disciples, and from these chosen few forward through the generations. The word “Koran” itself means “recitation,” and oral transmission of the living word was always to be preferred over a written transcription. The book was merely an instrument, a lowly tool, to facilitate faithful memorization of the word, and manuscripts were continuously checked and rechecked against oral memory to ensure their accuracy and the authority of their lineage. The Islamic belief that oral recitation, rather than written transcription, best preserved the word of God and kept it pure across the generations meant that the technology of printing was very slow to penetrate into Islamic lands, and it was only widely adopted throughout the Middle East with the advent of the mass newspaper press in

1 William P. Alford, *To Steal a Book is an Elegant Offense: Intellectual Property Law and Chinese Civilization* (Stanford, Calif.: Stanford University Press, 1995), esp. 25–29. I would like to thank the National Humanities Center in Research Triangle Park, N.C., for its support of the research and writing of this essay. I would also like to thank Thomas Laqueur and Robert Post for their comments and criticism.

2 Ibid.

the nineteenth century.³

To be sure, a certain notion of legal “authorship” did emerge from Islamic scribal practices. But a concept of intellectual property did not. *Shari‘a* law against “imposture” or “fraud” was used to prevent the unauthorized appropriation of the reputation or authority of a great teacher through false attribution of written texts.⁴ But the teacher did not own the ideas expressed within his books. A thief who stole a book was thus not subject to the punishment for theft – the amputation of his hand. Islamic law held that he had not intended to steal the book as paper and ink, but the ideas in the book – and unlike the paper and ink, these ideas were not tangible property.⁵

The Judeo-Christian tradition elaborated a similar view of knowledge. Moses received the law from Yahweh and freely transmitted it to the people chosen to hear it. And the New Testament sanctified the idea of knowledge as a gift from God in the passage of the Book of Matthew in which Jesus exhorts his disciples, “Freely ye have received, freely give” (10:8). Medieval theologians interpolated this passage into the canon law doctrine “Scientia Donum Dei Est,

3 Johannes Pedersen, *The Arabic Book*, trans. Geoffrey French (Princeton, N.J.: Princeton University Press, 1984; original publication: Copenhagen, 1946); William A. Graham, “Traditionalism in Islam: An Essay,” *Journal of Interdisciplinary History* XXIII (3) (Winter 1993): 495–522; Francis Robinson, “Technology and Religious Change: Islam and the Impact of Print,” *Modern Asian Studies* 27 (1) (1993): 229–251.

4 Sayed Hassan Amin, *Law of Intellectual Property in the Middle East* (Glasgow: Royston, 1991), 3.

5 The *Hedaya* 92 (1795), cited in Steven D. Jamar, “The Protection of Intellectual Property under Islamic Law,” *Capital University Law Review* 21 (1992): 1085.

Unde Vendi Non Potest” (Knowledge is a gift from God, consequently it cannot be sold).

Selling something that belonged to God constituted the sin of simony. University professors, lawyers, judges, and medical doctors were thus admonished not to charge fees for their services, although they might receive gifts in gratitude for the wisdom they imparted.⁶

Indeed, the language of gift-giving permeated all forms of knowledge exchange in the premodern period, and nowhere more so than in the dedicatory prefaces to books through which authors sought patronage in recompense for the symbolic offering of their works. Thus, even as books were increasingly bought and sold after the advent of print in Europe in the fifteenth century, and even as writers began to sell their manuscripts to printers for a profit, there remained a dimension of the book, its spiritual legacy, that lay beyond the grasp of market relations.⁷ The author might lay claim to the manuscript he created, and the printer to the book he printed, but neither could claim to possess the contents that lay within it. The Renaissance elevated the poet, the inventor, and the artist to unprecedented social heights, but their “genius” was still understood to be divinely inspired rather than a mere product of their mental skills or worldly labors.

In the sixteenth century, Martin Luther could thus preach confidently in his *Warning to Printers*, “Freely have I received, freely I have given, and I want

6 Gaines Post et al., “The Medieval Heritage of a Humanistic Ideal: ‘Scientia Donum Dei Est, Unde Vendi Non Potest,’” *Traditio* 11 (1955): 195–234.

7 Natalie Z. Davis, “Beyond the Market: Books as Gifts in Sixteenth Century France,” *Transactions of the Royal Historical Society*, ser. 5, 33 (1983): 69–88.

nothing in return.” Well into the eighteenth century the idea of the writer as God’s handmaiden held sway. Alexander Pope, in 1711, still conceived of the poet as a reproducer of traditional truths rather than an inventor of new ones, and Goethe could write fairly of the German poets of the early eighteenth century that “the production of poetical works was looked upon as something sacred. It was considered almost simony to accept or to bargain for payment of them.”

This theologically informed moral revulsion to the idea of an individual profit motive in the creation and transmission of ideas continued to circulate in the United States well into the nineteenth century. Francis Wayland, the president of Brown University in the 1830s, wrote in his college textbook *The Elements of Moral Science* that “genius was given not for the benefit of the possessor, but for the benefit of others.”⁸ And an intellectual of no less stature than George Bancroft added a Hegelian twist to the Christian tradition, writing in 1855 that:

Every form to which the hands of the artist have ever given birth, spring first into being as a conception of his mind, from a natural faculty, which belongs not to the artist exclusively, but to man. . . . Mind becomes universal property; the poem that is published in England, finds its response on the shores of Lake Erie and the banks of the Mississippi.⁹

The virtually universal proscription of private ownership of ideas in the pre-

8 Francis Wayland, *The Elements of Moral Science* (London: The Religious Tract Society, n.d [1835]), 275.

9 George Bancroft, *Literary and Historical Miscellanies* (New York: Harper & Brothers, 1855), 412, 427.

modern world did not, of course, mean that ideas flowed freely within premodern regimes. It fell to God’s agents upon the earth to determine how much of the knowledge putatively transmitted from God was actually divine in origin, as well as how widely and by whom such knowledge should be circulated within their kingdoms, empires, and cities. Rulers forged alliances with religious authorities to control the production and circulation of ideas and information – both spiritual and technical – within their realms. Throughout the world, the early modern period witnessed the emergence of elaborate systems of prepublication censorship, state-licensed monopolies to control the burgeoning printing and publishing trades, and the use of royal letters of patent or “privileges” to give exclusive monopolies for the printing and publication of authorized texts. Technical inventions came to be regulated by a similar system of exclusive state licensing.

In China, as early as the Tang dynasty (A.D. 618–907), the legal code prohibited the transcription and distribution of a wide range of literature in order to protect the emperor’s prerogatives and interests. The first known ordinance regulating publication was that of the Emperor Wen-tsing, in 835, forbidding the private publication of almanacs. An extensive regulatory apparatus was created around the industry of printing under the Sung dynasty (960–1179), and official government printing houses were established in the major cities. Exclusive state privileges were implemented for categories of sensitive literature, from astrological charts, prognostications, and almanacs to official promulgations, dynastic histories, and civil-service examination literature. Private printing houses could register a particu-

lar work with Imperial officials and receive an exclusive privilege to print and sell it.

But privileges were not a form of property right in the modern sense. They were a grace, extended by the pleasure of the authorities, and they were revocable at any time. By the eighteenth century a comprehensive system of prepublication censorship and licensing, even of private writing, was in place throughout Imperial China.¹⁰

European monarchies, empires, and city-states created similar legal and institutional structures in response to the introduction of the new technology of printing in the 1450s. Less than a hundred years later, the Reformation rent western Christendom. With the spread of ideological division, regulation of the printed word intensified rapidly. Rulers granted commercial monopolies, or “privileges,” in exchange for submission to state censorship and control. The earliest European initiative occurred in the Republic of Venice in 1469, where Johann Speyer was granted an exclusive monopoly on printing in Venetian territories for a period of five years.¹¹ The practice of granting exclusive privileges to print in a particular city, to print a particular text, or to print a particular category of texts (schoolbooks, laws, Latin texts, etc.) spread rapidly from Venice throughout the Italian states, and from there to France and England.

England presents an exemplary case. The first royal grant of a privilege to the book trade was the creation of the title

of “King’s Printer,” which was given to one William Facques in 1504. This position afforded him the exclusive right to print royal proclamations, statutes, and other official documents. By 1557 the English crown reorganized the guild of printers and publishers known as the “Stationers’ Company” and gave them a virtual monopoly over printing and publishing, both in London and in the kingdom as a whole. In 1559, as part of her attempt to resolve the religious controversies that wracked the realm, Elizabeth I issued an injunction against publication of any text unless it had been licensed by censors appointed by the crown. The Stationers’ Company kept a registry of licensed books and the crown could, in principle, extend or revoke a license at will and limit it for whatever term it deemed appropriate. Rights to profit from a book derived not from property in ideas, but from a “privilege” extended by royal “grace” alone.¹²

These licenses were “copied” into the registry book of the guild and soon came to be treated by members of the guild as exclusive rights to print a particular “copy.” Though created by royal prerogative, these “copy” rights were bought, sold, and traded amongst guild members, as though they were a form of perpetual property. By the 1570s, four prominent members of the Stationers’ Company came to have a monopoly control, through “letters patents” that they claimed as their perpetual property rights, over the most lucrative books in print: Christopher Barker, the Queen’s Printer, controlled the Bible, the New Testament, the Book of Common Prayer, and all statutes, proclamations, and other official documents; William Serres

10 Chan Hok-Lam, *Control of Publishing in China: Past and Present* (Canberra: Australian National University, 1983), 2–24.

11 Leonardas Vytautas Gerulaitis, *Printing and Publishing in Fifteenth-Century Venice* (Chicago: American Library Association; London: Mansell, 1976).

12 John Feather, *Publishing, Piracy and Politics: A Historical Study of Copyright in Britain* (London: Mansell, 1994).

had a monopoly on private prayer books, primers, and schoolbooks; Richard Tottel had a monopoly on common law texts; and John Day laid claim to alphabet books, the Catechism, and the Psalms in meter.

A similar process of consolidation of great publishing empires, founded upon monopolistic claims rooted in royal privileges, occurred throughout Christian Europe. By the middle of the seventeenth century, the Paris Book Publishers and Printers Guild, like its brethren in London, had used its strategic proximity to the royal court to achieve a monopoly on the most valued ancient and religious texts as well as the most lucrative contemporary publications.¹³ Each of the more than three hundred German principalities and cities developed its own particular mechanisms to censor books, distribute privileges, and regulate guilds.

An author might sell a manuscript to a licensed publisher for a one-time fee, but the real material rewards for the composition of a book came from the anticipated royal or aristocratic patronage that might redound, indirectly, to the writer from its publication. Authors could not publish their own books, and unless they obtained a privilege in their own name, they were denied any profits from the sale of their books. These went to the publishers alone. State-licensed monopolies on texts, on technical inventions, and on the means of reproducing them successfully wedded the commercial interests of publishers, printers, and other technical entrepreneurs to the ideological needs of absolutist states to control the knowledge that circulated in their realms.

13 Henri-Jean Martin, *Livre, pouvoirs et société à Paris au 17^{ème} siècle (1598–1701)* (Geneva: Droz, 1969).

Throughout the early modern world the development of commercial printing and publishing thus first occurred through a system of state-licensed monopolies, sanctioned by religious ideologies, that made no mention at all of intellectual property rights. The prevailing theories of knowledge and of political legitimacy made such rights inconceivable.

In the 1700s, cultural life in Europe underwent a dramatic transformation. A shift from intensive to extensive reading and the rise of a middle-class reading public led to an explosion of print commerce in the eighteenth century. In England, it is estimated that annual book production increased fourfold over the course of the eighteenth century. France, too, saw a marked increase in the literacy rate and a dramatic increase in the demand for modern secular literature.

Everywhere, observers noted the change. Whereas in 1747 Johann Georg Sulzer lamented that in Berlin “the general public does little reading,” a half-century later Immanuel Kant recorded a literary world transformed: “This incessant reading has become an almost indispensable and general requisite of life.” Kant’s observations were confirmed by others: “People are reading even in places where, twenty years ago, no one ever thought about books; not only the scholar, no, the townsman and craftsman too exercises his mind with subjects for contemplation.” Increasing literacy and the emergence of a large middle-class readership throughout Europe in the first half of the eighteenth century put unprecedented strains upon a system of publication that had been predicated on the notion that there was a fixed amount of divine or ancient

knowledge to be known, transmitted, and interpreted.¹⁴

These developments put enormous pressure on traditional notions of authorship. The increased demand for printed matter, and especially for modern secular literature (in particular, novels, theatrical works, and self-help manuals of various sorts), tempted an increasing number of young men (and women) to aspire to become writers. And they were writers of a new sort – oriented more toward the commercial potential of their contemporary readership than toward eternal glory. For the first time, in the eighteenth century, writers like Daniel Defoe in England, Denis Diderot in France, and Gotthold Lessing in Germany began to try to live from the profits of their pens rather than from elite patronage. And, not surprisingly, they began to make claims for better remuneration for their products. Older notions that a fixed “honorarium” or fee was an appropriate reward for the composition of a manuscript gave way to bolder assertions that the author deserved a share in the profits earned from his creative labor.

Rather than selling a manuscript to a publisher, authors increasingly sought simply to sell the “rights” to a single edition. With greater frequency, secular authors began to claim that they were the creators of their own works rather than the mere transmitters of God’s eternal truths. As they came to view themselves as the originators of their work, they also began to claim that their

creations were their own property, as susceptible to legal protection and as inheritable or saleable as any other form of property. Daniel Defoe wrote in 1710, “A Book is the Author’s Property, ’tis the Child of his Inventions, the Brat of his Brain: if he sells his Property, it then becomes the Right of the Purchaser.” Authors thus began to assert that their works were their own property, transmissible by contract to others if the authors desired, but that authors should no longer be constrained to sell their manuscripts in order to see them published.

The rise in public demand for printed matter also led to a dramatic expansion in the practice of literary piracy. Sensing unsatisfied market demand and acutely aware of the artificial inflation in the price of some books due to publishers’ perpetual privileges, less-scrupulous printers and booksellers throughout Europe paid diminishing heed to the claims to exclusive perpetual privileges on the best-selling and most lucrative works. Cheap reprints, produced most frequently across national frontiers or in smaller provincial cities, began to flood urban markets. Publishers of pirate editions successfully represented themselves as champions of the “public interest,” against the monopolistic members of the book guilds. Why, they argued, should any particular publisher have an exclusive claim on a work whose authors or heirs were no longer living – indeed, on many works composed before the invention of printing? Did not the greater good of making enlightening works widely available at a low cost eclipse the selfish interests of individual publishers?

By the middle of the eighteenth century, the traditional system of publication was everywhere in shambles. First in England, and then in France and Ger-

14 W. H. Buford, *Germany in the Eighteenth Century: The Social Background of the Literary Revival* (Cambridge: Cambridge University Press, 1965); Albert Ward, *Book Production, Fiction and the German Reading Public, 1740–1800* (Oxford: Oxford University Press, 1974); Roger Chartier, *The Order of Books* (Stanford: Stanford University Press, 1994).

many as well, calls for reform of the regulation of the book trade were coming from all parties involved. Readers wanted cheaper books. Government legislators sought to increase commerce and to encourage a more educated population within their realms. Foreign and provincial publishers – most notably in Scotland, Switzerland, and secondary French cities like Lyon – clamored against the perpetual monopolies of the London and Paris Book Guilds on the most lucrative books. Authors wanted their property rights in their compositions recognized as absolute and perpetual. And even the privileged guild publishers, especially in Hamburg, Leipzig, Frankfurt am Main, London, and Paris, hoped to see their traditional privileges recognized as perpetual property rights that could be defended against pirates in the courts.

Satisfying and sorting out these conflicting claims provoked a host of pressing new questions: Were ideas in fact a gift from God, as traditional authorities had claimed, or were they the property of those who made them manifest, as authors now asserted? Was a “privilege” a “grace,” or was it rather the legal ratification of an anterior, natural right to property? Upon what basis could the governments of nations or cities restrict or confirm traditional privileges? Could a secular foundation be articulated for the regulation of the publication and circulation of ideas?

The reform of the publishing industry in Europe thus entailed a rethinking of the basis and purpose of knowledge. A variety of European thinkers entered into a momentous debate about the origins and nature of ideas. As a result, a series of philosophical (or, more specifically, epistemological) problems were shown to lie at the heart of what at

first glance seemed merely to be questions of commercial policy.

One influential view – that authors have a natural property right in their ideas – was articulated first in England and associated with two key texts: John Locke’s *Second Treatise* (1690) and Edward Young’s *Conjectures on Original Composition* (1759).

In his *Treatise*, Locke famously wrote that “every Man has a *Property* in his own *Person*. This no Body has any right to but himself. The *Labour* of his Body, and the *Work* of his Hands, we may say, are properly his.” Three generations later, the poet Edward Young, writing with the assistance of the novelist Samuel Richardson, asserted that the author contributed more than simply his labor to a book – he imprinted its contents with his original personality. According to Young, the labor of an author was thus of a higher order than the labor of an inventor, never mind the labor of a farmer, for the author not only worked upon nature, but produced something from himself, which bore the indelible stamp of a unique personality. While limits might be imposed upon patents for mechanical inventions, products of the mind – bearing the personhood of their author – ought to belong perpetually to their creator. Intellectual property, an invention of the eighteenth century, thus burst into the world claiming to be real property in its purest form.

Young’s reflections, like those of John Locke before him, constituted a dramatic secularization of the theory of knowledge. If all knowledge was derived from the senses working upon nature, as Locke had argued in the *Essay Concerning Human Understanding* (1689), there was no role left for divine revelation. In the secular epistemology of Locke, inspiration is internalized and redefined as cognition. Young in turn applied Locke’s

epistemology to argue that cognition emanates from the workings of a unique mind. The individual personality supplanted God as the divine font of knowledge.

The new British accounts of knowledge began circulating almost immediately on the Continent. Young's *Conjectures on Original Composition* was rapidly translated into German and went through two editions there in the two years after it first appeared in English. Meanwhile, in France, both Locke and Young were widely influential. In 1726, for example, the French jurist D'Hericourt seized upon Locke's critical passage to argue in court on behalf of perpetual book privileges for authors, asserting that products of the mind are "the fruits of one's own labor, which one should have the freedom to dispose of at one's will" and forever. One could own one's ideas just as one owned land that one had cleared with one's own labor. D'Hericourt concluded that a royal book privilege was not merely a grace accorded by the king, to be granted or revoked at his will, but rather a legal confirmation of an anterior natural property right, secured by the author's labor.¹⁵ The author could sell or retain those rights as he or she wished. Once sold, they belonged to the publisher in perpetuity.

The same argument was taken up again by the encyclopedist Denis Diderot in 1763, after he was commissioned by the Paris Book Guild to write a *Letter on the Book Trade*. In Diderot's words, we can hear the resonance of both Locke and Young:

What form of wealth *could* belong to a man, if not the work of the mind... if not

15 Raymond Birn, "The Profit in Ideas: *Privilèges en librairie* in Eighteenth-Century France," *Eighteenth-Century Studies* 4 (2) (1971): 131–168.

his own thoughts... the most precious part of himself, that will never perish, that will immortalize him? What comparison could there be between a man, the very substance of a man, his soul, and a field, a tree, a vine, that nature has offered in the beginning equally to all, and which the individual has only appropriated though cultivating it?¹⁶

Like Young, Diderot argued that products of the mind are more uniquely the property of their creator than land acquired through its cultivation. Literary property should, therefore, be even less susceptible to social regulation than land.

It was Gotthold Lessing, the greatest writer of the German Enlightenment, who most forcefully developed the notion of the author's unique personality as a source of property rights in ideas. In a 1772 essay, *Live and Let Live*, Lessing proposed a reorganization of the German book trade that attacked the foundations of the old system. He challenged directly the traditional ban on profits received from writing:

What? The writer is to be blamed for trying to make the offspring of his imagination as profitable as he can? Just because he works with his noblest faculties he isn't supposed to enjoy the satisfaction that the roughest handyman is able to procure?... Freely hast thou received, freely thou must give! Thus thought the noble Luther... Luther, I answer, is an exception in many things.

From Lessing forward, German writers clamored insistently for recognition of their claims upon their writings as a form of unique, perpetual, and inviolable property.

16 Denis Diderot, *Oeuvres Complètes*, 15 Vols. (Paris: 1970), 5:331 (my translation).

A generation later, Johann Gottlieb Fichte, a philosopher and disciple of Kant, probed the complexities of the problem even more deeply. Fichte posed a difficult question: if creations of the mind were indeed “property,” what exactly was immaterial property? Clearly it did not simply consist of a physical manuscript, since the author or the publisher could no longer claim such an object to be unique once it had been reproduced through printing. Literary property seemed to lack the singular physical form that characterized other forms of real property. But this was not the only difficulty with the idea of a property in ideas. After all, a great many people seemed able to share the same ideas, and it seemed intuitively just that as many people as possible should be permitted to express freely the same ideas independent of one another.

Fichte’s solution to his puzzlement proved widely influential. For an idea to be regarded as a piece of real property, Fichte argued, it had to be assigned some distinguishing characteristic that allowed one person, and no other, to claim it as his own. That quality, he suggested in 1791 in his essay *Proof of the Illegality of Reprinting: A Rationale and a Parable*, lay not in the ideas per se, but rather in the unique “form” in which an author chose to express these ideas. Once published, the ideas in a book belonged to all – but the singular form of their expression remained the sole property of the author. Even ideas that had been “in the air” could become a piece of property through the unique way in which an author expressed them. Fichte’s distinctions – between the material and the immaterial book, and between the content and form of ideas – were to be critical in establishing a new theory of copyright based on the natural right to property in the unique expres-

sions of ideas, rather than in the ideas themselves.¹⁷

Not everyone shared the enthusiasm of Fichte and Diderot and Edward Young for the nascent concept of intellectual property. Some viewed the widespread movement toward securing an author’s property rights as nothing more than a new metaphysics and a thinly veiled campaign to protect the monopolies of book publishers. In the 1770s, a zealous German mercantilist went so far as to defend the piracy practiced by some German book publishers:

The book is not an ideal object... It is a fabrication made of paper upon which thought symbols are printed. It does not contain thoughts; these must arise in the mind of the comprehending reader. It is a commodity produced for hard cash. Every government has a duty to restrict, where possible, the outflow of its wealth, hence to encourage domestic reproduction of foreign art objects.

In 1776, the French mathematician and philosopher Condorcet expressed even deeper reservations, for philosophical rather than commercial reasons. Writing in direct response to Diderot’s *Letter on the Book Trade*, Condorcet disputed his Lockean line of argument: “There can be no relationship between property in ideas and [property] in a field, which can serve only one man. [Literary property] is not a property derived from the natural order and defended by social force; it is a property founded in society itself. It is not a true right; it is a privilege.”

Ideas, Condorcet asserted, are not the creation of a single mind. Nor are they a

17 Martha Woodmansee, “The Genius and the Copyright: Economic and Legal Conditions of the Emergence of the ‘Author,’” *Eighteenth-Century Studies* 17 (1984): 425–448.

gift from God to be regulated by royal authority. Ideas inhere in nature and are equally and simultaneously accessible to all. Ideas are intrinsically social: they are not produced by individuals alone; they are the fruit of a collective process of experience.

Moreover, Condorcet could see no social value in granting individual claims upon ideas. Since true knowledge was objective, particular claims on ideas could consecrate nothing more than mere style, what Fichte had called “form.” Condorcet, as a man of science rather than literature, had little use for style. Style merely distorted nature’s truths, and to encourage the individuation of ideas was simply to encourage pleasant fictions and personal gain rather than the pursuit of knowledge and the public good: “It is uniquely for expressions, for phrases, that privileges exist. It is not for the substance of things.... Privileges of this sort, like all others, are inconveniences that diminish activity by concentrating it in a small number of hands.... They are neither necessary nor useful, and... they are unjust.”

While Diderot, Lessing, and Fichte celebrated romantic originality, Condorcet sought to ground public literary culture in scientific rationalism. The model of publication based upon authors’ property rights could, according to Condorcet, be replaced with the model of periodical subscriptions, like the *Journal des Savantes*. People could subscribe to useful publications and the authors could be remunerated as salaried employees or freelance writers for a nonprofit organization. More important than his specific policy suggestion was Condorcet’s claim that if ideas, as social creations, were to be recognized as a form of property, it must not be on the basis of an individual natu-

ral right but rather on the basis of the social utility of a property-based regime.

Condorcet thus erected a second, alternative pillar for the modern notion of intellectual property: social utilitarianism.

The tension within Enlightenment epistemology left those policymakers concerned with the book trade on the horns of a philosophical dilemma. Did knowledge inhere in the world – or in the mind? To what extent were ideas discovered – and to what extent were they invented?

Condorcet argued that knowledge was objective and thus fundamentally social in character, belonging to all. Diderot, along with Young, Lessing, and Fichte, viewed ideas as subjective, originating in the individual mind and thus constituting the most inviolable form of private property.

Two strains of legal interpretation developed from these competing philosophical doctrines. Those legal thinkers who sided with the objectivist position of Condorcet elaborated the utilitarian doctrine that there was no natural property in ideas, and that granting exclusive legal rights to individuals for unique forms of their expression could only be justified because such an arrangement was the best legal mechanism for encouraging the production and transmission of new ideas, a manifest public good. Conversely, those who sided with Locke, Young, Diderot, Fichte, and the subjectivist camp argued that there was a natural right to perpetual property in ideas and that legal recognition of that right was simply the confirmation in statute of a universal natural right. The utilitarian position thus understood the public interest as the highest aim of the law, while natural-rights proponents argued that the sanctity of the individual

creator should be the guiding principle of any legislator.

Over the course of the eighteenth century, every European country witnessed a series of legal battles over which of these principles would prevail. Vested interests on both sides of the debate vied to capture the legislative advantage. The English were the first to take up the question after the lapsing of the Licensing Act in 1695, which had regulated the book trade and censorship. Intending to end prepublication censorship by suppressing the obligation to submit to prior licensing before publication, Parliament inadvertently also called the whole system of privileges into question. If a work were not registered prior to publication, no mechanism existed to protect literary privileges against pirate editions. The Stationers' Company clamored for recognition of their traditional privileges as perpetual property rights, while pirate publishers insisted that the lapsing of the act meant that all previously published works were now free for all to reprint.

Parliament finally filled the legal vacuum in 1710, when the so-called Statute of Anne definitively separated the question of censorship from that of literary property. The statute ruled that authors, and those who had purchased a manuscript from an author, would have an exclusive right to publish the work for fourteen years (the term that had previously been established for patents on mechanical inventions). This right could be renewed for an additional fourteen years. But after this period (of fourteen or twenty-eight years), the work became part of the public domain, and anyone was free to publish it. As a result, all of the monopolies held by the Stationers' Company on classical texts were abolished. In effect, the Statute of Anne – its full title, appropriately enough, was “A Bill for

the Encouragement of Learning and for Securing the Property of Copies of Books to the Rightful Owners Thereof” – represented an uneasy compromise between the position of the Stationers' Company and the advocates of authors' natural rights on one side and the position of the pirate publishers and advocates of “the public interest” on the other.

Needless to say, neither side was entirely satisfied with this compromise. The contradictory philosophical assumptions it codified left plenty of room for subsequent court challenges. A series of cases that pitted London publishers against foreign rivals – *Tonson v. Collins* in 1760, and *Millar v. Taylor* in 1769 – led briefly to a recognition of perpetual property rights in the unique expression of an idea. But *Donaldson v. Becket* in 1774 reversed this decision, and definitively established as British law the compromise concept of a “limited property right” in the unique expression of an idea.

The *Donaldson v. Becket* decision was crucial in two respects. First, despite the dissenting voice of eighteenth-century England's most distinguished jurist, William Blackstone, it established the “encouragement of learning” as the highest aim of the laws regulating books. Second, even though copyright was acknowledged to be a natural right rooted in common law, the *Donaldson v. Becket* decision held that copyright in practice hinged on government legislation. In England, the utilitarian doctrine of a higher public good trumped the idea of intellectual property rooted in natural right.¹⁸

18 Mark Rose, *Authors and Owners. The Invention of Copyright* (Cambridge, Mass.: Harvard University Press, 1993).

In early America, both natural rights and utilitarian doctrines were debated within the British colonies, and colonies differed as to which theory formed the basis of their laws.¹⁹ The Statute of Anne, as ratified by the *Donaldson v. Becket* decision, became the basis for the relevant clause in the Federal Constitution of 1787: “Congress shall have the power . . . to promote the progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” This article in turn became the basis of the United States Copyright Statute of May 31, 1790. The author or inventor was acknowledged as an individual with special claims upon his own ideas – but the public good dictated that those claims be limited. In America, as in England, there thus remained a persistent tension between a natural-rights justification for perpetual copyright claims, rooted in common law, and statutory limits that preempted, but did not abolish, those anterior rights.

A similar tension in French legal thinking provoked a parallel set of court battles. At the beginning of the eighteenth century, the French crown, hoping to strike a compromise between Parisian publishers and their provincial competitors, had declared that privileges were not a form of perpetual property, as the Parisian publishers claimed, but rather “a grace founded in justice”; as a result, privileges could be limited, renewed, or even revoked, at the king’s will. This ruling permitted the crown

officers administering the book trade considerable latitude in redistributing privileges. The ruling did little, however, to undermine the monopolies of the Paris Book Guild, or to forestall a growing flood of books illegally produced by provincial and foreign printers.

In 1777, the French crown, confronted with mounting criticism, was forced to revise the system of privileges. While still refusing to recognize the concept of “literary property,” the king for the first time granted authors their own category of privileges (*privileges d’auteur*). These new privileges were to be perpetual and inheritable, like any other form of personal property. However, once an author sold a manuscript to a publisher, the publisher’s claim would be limited to ten years, with the possibility of a single renewal. This meant that the publisher’s privileges were to be restricted at the same time as unlimited privileges were extended to authors. The Paris Book Guild, predictably enraged, refused to acknowledge the new law and essentially went on strike against crown officials until the Revolution in 1789.

The Revolution changed everything. “Freedom of the press” was declared and literary privileges abrogated. The royal administration of the book trade was abolished, and so were the Parisian book guilds. Authors were now widely celebrated not as private creators and possessive individuals, but rather as civic heroes, servants of public enlightenment.²⁰

Hoping to establish the French book trade on a new, secular footing, the Abbé Sieyès in 1791 proposed passing a “Law on the Freedom of the Press” that he had written with the help of Condorcet,

19 See Lyman Ray Patterson, *Copyright in Historical Perspective* (Nashville: Vanderbilt University Press, 1968), esp. 180–202; and Jane C. Ginzburg, “A Tale of Two Copyrights: Literary Property in Revolutionary France and America,” *Tulane Law Review* 64 (5) (May 1990): 991–1031.

20 Carla Hesse, *Publishing and Cultural Politics in Revolutionary Paris, 1789–1810* (Berkeley: University of California Press, 1991).

among others. Like the English Statute of Anne, the Sieyès law recognized authors' texts as a form of property, originating with their creators, and susceptible to legal protection; yet at the same time, the Sieyès law reflected Condorcet's concern for the "public interest" by limiting exclusive claims upon literary property to the lifetime of the author, plus ten years.

In the heated climate of revolutionary Paris, the law proposed by Sieyès satisfied no one. Many journalists rejected any law that threatened to limit the free circulation of texts. Revolutionary pamphleteers denounced it as a resurrection of discredited feudal privileges. Veteran book publishers demanded a restoration of their former rights and privileges.

It was only in 1793, after the Paris Book Guild had ceased functioning as a lobbying group, and after the seizure of power by the Jacobins, that the National Convention was able to pass a slightly revised version of the Sieyès law, now touted as a "Declaration of the Rights of Genius." The law of July 19, 1793, became the basis for all subsequent literary property law in France. It ratified the compromise proposed by Sieyès in 1791 and, like the British *Donaldson v. Becket* decision of 1774, enshrined the concept of a limited property right as the best means to strike a balance between remunerating authors and protecting the public interest in the advancement of learning.

In these years, a great many German writers and intellectuals closely followed the debate over intellectual property in France. Since there was no unified German state until 1870, there was no centralized authority to regulate the book trade. Still, a number of individual German states did pass laws similar to the revised Sieyès law. In 1794, for exam-

ple, the largest German state, Prussia, revised its general legal code to reaffirm the privileges of publishers, but also to extend similar privileges to authors.

During the Napoleonic period, when the French civil code was imposed on many German states, even more principalities followed the French model: Baden was the first German state to grant real copyright to authors (1806, 1810), and the phrase *Rechten des Urhebers* (authors' rights) was first used in Bavaria in 1813. Beginning with the Congress of Vienna in 1815, authors' rights were increasingly and more uniformly recognized in German law. It was not, however, until 1870 that Imperial Germany successfully adopted a uniform copyright law similar to those of the French and the English.²¹

It is no coincidence that the English phrase "intellectual property" should first appear in 1845, according to the *Oxford English Dictionary*. By then, a broad consensus had emerged that "copyright" should strike a balance between the interests of the intellectual property owner and the public good: authors and inventors could profit from their works and their ideas, but only for a limited span of time.

But this is by no means the end of the story. Because the modern laws regulating intellectual property rest on a largely unexamined set of contradictory philosophical assumptions, these laws have been uniquely vulnerable to challenge – not least by the continuing rise of new methods of distributing ideas and information across national boundaries. As a result, the philosophical tensions at the heart of modern concepts of intellectual

21 Reinhard Wittmann, *Geschichte des deutschen Buchhandels: ein Überblick* (Munich: Verlag C. H. Beck, 1991).

property have been played out on an increasingly global scale, reworking the balance between private rights and the public interest, often in dramatic new ways.

The industrial revolution created an international market for literary works and mechanical inventions – and so created a new need for a regime of international intellectual property rights. By the middle of the eighteenth century, French competition with Belgian and Swiss publishers had led to the first major international copyright treaties. In 1858, a Congress of Authors and Artists convened by Victor Hugo held its first meeting in Brussels in an effort to formulate a truly international basis for the universal protection of authors' rights. Unable to secure agreement on such a universal regime, the congress instead enunciated a doctrine of "national treatment," asking each nation to extend the legal protections it offered to domestic writers and inventors to foreign writers and inventors as well.

A generation later, in 1886, a series of conferences held in Berne led to the signing by ten European nations of the first international copyright treaty.²² Despite the doctrine of "national treatment," the process of internationalizing copyright protection tended to strengthen universalist claims for protection of inviolable natural rights against statutory limits imposed by particular nations on utilitarian grounds. This progressive shift in the legal spectrum toward the enforcement of natural rights has led to a steady strengthening of private intellectual property right claims over the doctrine of the public interest. Thus, over the course of the nineteenth and

twentieth centuries the private claims of holders of authorial rights or copyrights have been repeatedly extended from the initially modest ten to fourteen years after the author's death to the current terms of fifty and sometimes seventy-five years after the author's death in most countries with liberal copyright regimes.

Positions on copyright were clearly not the product of disinterested jurisprudential reflection. By the nineteenth century it became clear that nations that were net exporters of intellectual property, such as France, England, and Germany, increasingly favored the natural-rights doctrine as a universal moral and economic right enabling authors to exercise control over their creations and inventions and to receive remuneration. Conversely, developing nations that were net importers of literary and scientific creations, such as the United States and Russia, refused to sign on to international agreements and insisted on the utilitarian view of copyright claims as the statutory creations of particular national legal regimes. By refusing to sign international copyright treaties, the developing nations of the nineteenth century were able to simply appropriate the ideas, literary creations, and scientific inventions of the major economic powers freely.

The United States offers an exemplary case. As it evolved from being a net importer of intellectual property to a net exporter, its legal doctrines for regulating intellectual property have tended to shift from the objectivist-utilitarian side of the legal balance toward the universalist-natural-rights side. In early-nineteenth-century America the first great publishing houses in New York, Philadelphia, and Boston built fantastic fortunes on unauthorized, and unremunerated, publication of British writers. They

22 Peter Burger, "The Berne Convention: Its History and Its Key Role in the Future," *Journal of Law and Technology* 3 (1) (Winter 1988).

justified their practices on the utilitarian grounds that copyright was statutory and that it was in the American public interest to have great works available for the cheapest possible prices.²³ *Harper's Monthly*, for example, was created exclusively from unauthorized reproductions of copy from British magazines. In 1843 a copy of Charles Dickens's *A Christmas Carol* sold for six cents in the United States, while in England it cost the equivalent of two dollars and fifty cents.²⁴ The Reverend Isaac K. Funk, founder of Funk and Wagnalls, made his initial fortune by pirating Ernst Renan's *The Life of Jesus*. Against these large publishing and printing businesses a movement for American recognition of international copyright claims emerged by the 1830s, led largely by American writers and fellow advocates of a nativist American culture who felt that without international copyright indigenous writers could not compete with their British counterparts in the American literary market. They drew increasingly upon the rhetoric of authors' universal natural rights, and they appealed on patriotic grounds to Congress to act to encourage American letters by preventing cheap reprints of unauthorized British texts.

Not surprisingly, despite repeated petitions to Congress from distinguished writers in both America and England, this movement was repeatedly thwarted by the more intensive lobbying of the American publishing industry in the name of the public interest. Thus the Sherman and Johnson publishing house of Philadelphia sent the following pro-

test to the Senate and the House in 1842:

All the riches of English literature are ours. English authorship comes to us free as the vital air, untaxed, unhindered, even by the necessity of translation, into the country; and the question is, shall we tax it, and thus impose a barrier to the circulation of intellectual and moral light? Shall we build up a dam to obstruct the flow of the rivers of knowledge?²⁵

Knowledge was there for the taking if the grab could be justified by the public good. A radical version of Condorcet thrived in mid-nineteenth-century America. By the 1870s the American debate became sharply focused. On one side, trade protectionists, printers' unions, and publishing houses whose fortunes were rooted in pirating British literature argued against any international agreement. On the other side, advocates of indigenous authors allied themselves with partisans of free trade and international copyright, claiming universal natural rights of authorship.

A critical shift in the political balance occurred in the 1880s as the older American publishing houses on the east coast began to see their profits eroding in the face of a new generation of mass penny-press publishers, expanding especially in the midwestern states, who undercut their costs and reached yet wider markets. In the face of this challenge the older houses reshaped their business strategies and their arguments about intellectual property. They now realized that they would be better positioned than the new generation of publishers to sign exclusive copyright agreements with foreign authors that would be enforceable within the United States. The signing of the Berne Convention in

23 Aubert J. Clark, *The Movement for International Copyright in Nineteenth-Century America* (Washington, D.C.: The Catholic University of America Press, 1960).

24 Sidney Moss, *Charles Dickens' Quarrel with America* (Troy, N.Y.: Whitson Pub. Co., 1984).

25 Cited in Clark, *The Movement for International Copyright*, 77.

Europe in 1886 added further momentum to a shift in the views of major publishing houses like Harper's and Scribner, who recognized the advantage of the movement for American adherence to some form of international agreement, at least with England. American theologians, including the Reverend Isaac Funk, now denounced the "national sin of literary piracy" (which had allowed him to make his fortune on his pirated *Life of Jesus*) as a violation of the seventh commandment.²⁶ And their voices resounded on the floor of Congress. Although Congress refused to sign the Berne Convention on the grounds that American law did not recognize authors' natural rights, in 1891 an international agreement with England for reciprocal copyright protection was finally signed by Congress.

By the opening of the twentieth century, as America came to be a full-fledged competitor in international commerce in intellectual property and a net exporter of intellectual property, American legal doctrine began to move toward an increasing recognition of unique authorial rights rooted in the sanctity of the personality of the creator, rather than simply in commercial privileges extended for utilitarian ends. The personality theory of intellectual property had been present in the Anglo-American tradition since the eighteenth century, but the single most important source for this shift in principle was the Supreme Court decision written by Justice Holmes in *Bleistein v. Donaldson* (188 U.S. 239) in 1903.²⁷ The case involved the commercial repro-

duction of images used in a circus poster. The argument of the defendant, Donaldson, was that the images were of such a generic nature as to contain insufficient originality to qualify as artistic creation susceptible to copyright protection. The Holmes court demurred, arguing that the courts were not to be put in the role of literary or artistic critics, that is, judges of the artistic merit of a work, and that moreover, any created image "is the personal reaction of an individual upon nature. Personality always contains something unique. It expresses its singularity even in handwriting, and a very modest grade of art has in it something irreducible, which is one man's alone."

Through the Holmes decision the rhetoric of authorial originality and natural rights – the Defoe, Diderot, and Lessing side of the Enlightenment debate – made its way into American jurisprudence at the very moment when America began to supplant Europe as the hegemonic global economic power. The course of twentieth-century American copyright law – from *Bleistein v. Donaldson* through United States adherence to the Berne Convention in 1988 to the Digital Millennium Copyright Act of 1995 – has been a story of the steady strengthening of the proprietary rights of intellectual property owners at the expense of public access and interest.²⁸ It is a history of the tipping of the balance in the founding principles of eighteenth-century intellectual property law away from the aim of public utility through "encouragement of learning" toward the enhancement of private commercial gain.

26 Henry Van Dyke, *The National Sin of Literary Piracy* (New York: Charles Scribner's Sons, 1888).

27 Robert C. Post, "Reading Warren and Brandeis: Privacy, Property, and Appropriation," *Case Western Reserve Law Review* 41 (3) (1991): 658–662.

28 James Boyle, *Shamans, Software, and Spleens: Law and the Construction of the Information Society* (Cambridge, Mass.: Harvard University Press, 1996); and Jessica Litman, *Digital Copyright* (Amherst, N.Y.: Prometheus Books, 2001).

The tension between utilitarian interests and authors' natural rights has also played itself out in modernizing societies beyond the United States and Western Europe. Developing nations, which are net importers of cultural goods and technology, find themselves in the position of the United States in the nineteenth century. And the tendency has been for these nations to hold fast to the utilitarian claim that the national public interest should come before recognition of the natural right to property in international copyright, patent, or trademark claims asserted by exporting nations.

In Russia and China the eighteenth-century battles were fought in much the same terms, although with different actors. Theocratic authority gave way to secular power within a Marxian framework, which drew upon the Lockean notion that new ideas and inventions were the result of the mind working upon natural resources. This led to a labor theory of intellectual production that was assimilable to the Marxist notion of the labor theory of value. But Marx gave it a twist *à la* Condorcet. He argued that labor was inherently social rather than individual in nature, even in the case of mental labor, when the mind worked alone with its own resources. In his early manuscripts, Marx suggested that this was because the creating individual was the product of social experience – he owed his livelihood and education to the society that produced him. Because he worked with natural resources that should belong to all, his mental labors were social, and hence the products of them should belong to society as a whole. The people, in the form of the revolutionary people's state, were thus to lay claim to the right to exploit the creations of individual authors and

inventors.²⁹ The early Bolsheviks thus famously “nationalized” a list of great Russian writers following the 1917 revolution. And Chinese authorities during the Cultural Revolution promulgated the following popular saying: “Is it necessary for a steel worker to put his name on a steel ingot that he produces in the course of his duty? If not, why should a member of the intelligentsia enjoy the privilege of putting his name on what he produces?”

The story of intellectual property in Russia and China, despite brief experiments with liberal property-based regimes in the early twentieth century, has essentially been a story of the devolution of a monopoly on ideas and inventions from theocratic regimes to communist states. In both the Soviet and Chinese communist regimes, however, there was an increasing recognition of the necessity to create nonproperty-based incentives for individual authors and inventors. A system of state-issued awards, prizes, and privileges became the socialist mechanism for encouraging creation and invention. The Soviet Union created a system of “Authors' Certificates” that recognized individual contributions to the public good, and the Chinese, after the Cultural Revolution, followed suit. While the state retained the power to exploit, or not exploit, the contributions of these individuals, the certificates made their bearers eligible for material rewards and for remuneration from the profits generated by their creations. In socialist coun-

²⁹ John N. Hazard, *Communists and Their Law* (Chicago: University of Chicago Press, 1969), 243–268; Serge Levitsky, *Introduction to Soviet Copyright Law* (Leyden: A. W. Sythoff, 1964); Michael A. Newcity, *Copyright Law in the Soviet Union* (New York: Praeger Publishers, 1978); Alford, *To Steal a Book is an Elegant Offense*.

tries, the logic of utilitarianism – married to a state monopoly on the distribution of knowledge – led to a system of public patronage of authors and inventors rather than a recognition of their individual property rights.

Islamic states have followed yet another path. These states have remained theocracies, and so *shari'a*, or Koranic law, remains the highest authority, even for secular potentates. Koranic property law traditionally applied only to tangible things that could be apprehended by the five senses. It is notoriously silent on the question of ownership of ideas.³⁰ In Islamic jurisprudence, however, where the Koran is silent, governments are permitted to make a new law, as long as it does not explicitly conflict with Koranic injunctions. As a consequence, in the twentieth century a body of intellectual property law has emerged in most Islamic states, based on Western legal codes.

These Western-style copyright laws have recently come under new scrutiny by Muslim jurists, and a lively debate has emerged between legal scholars as to whether any concept of ownership of ideas is compatible with *shari'a*. Some scholars argue that the concept of “intellectual property” is inherently incompatible with the Koranic injunction against the ownership of anything intangible, suggesting that it will only lead to private monopolies of some individuals over knowledge. Others make the distinction between ideas and their tangible expression and defend the modern concept of copyright.³¹

30 Steven D. Jamar, “The Protection of Intellectual Property under Islamic Law,” *Capital University Law Review* 21 (1992): 1079–1106; Sayed Hassan Amin, *Law of Intellectual Property in the Middle East* (Glasgow: Royston, 1991).

31 See Simon Buckingham, “In Search of Copyright in the Kingdom,” *Middle East Executive*

Because these states remain essentially theocratic in nature, however, the law has preserved the state’s right to censor all publications as it deems necessary, and to assert the broad discretionary power of the government to set limits on the terms and duration of an author’s or inventor’s rights in relation to his creations. In Iran, for example, the duration of private copyright claims is set at thirty years after the author’s death. The state then retains an exclusive right on the creation for another thirty years before it is made accessible to the public at large. Moreover, Islamic states in general do not extend copyright protection to non-nationals, although some bilateral agreements have been signed between Arab nations. In the international arena, Islamic law has thus tended toward the utilitarian position that the state’s interest is higher than any notion of the universal natural rights of authors or inventors.

In the closing decades of the twentieth century the outlines of a serious conflict over the nature and scope of intellectual property have emerged in the international arena. In general, developing nations – including not only China, Taiwan, Russia, and the Middle Eastern states, but African and South American nations as well – have employed the utilitarian argument, derived from Condorcet, that intellectual property is inherently social in nature and that the state has the right to limit the individual claims of its citizens as well as others in the name of the public good. This argument is used, as it was in nineteenth-century America, to justify these nations’ refusal to recognize copyright and patent claims by nonnationals.

Reports, 8 May 1988, and Mufti Taqi Usmani, “Copyright According to Shariah,” *Albalagh, an Islamic E-Journal* (23 April 2001).

Conversely, the United States and Western Europe have witnessed a shift in their jurisprudential traditions away from the utilitarian side of the eighteenth-century intellectual property balance and toward an unprecedented strengthening of the doctrine of the universal natural rights of authors and inventors to the exclusive commercial exploitation of their creations and inventions. And since the 1970s the United States and Western European nations have been increasingly aggressive in using trade sanctions and international trade agreements to coerce developing nations to recognize precisely this view of intellectual property rights.³²

32 Alford, *To Steal a Book is an Elegant Offense*; Zachary Aoki, "Will the Soviet Union and the People's Republic of China Follow the United States' Adherence to the Berne Convention?" *Boston College International and Comparative Law Review* 13 (Winter: 1990): 207–235; and Natasha Roit, "Soviet and Chinese Copyright: Ideology Gives Way to Economic Necessity," *Loyola Entertainment Law Journal* 6 (1986): 53–71.

The consequences of this evolution in Western, and especially American, intellectual property law are troubling for several reasons. Most immediately, in the global arena questions of patents on AIDS drugs, stem cells, and ethnobotanical practices are morally urgent. The dominance of the natural-rights view leads to immediate suffering and to the appropriation of local knowledge for international gain. The loss of a legal balance in the global arena risks giving monopolistic power to exporter nations. Equally important, it puts at risk the liberal political balance between individual gain and the public good that was the foundational aim of the intellectual property laws within Western democratic polities themselves. The cultural and scientific health of Western democracies in the future will depend on a public renewal of the animating mission of the Enlightenment concept of intellectual property: to dismantle commercial monopolies on the circulation of thought and to spread knowledge freely among our citizenry.

The rise of intellectual property, 700 B.C. – A.D. 2000

Arthur Goldhammer

On Diderot & Condorcet

The texts that follow are excerpts from two seminal documents of the Enlightenment debate about intellectual property that Carla Hesse recounts in her essay in this volume, and that Roger Chartier analyzes in detail in his contribution. The first is by Denis Diderot (1713–1784), writer, philosopher, and editor of the *Encyclopédie*. The second is from the pen of Marie Jean Antoine Nicolas de Caritat, Marquis de Condorcet (1743–1794), philosopher, mathematician, and politician executed for his Girondin sympathies during the Terror.

The two texts are a study in contrasts, not only for their contradictory positions on the key issue of authorial rights (Diderot held that authors are the natural owners of their texts, whereas Condorcet emphasized the public's interest in the widest possible dissemination of

ideas), but also for their styles.

Diderot is all energy and abundance; Condorcet is poise and restraint. Diderot's torrents of language are meant to sweep opposition away, Condorcet's logic and balance to hold it in check. One is not surprised to find Condorcet conceding, with cavalier nonchalance, that "*privileges*" – or rights to publish, roughly equivalent to copyrights – "exist only for expressions, for sentences, not for substance or ideas," as if expression were a mere trifle, whereas for Diderot the paramount question is what property a man can own "if a work of the mind – the unique fruit of his upbringing, his studies, his evenings, his age, his researches, his observations; if his finest hours, the most beautiful moments of his life; if his own thoughts, the feelings of his heart, the most precious part of himself, that which does not perish, which makes him immortal – does not belong to him?"

For Condorcet, moreover, the discussion is an abstract one, best conducted in the language of freedom, natural rights, and societal interests. In Diderot's text, by contrast, one hears echoes of a very harsh and concrete struggle for existence: the battle among publishers for market share, among writers for recognition, between writers and publishers

Arthur Goldhammer has translated more than eighty books from French into English, including works by Francois Furet, Marguerite Duras, Jacques Le Goff, Emmanuel Le Roy Ladurie, Jean Starobinski, and Roger Chartier, among others. A Chevalier de l'Ordre des Arts et des Lettres, he has also received the Médaille de Vermeil of the Académie française. He is currently working on a new translation of Tocqueville's "Democracy in America" for the Library of America.

for the division of profits and the apportionment of risk.

Condorcet's text speaks for itself. But readers new to Diderot may be astonished to find, instead of a coherent argument, something close to a rant, delivered in a breathless rush of dense (and, to the modern reader, sometimes confusing) allusions. The rapid shifts of register and tone must also have disconcerted the booksellers who commissioned the piece: they had the draft reworked by other hands, and Diderot's words did not appear in their original form until after his death.

When Diderot drafted his brief in 1763, he was still in the thick of publishing *L'Encyclopédie*. Condorcet's piece, though in some ways a riposte to Diderot, was not published until 1776, thirteen years later, as part of a larger defense of freedom of the press.

Because the two texts have such different complexions, the selection of passages to translate was based in each case on different principles. For the Condorcet, the choice was easy, since his discussion of the central issue of authorial rights and intellectual property is confined to the final pages of a much longer text. I therefore chose to translate this compact and coherent final section in its entirety.

In the case of the Diderot, the criteria of selection were more complex. It was essential, first of all, to choose passages illustrating the delicacy of Diderot's position: although ostensibly writing a brief on behalf of the guild of booksellers, he is at pains to justify a continuation of privileges in the form of authorial property rights without thereby justifying corporate monopolies in publishing. I also wanted to include passages that offer a particularly vivid image of

the eighteenth-century man of letters, and also those that exemplify the complexity of the book trade as it existed in Diderot's time, with its international competition, pirated editions, and royal regulation and censorship.

Underlying the contradictory positions of Diderot and Condorcet are unspoken assumptions about the precariousness of the writer's existence, about the very question of survival. For Condorcet, whose image of the man of letters is the philosopher or mathematician, survival is not an issue: if private means are not available, there is always institutional support. Diderot, for whom the paradigmatic writer is the bohemian in his garret, is less sanguine: "How many authors," he asks, "have not obtained the celebrity they deserve until long after their death? This is the fate of nearly all men of genius. They are not within reach of their century."

Yet Diderot is sensitive not only to the difficulties of his own estate, the men of letters, but also to those of his partners and sometime adversaries, the publishers: is not the purpose of regulation "to protect the legitimate interests of the printer, to encourage him, to secure a future for him and his children, to bind him to his estate and interest him in risky enterprises by ensuring that his household and his family would enjoy the fruit thereof in perpetuity"? He writes not as an ideologue but as a man engaged in a profession and deeply aware of its complexities, and as such he has no "wish to be cleverer than Providence, which is content to balance goods with ills."

Because the meaning of the publishing *privilege* in France changed over time, I have left this term in French.

Denis Diderot

Letter on the book trade

Excerpts selected and translated by Arthur Goldhammer

I shall begin by saying that the question here is not simply one of the interests of a guild. What does it matter to me if there is one guild more or less? Can this possibly concern me, one of the most zealous proponents of liberty in the broadest sense? – who suffers pangs at the sight of restrictions imposed on the exercise of the lowliest of talents, of natural industriousness and strength hobbled by convention? – who has always been convinced that corporations were unjust and catastrophic, and who would look upon their utter and absolute abolition as a step toward wiser government?

The object is to examine, as things now stand, or indeed under any other hypothesis, what should be done in response to the harm that has already been or might yet be done to our booksellers; whether foreigners' attacks on our commerce should be suffered any longer; what is the relation between commerce and literature; whether it is possible to degrade one without injuring the other, and impoverish the bookseller without ruining the author; what *privileges* are in regard to books, and whether they should be included under the general and odious denomination of other monopolies (*exclusives*); if there is some legitimate basis for limiting their duration or denying applications for their

renewal; what is the nature of a bookseller's stock-in-trade; what rights of ownership to a work does the bookseller acquire from the writer (*littérateur*); whether those rights are temporary or eternal. The examination of these various points will lead me to clarify others, as you have requested....

A bookseller's stock-in-trade consists of the possession of a more or less considerable number of books appropriate to different estates of society and assorted in such a way that the certain but slow sale of some, advantageously compensated by the equally certain but more rapid sale of others, favors the increase of the initial possession. If a bookseller's stock does not satisfy these conditions, it is ruinous....

It is not a merchant who is speaking to you; it is a man of letters whose colleagues have on occasion consulted him as to the use of their talents. If I were to propose some important project to them, they would not answer, "Who will read me? Who will buy me?" but rather, "When my book is done, what bookseller will take it?"

Most of these people haven't a sou, and what they need right now is a commission to produce some vile pamphlet that will earn them quick money and put bread on the table tomorrow. In fact, I

could name you twenty great and good works whose authors died before finding a merchant to take them, even at a paltry price. . . .

[How many of the] celebrated printers whose editions we now seek out, whose work astonishes us, and whose memory we hold dear died poor? They were, moreover, on the verge of abandoning their type and their presses when the justice of the magistrate and the liberality of the sovereign came to their rescue. Caught between their taste for science and for their art and their fear of being ruined by greedy competitors, what did these clever and unfortunate printers do? Among the manuscripts that remained, they chose a few that might succeed if printed; they quietly prepared an edition; they published it, and to ward off as best they could the counterfeits that had begun their ruin and would have completed it, they went to the monarch just prior to publication and from him sought and obtained an exclusive *privilege* for their venture.

There, sir, is the first line of the bookseller's code, the first regulation. Before continuing, sir, may I ask you what you disapprove of in the merchant's precaution or the sovereign's favor? "This monopoly," you will answer, "was contrary to the common law [governing items in the public domain]." That I grant you. "The manuscript for which it was granted was not the only one that existed, and another typographer had or could procure a similar one." That is true, but only in certain respects, for the edition of a work, especially in those early days, required not only the possession of a manuscript but the collation of a large number of them – a lengthy, difficult, and costly process. But I won't stop you; I do not wish to be difficult. "So," you will add, "it should have seemed hard to grant to one what one

refused to another." And so it did seem, though this was an occasion if ever there was one to plead the cause of the first occupant and of legitimate possession based on risks run, care taken, and moneys advanced. Still, in order to ensure that the derogation from common law would not be excessive, it was deemed appropriate to limit the duration of the monopoly. You will note that the ministry, proceeding with some knowledge of what it was about, responded in part to your objections; but what you may not see, and what it did not see initially, was that, far from protecting the entrepreneur, it was laying a trap for him. Yes, sir, a trap, and you shall be the judge of it. . . .

Suppose that *L'Esprit des lois* were the first work by an unknown author relegated by misery to a fifth-floor apartment; despite the excellence of the work, I doubt that it would have made three editions, and there are now perhaps twenty. Nineteen of twenty people who bought the work on the basis of the author's name, reputation, rank, and talent, and who quote it endlessly without having read or understood it, would scarcely know its name. And how many authors have not obtained the celebrity they deserve until long after their death? This is the fate of nearly all men of genius. They are not within reach of their century. They write for the next generation.

When will people go to the bookseller in search of their works? Thirty years after those works have left his store for the pulp dealer's. In mathematics, chemistry, natural history, law, and a very large number of specialized fields, it happens every day that the *privilege* expires before half the edition has sold out. Now, clearly, what is the case today must have been the case in the past and will be the case always. After the first

edition of an old manuscript was published, it often turned out, on publication of the second, that the remainder of the first had to be written off as a pure loss by the holder of the *privilege*.

One must not imagine that things happen for no reason, that there were no wise men before the time in which one happens to live or that our predecessors were less aware of the public interest or cherished it any less than we do. Seduced by systematic ideas, we attack their behavior, and we are unwilling to acknowledge their prudence inasmuch as the difficulty their regulation was intended to remedy is one from which we no longer suffer. The printer made further representations to the magistrate concerning the unduly narrow limits of his *privilege*, leading to a new regulation, or a modification of the previous one. Bear in mind, sir, that we are still speaking of manuscripts in the public domain. The merchant's arguments were weighed, and the decision was made to grant him a second *privilege* upon expiration of the first. I leave it to you to judge whether this made things worse or better, but it was certainly one or the other.

In this way one proceeded little by little toward perpetuity and immutability of the *privilege*, and it is obvious that, with this second step, the intention was to protect the legitimate interests of the printer, to encourage him, to secure a future for him and his children, to bind him to his estate and interest him in risky enterprises by ensuring that his household and his family would enjoy the fruit thereof in perpetuity; and I shall ask you whether these views were or were not sound. To blame some human institution because its goodness is not general and absolute is to insist that it be divine; it is to wish to be cleverer than Providence, which is content to balance goods with ills; to be wiser in

our conventions than nature in her laws; and to disturb the order of the whole with the cry of an atom under the impression that it has suffered a rude shock.

Nevertheless, this second favor was rarely granted; there was an infinity of claims, blind as well as enlightened, as it may please you now to call them. The majority of printers, who, in this corporation as in others, are more ardent to commandeer the resources of the inventive and enterprising man than to emulate his inventiveness, howled in protest when deprived of the hope of despoiling their colleagues. They did not, as you may well suppose, fail to adduce either the wound inflicted on freedom of commerce or the despotism that a few individuals were prepared to exercise on the public and on men of learning.

They submitted to the university and to the *parlements* the bogeyman of a literary monopoly, as if a French bookseller could sell a work at an exorbitant price without some attentive foreigner devoting his days and nights to counterfeiting it and without his greedy colleagues having recourse to similar methods, in contempt of all afflictive laws, as we have seen all too often, as if the merchant were unaware that his true interest lay in the rapidity of sale and the number of editions and as if he were not more keenly cognizant of the risks and benefits than anyone else. Would they not say, if forced to such an extreme, that the person who renews the *privilege* should have the power to set the price of the thing? It is a matter of experience, however, that the works most often reprinted are the best, the most frequently purchased, the most widely sold for the lowest price, and the most certain instruments of the bookseller's fortune.

Nevertheless, these howls from the dregs of the corporation, reinforced by

those of the university, were heard by the *parlements*, which thought they saw in the law unjust protection for a small number of individuals at the expense of others; which led to edict after edict against the prorogation of *privileges*. But allow me, sir, to remind you once more, in defense of the *parlements*, that these first *privileges* applied only to old works and original manuscripts, that is, effects that no one had acquired as property and that were therefore in the public domain. Unless you attend to this point, you will confuse very different objects. A *privilege* of the time I am discussing now no more resembles a *privilege* of today than a momentary favor, a freely granted and revocable kindness, resembles a personal possession, a fixed acquisition, which is constant and inalienable without the express consent of the owner. What follows will give this distinction all the solidity you require – you may count on it...

If, upon expiration of the initial *privilege*, the bookseller applied for a renewal, it was granted without difficulty. Why was this done? Doesn't a work belong to its author as much as his house or his field? Can he not alienate ownership forever? Should he be allowed on any pretext whatsoever to withdraw ownership of the work from the person to whom he freely transferred his right? Isn't the person to whom ownership has been transferred deserving of the full protection that the government grants to owners of property against other sorts of usurpers?...

Nevertheless, despite these principles, which may be regarded as the foundation of jurisprudence regarding ownership and acquisition, Parlement continued, through its edicts, to disapprove of renewals and prorogations of *privileges*, the only imaginable reason for which was the following: namely, that, being

insufficiently aware of the revolution that had taken place in the regulation of the book trade and the nature of *privileges*, it was still put off by the bogeyman of monopoly.... The spirit of interest is not the same as the spirit of equity, however. Those who have little or nothing are quite prepared to give up the little or nothing they have in exchange for the right to help themselves to the fortune of the well-to-do....

Do you not find the behavior of some of these booksellers quite strange? Moved by the immediate desire to help themselves to some of their colleagues' wealth, they left the wealth of their offspring vulnerable to all sorts of depredations. You will agree, sir, that these wretches behaved like men whose nephews and grand-nephews were condemned in perpetuity to remain as poor as their ancestors.

But I would rather trace the history of the bookseller's code and the institution of *privileges* than engage in distressing reflections upon the nature of man. In order to put an end to these lawsuits between booksellers that proved so fatiguing to both Council and Chancery, the magistrate verbally prohibited the guild from printing anything whatsoever absent a letter of *privilege* stamped with the great seal. The guild, or at any rate the impoverished part of it, made remonstrances, but the magistrate held firm; he even extended his verbal order to include old books, and the Council, basing its decision on this order concerning *privileges* and their continuation by letters-patent of December 20, 1649, prohibited the printing of any book without a royal *privilege*, gave preference to the bookseller who was the first to obtain letters of continuation when these were granted to several different people, banned counterfeits, returned applications for continuations upon

expiration of the *privilège*, limited such applications to those to whom *privilèges* were first awarded, allowed such applicants to apply for renewal whenever they saw fit, and insisted that all letters granting or continuing *privilèges* be recorded in the register of the guild, which the syndic could be required to show upon request, so that in the future no one could claim ignorance and no fraudulent or unanticipated competition could arise over a particular permission.

Does it not seem to you, sir, that after this decision, the story should have been finished, the ministry having done everything within its power to ensure the tranquility of those in possession of titles? But the indigent and rapacious portion of the guild made one last effort to remove the fetters from its hands. You may be surprised that a man to whom you would not refuse the epithet “compassionate” speaks out against the indigent. Sir, I should be glad to give alms, but I refuse to be robbed, and if misery can serve as an excuse for usurpation, where are we? . . .

Isn't the person to whom the *privilège* is granted the one who has acquired the manuscript from the author and paid him for it? Who is the owner? Who is the most legitimate owner? Did he not consummate his enterprise under a certain safeguard, under the protection of a warrant signed by the hand of the sovereign, which he holds? If it is just for him to enjoy the benefits of that protection, is it not unjust that he be despoiled of it? Is it not indecent to permit such a thing?

Sir, these are the laws concerning *privilèges* as they stand, and this is how they came to be. Though they have sometimes been attacked, they have been maintained continuously, with the exception of one recent circumstance. By a decree of September 14, 1761, the Council granted to the descendants of

our immortal La Fontaine the *privilège* for his *Fables*. It is a handsome thing, surely, for a people to honor the memory of its great men in their posterity. The sentiment is too noble, too generous, too worthy for any criticism of it to issue from my mouth. The conqueror of Thebes laid waste to Pindar's homeland but left the poet's house untouched, and history remembers this gesture as honoring the victor no less than it honored literature. But if Pindar, during his lifetime, had sold his house to some Theban, do you suppose that Alexander would have torn up the contract of sale and banished the legitimate owner?

Some maintain that the bookseller had no title of property, and I am quite willing to believe it. It is not for a man of my estate to plead the cause of the merchant against the posterity of the author, but it is right for a just man to acknowledge justice and to speak the truth even when it goes against his own interest, and it might perhaps be in my interest not to deprive my children, to whom I shall leave still less of fortune than of renown, of the sad resource of despoiling my bookseller when I am no longer here. But should they ever be base enough to call upon authority for help in committing this injustice, I say that the sentiments I have tried to impart to them must have vanished from their hearts, since for the sake of money they trample all that is sacred in the civil laws of property; that I believed myself to be, and apparently was, the master of what I produced, for better or for worse; that I freely and voluntarily alienated those products of my hand; that I received for them the price I asked; and that the section of vineyard or acre of meadow bequeathed to me by my forebears that I may yet be obliged to sell in order to provide for their education no more belongs to them than this. Let them

therefore make up their minds which course to take: either they must declare that I was mad when I made my bargain or convict themselves of the most glaring injustice. . . .

The odious title that consists in conferring gratuitously upon a single individual a benefit to which everyone holds a just and equal claim – that is the privilege abhorred by good citizen and enlightened minister alike. It remains to be seen whether the bookseller's *privilege* is of this kind. But the foregoing has shown how misleading this idea is: the bookseller acquires a manuscript by contract; the ministry, with its permission, authorizes the publication of that manuscript and guarantees the buyer's tranquil possession. What is there in this that is contrary to the general interest? What is done for the bookseller that is not done for any other citizen? I ask you, sir, whether the buyer of a house does not acquire the exclusive possession and enjoyment of that house; whether, from this point of view, all contracts that assure an individual of the fixed and constant possession of a good of any nature whatsoever are not exclusive privileges; whether, on the grounds that the owner has received sufficient compensation for the price he paid for his acquisition, it is legitimate to deprive him of it; whether such spoliation would not be the most violent act of tyranny; whether such an abuse of power, by tending to make all fortunes insecure and all legacies uncertain, would not reduce a people to the condition of serfs and fill the state with bad citizens. For it is always true that any man who thinks that he has no property in the state, or only a precarious property, can never be a good citizen. Indeed, what would attach him to one plot of land rather than another?

The prejudice comes from confusing

the estate of bookseller, the guild of booksellers, the corporation, with the *privilege* and the *privilege* with the title of ownership, all things which have nothing in common – no, sir, nothing! So, then, destroy all guilds, restore to all citizens the freedom to use their faculties as their tastes and interests dictate, abolish all privileges, including those of the bookseller – I grant you this; all will be well, so long as the laws pertaining to contracts of purchase and sale subsist.

In England, there are book dealers and no guild of booksellers; there are printed books and no *privileges*. Nevertheless, the counterfeiter is considered as dishonorable there as the man who steals, and this theft is prosecuted by the courts and punished by the laws. Books printed in England are counterfeited in Scotland and Ireland, but it is unheard of for books printed in London to be counterfeited in Cambridge or Oxford. The point is that the English see no difference between the purchase of a field or a house and the purchase of a manuscript, and in fact there is none, unless perhaps it is in favor of the purchaser of the manuscript. This is what I insinuated to you earlier and what the partners in the publication of La Fontaine's *Fables* demonstrated in their brief, and I defy anyone to refute their argument.

What property can a man own if a work of the mind – the unique fruit of his upbringing, his studies, his evenings, his age, his researches, his observations; if his finest hours, the most beautiful moments of his life; if his own thoughts, the feelings of his heart, the most precious part of himself, that which does not perish, which makes him immortal – does not belong to him? What comparison between the man, the very substance of the man, his soul, and the field, the meadow, the tree or vine that nature in the beginning offered equally to

everyone, and which the individual appropriated only through cultivation, the first legitimate means of possession? Who has a greater right than the author to dispose of what he has made by gift or sale? Now, the right of ownership is the true measure of the buyer's right. If I leave my children the *privilège* of my works, who would dare take it from them? If, forced to alienate that *privilège* to meet their needs or mine, I transfer ownership to another, who could contest his ownership of the property without jeopardizing every principle of justice? Without this, how vile and miserable the condition of the man of letters would be! A perpetual ward, he would be treated like an imbecile child whose minority never ends. Of course the bee does not make honey for itself, but does man have the right to use other men the way he uses the honey-making insect?

I repeat, the author is master of his work, or no one in society is master of his property. The bookseller owns the work as it was owned by the author; he has the incontestable right to profit from it as he sees fit through repeated editions. It would be as senseless to deny him this as to require a farmer to leave his field unplanted or the owner of a house to leave his apartments empty.

Sir, the *privilège* is nothing but a safeguard granted by the sovereign for the preservation of a good whose defense, absent his express authority, would often cost more than it is worth. To extend the notion of the bookseller's *privilège* beyond these bounds would be a mistake; it would be to contemplate an encroachment of the most atrocious kind; to make a mockery of contract and property; to inflict iniquitous harm on men of letters or their heirs and proxies; to gratify, through tyrannical partiality, one citizen at the expense of his neighbor; to sow discord in a multitude of tranquil families; to ruin those who, on

presumption of valid possession under the rules in force, accepted literary properties in the division of an estate, or to force them to make demands upon their co-legatees, which justice could not be denied them since they accepted these properties under the law's authority, which guaranteed them as real; to oppose children to children, mothers and fathers to mothers and fathers, creditors to assignees; and to impose silence on justice in general. . . .

But however kind and munificent a prince friendly to letters may be, his generosity can hardly be extended beyond known talents. How many attempts must be made, happy and unhappy, before the writer emerges from obscurity and acquires the celebrity that attracts the notice and the recompense of sovereigns?

Once again, sir, we must look to the beginning of things, for it is the common fate of men to be nothing before they are something, and it may even be desirable for honors and fortune to keep pace with the progress of merit and service, even though the beginning of a man's career is the most important and difficult time of his life. A man recognizes his genius only upon putting it to the test. The eaglet trembles like the young dove at the moment it first unfolds its wings and entrusts itself to a breath of air. When an author composes a first work, he does not know what it is worth, nor does the bookseller. If the bookseller pays us as he wishes, we in turn sell him what we are pleased to sell him. It is success that instructs the merchant and the man of letters. The author may go into partnership with the merchant: a bad bargain, for it presumes too much confidence on one side and too much honesty on the other. Or he may permanently cede ownership of his work for a price that does not go far, because it is and must be based on the uncertainty

of success. Nevertheless, you have to have been in my place, the place of a young man who for the first time collects a modest tribute for a few days of meditation. His joy surpasses understanding. If he derives the further benefit of public applause from his success, if he sees his bookseller a few days after his *début* and finds him polite, decent, affable, reassuring, and calm, he is satisfied! At that moment the price of his talent changes, and I cannot deny that the increase in the commercial value of his second venture is related to the decrease in the risk. It seems that the bookseller, anxious to keep his man, begins to calculate on a different basis. . . .

If I make a bad bargain, that is my own affair. I was not forced to do so. I endured the common fate, and if my condition is bad, do you hope to improve it by depriving me of the right to alienate my property and voiding my contract with the buyer? Did you suppose that this man would regard the property as worthless? And if he adds value to it, will he not diminish my honoraria accordingly? I do not know whom you wish to injure. Talk all you like of your so-called love of letters, but it is literature that you will harm. With your mild administration, generous compensation, distribution of honors, and every other means imaginable, you have wooed back men of letters driven away by intolerance and persecution; beware of driving them away a second time. Your enemy prays that you succumb to frenzy, take up an iron rod, and, by committing imprudent act after imprudent act, drive into his arms the small number of men of letters whose allegiance to you he envies. They will go, I warn you, but more powerful warning than I can give can be seen in the advantageous proposals they receive and still have the courage to reject. . . .

Our position, you will tell me, is embarrassing. I know it.

But you have placed yourself in this predicament through bad policy, and your indigence keeps you in it. You mustn't punish the innocent for your own faults and take from me with one hand what you continue to sell me with the other. But once again, the abolition of corporations, if some day this falls within your power, has nothing to do with *privileges*. The two things are so mixed up in your mind that you have difficulty separating them. Even if everyone were free to open a shop on the rue Saint-Jacques, the buyer of a manuscript would be no less its true owner and, as such, a citizen protected by the law, and the counterfeiter would be no less a thief to be prosecuted to the full extent of the law. The more truthfully the current state of the publishing and bookselling trades is made known, the less plausible it will seem. . . .

Here, sir, the question is not what would be best, not what we both desire, but what it is within your power to do, and both of us declare in the depths of our souls, "Perish, perish forever those works that tend to make men brutish, mad, perverse, corrupt, and wicked!" But can you prevent people from writing? No. Well, then, neither can you prevent a text from being published and quickly becoming as commonplace as if you had tacitly permitted it – as well as far more sought after, sold, and read. Line all your borders with soldiers, sir, arm them with bayonets to repel any dangerous book that may appear, and those books will – pardon the expression – pass between their legs or jump over their heads to reach us. I beg you to name one such dangerous work, one such banned book, that was not clandestinely printed either abroad or in the kingdom and that did not within four

months become as widely available as any book to which the *privilège* was granted. What book is more contrary to good morals, to religion, to conventional ideas of philosophy and administration, in a word, to all vulgar prejudices, and, consequently, more dangerous, than *Les Lettres persanes*? Is there anything worse? Yet there are a hundred editions of *Les Lettres persanes*, and there is not a single student of the Quatre Nations who can't find a copy on the quay for twelve sous....

What does [censorship] mean? That we have neither more nor less of these works than we would otherwise, but have paid foreigners a sum for their handiwork that a more indulgent magistrate and better policy would have spared us, and we have been left to the mercy of hawkers who, exploiting the doubling and redoubling of curiosity due to the ban, have made us pay dearly for the real or supposed peril they hastened to make available to us....

If you grant tacit permission to publish a daring work, at least you put yourself in a position to control its distribution, and you quell the initial sensation. I know a hundred works that passed away without a fuss because a judge's indulgence avoided the furor that a more severe attitude would not have failed to generate....

I will not deal with the question of whether these dangerous books are as dangerous as some people proclaim; whether lies and sophisms are not sooner or later recognized and dismissed; and whether the truth, which can never be stifled – spreading as it does little by little, imperceptibly gaining the ascendancy over prejudice, and winning general acceptance only after a surprising lapse of time – can ever be a real danger. What I do see, however, is that the harsher the proscription, the more it raises the price of the book, the more it

stimulates the curiosity to read it, the greater the number of buyers, and the more widely it is read. How many books that became known when they were condemned would have been forgotten on account of their mediocrity? Had they but dared, how many times would the seller and author of a work granted the *privilège* have begged the authorities, "Sirs, a favor, please: a mere edict sentencing me to be lashed and burned at the bottom of the courthouse steps"? Whenever a judgment is proclaimed against a book, printers say, "Good, another edition!"...

Things are quite different in London, where there are neither *privilèges* nor censors. An author brings his work to a printer, he prints it, and the book appears. If the work is so daring as to merit public animadversion, the magistrate summons the printer, who either stands mute or names the author. If he stands mute, he is prosecuted; if he names the author, the author is prosecuted. I should be quite upset if such a regime were established here; we would soon be far too well-behaved. In any case, if it is important to maintain the regulations governing corporations as the *quid pro quo* granted to certain citizens by the government for the special taxes it imposes on them... I can... denounce one abuse that is increasing daily to the detriment of the booksellers' guild and commerce: I speak of the host of men without learning, credentials, or profession who participate in the trade with unprecedented publicity. Sheltered by protections they have created for themselves and occupying privileged places of asylum, they buy, sell, counterfeit, and resell counterfeits printed both here and abroad and in these various ways do harm to the trade without the slightest worry about the severity of the laws.

The Marquis de Condorcet

Fragments concerning freedom of the press

Excerpts selected and translated by Arthur Goldhammer

Does a man have the right to prevent another man from writing the same things that he himself wrote first? That is the question to be resolved. Indeed, one feels that there can be no relation between the ownership of a work and that of a field which a man can cultivate, or a piece of furniture that can be used by only one person, the exclusive ownership of which is consequently based on the nature of the thing. Such a property is not derived from the natural order and defended by social force; it is a property founded by society itself. It is not a true right, but a *privilege*, like the exclusive enjoyment of anything that can be taken from its sole possessor without violence.

Every *privilege* is therefore a constraint imposed on freedom, a restriction of the rights of other citizens. In this particular case, the *privilege* is harmful not only to the rights of others who wish to copy [the protected literary work] but also to all who wish to have copies, for whom anything that increases the price thereof is an injustice. Does the public interest require men to make this sacrifice? That is the question that must be examined; in other words, are *privileges* necessary and useful, or are they harmful, to the progress of enlightenment?

Had there been no *privileges en librairie*,¹ Bacon would nevertheless have taught the road to truth in the sciences; Kepler, Galileo, Huyghens, and Descartes would nevertheless have made their discoveries; Newton would nevertheless have discovered his system of the world; M. d'Alembert would nevertheless have solved the problem of the precession of the equinoxes.

The discovery of the circulation of the blood and of irritability and the successful researches of men like Stahl, Bergman, Scheele, and Priestley were not the fruit of *privileges en librairie*. In other domains, the works that have contributed most to the progress of enlightenment – the *Encyclopédie*, the works of Montesquieu, Voltaire, and Rousseau – did not enjoy the advantages of the *privilege*.

A man of genius does not write books for money, but if he is not wealthy, and

¹ For an illuminating discussion of this term of art, see Roger Chartier's article in this issue. Broadly speaking, a *privilege en librairie* or *privilege de librairie* was an exclusive right to publish and sell a literary work granted by the royal administration in France, specifically the *Direction de la Librairie*, or Directorate of the Book Trade, for a limited period of time.

his books bring him no income, he will be obliged to find an occupation in order to live, and the public will thereby suffer a loss.

The *privilège* is not necessary for that purpose, however. A subscription can replace it, and all other advantages besides. In any case, the original edition, prepared under the eyes of the author, will always be preferred not only if the price is the same but even with a difference in price sufficient to compensate the author. It will have the advantage of primacy as well as exactitude. Counterfeits are common only because the prices of original editions are exorbitant, and this is itself a consequence of *privilèges*.

A book that can circulate freely and that does not sell at a third above its price will almost never be counterfeited. In this as in any other realm, freedom has the effect of reducing each item to its natural price and each person to his natural right.

Another observation that also needs to be made is that *privilèges* are needed only for frivolous objects, unless expanded to a degree where they become ridiculous and no one would dare defend them.

Indeed, let us assume that a book is useful; what makes it so is the truths it contains. Now, the *privilège* granted to the author does not extend so far as to prevent another person from expounding those same truths, to order them more intelligibly or offer better proofs, to develop them further or extend their consequences. Hence, the author of this useful book really has no *privilège*.

Privilèges therefore exist only for expressions, for sentences, not for substance or ideas. They exist for the author's words, for his name. Thus their purpose is not to protect the prize the inventor deserves for his useful discoveries but to enable him to command a higher price for his pleasant turns of phrase.

I can, if I like, publish a solution to the problem of the precession of equinoxes, set forth a general principle of mechanics, etc., etc. The author of these great and useful discoveries will have no cause for complaint: the glory will remain his. But if I take it in mind to publish an epithalamium without the author's consent, I commit an offense.

Finally, in this as in any other domain, *privilèges* have the disadvantage of diminishing activity, concentrating it in a few hands, imposing a substantial tax on it, and making products manufactured in this country inferior to those manufactured abroad.

Hence they are not necessary, not even useful, and we have already seen that they are unjust.

These, then, are our ideas concerning a chapter of the law that is more important than is commonly recognized. The happiness of human beings depends in part on their enlightenment, and the progress of enlightenment depends in part on the laws governing the press. Even if those laws had no influence on the discovery of useful truths, they would have a prodigious influence on the diffusion of those truths. They are one of the inevitable causes of the difference that exists between the opinions of enlightened men, those of the public, and the opinions of the people who hold office. All the bold opinions have been stated and restated for years. Not one can be cited that was not already advanced by authors of the seventeenth century and only lately revived; most useful truths are ignored.

The history of harsh regulation of books should in itself be enough to dissuade anyone from attempting it.

The first man persecuted for a supposedly impious work was Aristotle. Tiberius was the first to persecute a historian and order that his books be burned. His intention was not to brand the work

with a mark of infamy but to destroy it. Such hopes could be entertained prior to the invention of the printing press. Nowadays, books are burned merely for ceremony, which is maintained out of habit, although people have also been in the habit of mocking such ceremonies for the past two centuries.

It was Francis I who established censorship in France, before his mistresses had solidified his faith in the true religion. Annoyed by complaints from the Sorbonne against several men of letters he liked, who were accused of Lutheranism, he forbade the doctors to print anything without permission, on the grounds that their fanatical books could cause trouble in the state. Thus censorship was initially directed against theologians.

Later, one saw the countries of the Inquisition plunged into ignorance of all the sciences and left in possession of only the crudest arts, inept in the arts of war and navigation as well as politics and commerce. In Italy itself, the country to which the rest of Europe owes its enlightenment, one saw, shortly before the invention of the printing press, the sciences reduced to the most tenuous asylum in Florence, Venice, and Milan. One saw Galileo forced to beg pardon for having discovered or demonstrated great truths; one saw entire volumes filled with the catalog of books forbidden by the pope, and all the good books, especially those establishing the rights of men and sovereigns, were on that list. One saw Descartes leaving his homeland to escape the persecution of the priests, and then obliged to flee again to avoid persecution by Protestant ministers and to seek repose in Christina's palace. One saw Bayle forced to leave his country

because he did not believe in the pope, and reduced to misery in Holland for having praised the popes; Fontenelle threatened with persecution if he dared to respond to a Jesuit by taking issue with the view that God, the better to deceive mankind, had endowed the devil with the gift of prophecy; Gianone ending in exile a life devoted to defending his country's rights; Rousseau condemned in Paris and Geneva for a book printed in Holland; Montesquieu obliged to have *L'Esprit des lois* printed outside his own country; Voltaire barely finding security in his old age and glory, obtaining asylum in the farthest reaches of France only with the greatest of difficulty; the marquis de Mirabeau deprived of his freedom for having spoken with too little respect of the salt tax and the tax on excessive drink; a citizen exiled for daring to express a heretical opinion about free trade in cattle; the author of *La Philosophie de la nature* subjected to criminal prosecution for preaching God and morality in a style unknown in the lofts of the *convulsionnaires*;² the author of *L'Histoire philosophique du commerce* (Raynal) condemned though no one had deigned to determine whether or not he was guilty. In short, with the exception of a few poets, who were only poets and nothing else, it is impossible to find, in countries where the press is not free, any celebrated man who was not subject to persecution of some kind.

² The *convulsionnaires* were an eighteenth-century sect of fanatical Jansenists prone to fits of uncontrollable shaking when dancing around the grave of Deacon Pâris in the Saint-Médard cemetery in Paris.

Roger Chartier

Property & privilege in the republic of letters

Translated by Arthur Goldhammer

In the fall of 1763, Denis Diderot, the French *philosophe* then in the midst of compiling his famous *Encyclopedia*, drafted a brief to which he gave several successive titles. In preparing a fair copy of the manuscript in early 1764, he corrected the original title, “Letter on the Book Trade,” to “Historical and Political Letter Addressed to a Magistrate Concerning the Book Trade, Its Former and Present State, Its Regulations, Its Privileges, Tacit Permissions, Censors, Hawkers, Bookstalls on Bridges, and Other Matters Pertaining to Literary Regulation.”

As the title indicates, Diderot directed his brief to a “magistrate,” namely,

Antoine Gabriel de Sartine, at the time *lieutenant général de police* in Paris, and also “Director of the Book Trade” in France.

A few years later, Diderot summed up this work as “a piece on the freedom of the press, in which I discuss the history of regulations pertaining to the book trade, the circumstances in which they developed, which ones should be preserved and which eliminated.” With these words – “freedom of the press” – Diderot indicated what for him was the fundamental significance of an essay ostensibly about nothing more than the regulation of literary commerce.¹

Roger Chartier, *Directeur d'Études at the École des Hautes Études en Sciences Sociales (Paris) and Annenberg Visiting Professor in History at the University of Pennsylvania, has written extensively on the relationship between the material history of institutions and the embodied practices that both animate and survive these institutions, in particular early modern techniques of reading, disseminating, and collecting printed information. Chartier's hundreds of articles and books have appeared in at least ten different languages; the most recent of these to appear in English are "Publishing Drama in Early Modern Europe" (1999) and "A History of Reading in the West" (edited with Guglielmo Cavallo, 1999).*

1 Diderot's brief was partially reprinted in Diderot, *Sur la liberté de la presse*, edited with introduction and notes by Jacques Proust (Paris: Editions Sociales, 1964), and fully reprinted in Diderot, *Oeuvres complètes*, vol. 8, *Encyclopédie IV et Lettre sur le commerce de la librairie*, critical and annotated edition presented by John Lough and Jacques Proust (Paris: Hermann, 1976), 465–567. It is available on the web site of the Association des Bibliophiles Universels, <<http://abu.cnam.fr/>>, under the title *Lettre historique et politique à un magistrat sur le commerce de librairie, son état ancien et actuel, ses règlements, ses privilèges, les permissions tacites, les censeurs, les colporteurs, le passage des ponts et autres objets relatifs à la police littéraire*. On the history of the text, see Jacques Proust, “Pour servir à une édition de la *Lettre sur le commerce de la librairie*,” *Diderot Studies* 3 (1961): 321–345.

His text was rich with ironies and paradoxes. Addressing the official in charge of banning books in France, Diderot sought to show that banning books was ineffective. Censorship not only failed to keep the banned books out of circulation, but actually encouraged their sale. It was also ruinous for French trade, since foreign booksellers reaped the rewards of publishing banned titles and smuggling them into France. As Diderot described the situation, the needs of commerce and the search for truth paradoxically converged.

To guarantee a prosperous book trade through “freedom of the press” in France, Diderot thought that it was not necessary to abolish prior censorship altogether, even if the English example might inspire such action (“I should be quite upset if such a regime were established here,” Diderot writes sardonically; “We would soon be far too well-behaved”). It was enough to “issue an unlimited number of tacit permissions” – that is, to use a mechanism that already existed in France and that had in fact been invented by the Directorate of the Book Trade as a means to soften the state’s regime of censorship. Tacit permissions, at first purely verbal, but later registered as if the books involved were foreign works being authorized for sale in France, differed from public permissions in that they did not imply approval by the chancellor. Tacit permissions were instituted to allow works to be printed in France that could not be approved officially yet were not dangerous enough to be prohibited and thus left to foreign booksellers.

In Diderot’s conception, issuing an unlimited number of tacit permissions thus became the preferred instrument whereby booksellers, in concert with enlightened writers, could dismantle prior censorship. In fact, “it is almost

impossible to imagine a hypothetical case in which a tacit permission would have to be refused,” since the authors of “infamous works” would certainly not venture to request authorization of any kind, tacit or otherwise. To establish the freedom to print within the regime of monarchical censorship, indeed with its assistance – that was the first paradoxical aspect of Diderot’s brief.

It was not the only one. The “Letter” was in fact a commissioned work, which Diderot was asked to write on behalf of the Communauté des Libraires Parisiens, or Guild of Parisian Booksellers, by its syndic, Le Breton, the principal publisher of the *Encyclopedie*.

The Paris booksellers were worried about the possible elimination of so-called *privileges de librairie*, through which the monarchy in the past had granted booksellers an exclusive and renewable right to publish works acquired from their authors. They were greatly alarmed by a decision of the King’s Council in 1761 granting the *privilege* for the publication of the *Fables* of La Fontaine not to a bookseller, but rather to the descendants of the author, thereby abrogating the rights of booksellers who had obtained that *privilege* in the past (or might wish to do so in the future). Worried that the council decision “undermined the very foundation of the booksellers’ estate,” the booksellers commissioned Diderot to write a brief in defense of their customary privileges.

His willingness to accept this commission might seem surprising. To begin with, his relations with the booksellers of Paris were far from felicitous. With each contract he signed with the publishers of the *Encyclopedie* (in 1747, 1754, 1759, and 1762), it was an uphill battle to win the slightest concession on terms from publishers who treated him as a salaried employee. Privately, Diderot

called his publishers “my pirates” (*mes corsaires*).²

In 1764, relations grew even worse when he found out that Le Breton – the very man who had commissioned Diderot’s letter to Sartine! – had secretly tampered with certain articles in the *Encyclopedia* after the proofs had been corrected. What is more, one scarcely expects a determined adversary of corporations and monopolies such as Diderot to defend the need for *privileges* of any sort.

From the start of his brief, Diderot expresses a keen awareness that his commission puts him in a paradoxical position:

I shall begin by saying that the question here is not simply one of the interests of a guild. What does it matter to me if there is one guild more or less? Can this possibly concern me, one of the most zealous proponents of liberty in the broadest sense . . . who has always been convinced that corporations were unjust and catastrophic, and who would look upon their utter and absolute abolition as a step toward wiser government?

Why, then, defend the traditional claims of the guild of booksellers, who were asking not only that *privileges de librairie* be maintained, but also that their renewal be made automatic and, ultimately, that they be granted in perpetuity?

The answer Diderot gives in a few words: “I repeat, either the author is master of his work or no one in society is master of his property. The bookseller owns the work as the author owned it.”

Diderot’s goal, then, is to show that the irrevocability of the *privilege de librairie* is the basis of all literary property. There are several steps to the argument.

2 Jacques Proust, *Diderot et l’Encyclopédie* (Paris: Armand Colin, 1967), 81–116.

First, the *privilege* has to be defined not as a royal favor that can be granted, refused, or revoked by the sovereign at will, but rather as the “guarantee” or “safeguard” of a private contract whereby the author freely cedes to the bookseller his right to his manuscript. The property right acquired by the bookseller is similar to that obtained by the buyer of a piece of land or a house. It is perpetual, irrevocable, and transmissible and cannot be transferred or shared without the agreement of the person who holds it. Such a property right does no harm to either the general interest or the progress of knowledge because it concerns only specific titles. Since it establishes no monopoly over “books in general” or “books on a particular subject,” it leaves open the possibility of publishing “unlimited” numbers of works on any given topic.

Diderot’s plea on behalf of the *privilege de librairie* subverts the traditional understanding of these privileges. His essay reduces the *privilege* to nothing more than the official sanction of a contract. It thus becomes a title of ownership, and as such it must be respected by the public authorities because it constitutes one of the fundamental rights of all “citizens.” Only a tyrant would dare confiscate the property of private individuals, thereby reducing them to the condition of “serfs.”

By subsuming the *privilege* under the logic of contract, Diderot is implicitly dissociating the bookseller’s title of ownership from the corporate regulations that had traditionally governed the book trade. Those regulations could disappear without abrogating the property rights of the bookseller:

The prejudice comes from confusing . . . the community of booksellers . . . with the *privilege* and the *privilege* with the title of ownership, all things which have nothing

in common – no, sir, nothing! So, then, destroy all communities, restore to all citizens the freedom to use their faculties as their tastes and interests dictate, abolish all privileges, including those of the bookseller – I grant you this; all will be well, so long as the laws pertaining to contracts of purchase and sale subsist.

Diderot thus demonstrated the futility of the very institutions (the *privileges* and the guild of Parisian booksellers and printers) that he had been commissioned to defend tooth and nail.

To bolster his argument, Diderot recounted the history of printing in France. The underlying thread of his narrative is the constant expansion of exclusive privileges, which were first established in the sixteenth century to protect enterprising publishers from counterfeits by dishonest competitors. At first these privileges were issued for a limited period of time. But later they were extended to protect the sales of editions that had not sold out their entire print run, and also to protect not just new editions of old works, but new works by living authors. Thus an equivalence was established between the perpetual property of the bookseller, acquired through the contract with the author, and the perpetuity of the *privilege*, made possible by successive renewals.

Rewriting the history of royal *privileges* in his own manner by making royal favor subject to the regime of contract, Diderot suggests that the case he is attempting to make to the Director of the Book Trade is the natural culmination of a historical process: “So it was that the grant of *privileges* became fixed, with the owners of manuscripts acquired from authors obtaining a permission to publish whose continuation they could solicit as often as it suited their interest to do so and transmitting

their rights to others by sale, bequest, or abandonment.”

Turning from history to administration, Diderot argued that maintaining permanent *privileges* was indispensable to the printing and bookselling trades. To prove this, he listed the disastrous effects that would follow if “general competition” were to be allowed in publishing; that is, if *privileges* were turned into mere permissions without any exclusivity clause. Booksellers would see a sharp decline in their profits, because several editions of the same title would compete for a share of the market. What had been “a profitable work for the exclusive owner would then become absolutely worthless to him and others,” and no bookseller would want to publish important works too costly to be remunerative in the slow market resulting from competing editions. Only works of high circulation would survive, and the drive to publish them at the lowest possible cost would ruin all the bookmaking arts, because these works would become “very common” and “wretched with respect to typesetting, paper, and proofreading.” Businesses related to bookmaking (font foundries, paper mills) would collapse, and, “what is worse, as these arts wither [in France], they will flourish abroad, and foreigners will be quick to supply us with the only good editions that will exist of our authors.”

Applying strict mercantilist logic, Diderot argued that the state itself would ultimately become the victim of such a process:

A little more persecution and disorder and booksellers will seek suppliers abroad commensurate with their rate of sales. Because this would eliminate the risk of losing sums advanced to cover manufacturing costs, what could be more prudent? But the state will become poorer owing to the loss of workers and the fall in

prices paid for raw materials grown at home, and you will be sending out of the country the gold and silver that your own territory fails to yield.

But the subject closest to Diderot's heart was clearly the effects of the *privilege* on "the condition of the literary man." Men of letters are necessarily tied to booksellers, for it is entirely illusory for an author to think of publishing his own works. Diderot speaks from experience:

I have come close to practicing both professions, bookseller as well as author; I have written, and I have on several occasions printed works on my own account; and I can assure you in passing that nothing accords less well with the active life of the businessman than the sedentary life of the man of letters. Incapable as we are of an endless round of petty chores, out of a hundred authors who would like to retail their own works, ninety-nine would suffer and be disgusted by it.

The author who wished to publish himself would in fact have to contract with booksellers to sell books printed at his own expense – a risky proposition. Booksellers are therefore unavoidable, as Diderot had learned at some cost to himself.

Authors, obliged to sell their manuscripts to people who would publish them, had only one hope: that their contracts would be as fair as possible. As Diderot saw it, only full recognition of the writer's property rights to his "product" and full assurance of the bookseller's security through grant of perpetual *privilege* could guarantee that a just price would be paid for the work sold by the former and acquired by the latter. To be sure, for authors unable to live on the income from their property or the emoluments of their position, literary activity could ideally be divorced from remuneration of any kind through the generosity

of the sovereign, in the form of pensions, subsidies, or employments. But such compensations were necessarily limited, and they were not always intelligently distributed. For those who embarked on a literary career, the only recourse was to draw their subsistence from the value of their writing when they signed their contract with a bookseller.

Diderot's text evokes a new image of the man of letters: the writer who tries to live by his pen. In discussing equitable payment for manuscripts, Diderot sketches the mediocre but acceptable existence in store for the literary man without formal status or patron. With a decent remuneration, "one might not get rich but would be able to live comfortably if the sums were not spread out over many years, did not slowly evaporate, and were not long gone by the time age arrived, needs increased, the eyes gave out, and the spirit was exhausted."

Still, if authors were to receive a fair payment, the bookseller had to be assured of "tranquil and permanent possession of the works he acquires." That is why Diderot had agreed to accept the commission from the Paris booksellers. He grasped the fact that the organization of the book trade in the old corporatist society meant that the independence (at least in a relative sense) of the writer depended on the existence of renewable and irrevocable *privileges*:

Abolish these laws, force the insecure acquirer to give up ownership, and the consequences of this poorly conceived policy will be borne in part by the author. What benefit will I derive from my work, especially if my reputation is not yet secure, if, as I suppose, the bookseller is afraid that a competitor – who has risked nothing to try out my talent, advanced nothing for a first edition, and paid me no honorarium – will instantly reap the

benefits of acquiring it at the end of six years, or sooner if he dares?

(Diderot is here taking six years as the average term of a *privilège* without renewal.)

The booksellers who commissioned Diderot's brief were predictably unhappy with it. They submitted it to Sartine in March of 1764 only after revising it substantially, and giving it a new title: "Representations and Observations in the Form of a Brief on the Former and Present State of the Book Trade, and Particularly on the Ownership of *Privilèges*." This new title is indicative of the gap between Diderot's most basic intentions – to plead for freedom of the press and establish the property rights of authors in their work – and the sole preoccupation of the booksellers, namely, to maintain the regime of *privilèges* and obtain recognition of the perpetuity, irrevocability, and transmissibility of their property. Drastically revised by its publishers (as some articles of the *Encyclopædia* had been), Diderot's "Letter" would not be published in its original form until 1861.

Thirteen years after Diderot composed his brief, in 1776, Condorcet, probably writing in support of Turgot's decision in February of that year to abolish all *communautés des arts et métiers* (guilds in the arts and crafts),³ drafted a pamphlet entitled "Fragments Concerning the Freedom of the Press."⁴ Although the title has something in common with the

one that Diderot ultimately gave to his "piece," the text calls into question one after another of the principles that Diderot had avowed.

Whereas Diderot based his argument on the idea that literary property is identical to other forms of real property, Condorcet radically rejected this notion: "One feels that there can be no relation between the ownership of a work and that of a field which a man can cultivate, or a piece of furniture that can be used by only one person, the exclusive ownership of which is consequently based on the nature of the thing." Literary property is of a different order: "It is not a right but a privilege," and, like all privileges, harmful to the "public interest," because it is "a constraint imposed on freedom, a restriction of the rights of other citizens." Just as a literary work cannot be protected by an exclusive privilege, neither can it be considered a form of personal property. Enlightenment must progress, and for that to happen everyone must be free to compose, improve, reproduce, and diffuse generally useful truths. Such truths can in no way be subject to appropriation by an individual.

For Diderot, every work is the legitimate property of its author because a work of literature is the irreducibly singular expression of that author's thoughts and feelings. As he put it in his brief,

What property can a man own if a work of the mind – the unique fruit of his upbringing, his studies, his evenings, his age, his researches, his observations; if his finest hours, the most beautiful moments of his life; if his own thoughts, the feelings of his heart, the most precious part of himself, that which does not perish, which makes him immortal – does not belong to him?

3 On this abolition, see Steven L. Kaplan, *La Fin des corporations* (Paris: Fayard, 2001).

4 The complete text of *Fragments sur la liberté de la presse* can be found in Marie-Jean-Antoine Caritat, marquis de Condorcet, *Oeuvres complètes*, vol. 11 (Paris, 1847), 257–314. On these "Fragments," see Carla Hesse, "Enlightenment Epistemology and the Laws of Authorship in Revolutionary France, 1777–1793," *Representations* 30 (1990): 109–138.

For Condorcet, in stark contrast, that which forms the illegitimate basis of property and privilege – namely, “expressions,” “sentences,” “words,” “pleasant turns of phrase” – is without importance compared to ideas and principles that belong to the realm of universal truths.

Condorcet is well aware of the danger that such a position involves for anyone whose existence depends on income derived from the sale of his work: “A man of genius does not write books for money, but if he is not wealthy, and his books bring him no income, he will be obliged to find an occupation in order to live, and the public will lose thereby.”

But for him two facts will limit such a risk. First, freedom of the press, by lowering the price of books, will ensure the greatest possible sale of the original edition, “prepared under the eyes of the author,” and discourage others from publishing competing editions of the same text. Authors will therefore receive a just price for their works, the profits on which will no longer be threatened by counterfeits.

Second, the writer’s condition may even improve if generalization of the subscription system allows the bookseller to amass the capital needed for a future edition and makes it possible for authors to be paid even before their works are completed.

The differences between Diderot’s brief and Condorcet’s pamphlet are substantial. They are due in part to the different contexts in which they were written and the different reasons for their writing. Diderot defends, or at any rate

accepts, existing institutions (guilds, *privilèges de librairie*, tacit permissions) even though he dislikes them, not only because he is writing on assignment but also because he believes that they can be invested with new content: the *privilège de librairie* is defended in the name of literary property, and tacit permissions are regarded as a guarantee of freedom of the press. Writing thirteen years later, at a time when Turgot’s brand of liberalism reigned triumphant, Condorcet refused such precautions and compromises: all privileges must be abolished because the progress of enlightenment demanded that truths be freely exposed and universally shared.

As for the property rights of authors to their works, the consequences of these differences are radical. For Diderot, the author’s ownership of his work is a legitimate and inalienable right – inalienable, that is, except by the author himself. For Condorcet, the very idea of a private property right to ideas is a claim contrary to the general interest.

Not only does this difference reflect two incompatible definitions of a “literary work” – for Diderot, the expression of a singular genius; for Condorcet, a vehicle of universal truths – it also reflects the two men’s very different relations with the world of publishing. The writer who lived by his pen had little in common with the marquis who lived on his *rentes*, other than the fact that both men’s texts would inspire revolutionary assemblies to draft ambiguous legislation that would attempt to reconcile their incompatible theses.

Adrian Johns

Pop music pirate hunters

It is the beginning of a new century, and the music industry is facing a crisis. New technology and innovative business practices are challenging the copyright principles that have underpinned the industry for as long as anyone can remember.

Taking advantage of a revolutionary process that allows for exact copying, “pirates” are replicating songs at a tremendous rate – on the order of a million copies a year. The public sees nothing wrong in doing business with them. Their publicity, after all, speaks of an orthodox music industry that is monopolistic, exploitative of artist and public alike, and devoted to the production of shallow commercial tat.

The pirates, by contrast, are ostenta-

tiously freedom-loving. They call themselves things like the People’s Music Publishing Company, and sell at prices anyone can afford. They are, they claim, bringing music to a vast public otherwise entirely unserved. Many of them are not businesses on the traditional model at all, but homespun affairs staffed by teenagers and run out of bedrooms and even pubs.

In reaction, the established industry giants band together to lobby the government for a radical strengthening of copyright law – one that many see as threatening to civil liberties and principles of privacy. And in the meantime they resort to underhand tactics to take on the pirates. They are forced to such lengths, they say, because the crisis of piracy calls the very existence of a music industry into question.

Sound familiar? If so, it is not because this is a description of the troubles facing today’s entertainment goliaths as they confront libertarian upstarts like Napster and MP3.com. In fact, this was the roiling battleground of music publishing in the earliest years of the twentieth century, not the twenty-first. In those years the industry faced a piratical threat more serious than any before or – until recently – since. How that threat materialized, how it flourished,

Adrian Johns is an associate professor in the Department of History and in the Committee on Conceptual and Historical Studies of Science at the University of Chicago. He is the author of “The Nature of the Book: Print and Knowledge in the Making” (1998), a prize-winning study of the rise of print culture in early modern England. Educated in Britain at the University of Cambridge, Johns is currently working on a history of intellectual piracy from the invention of printing to the Internet.

© 2002 by Adrian Johns

and how the industry fought back comprise a story with no little relevance for today's highly charged situation.

At the beginning of the twentieth century the music industry was premised on the sale of printed sheet music. The publishers producing such music did so on a truly enormous scale. Perhaps twenty million copies a year were printed in Britain alone, and the best-known pieces sold in the hundreds of thousands. Most of the businesses dominating this field were family firms committed to upholding traditional standards of taste and aesthetic value. Not just concerned to exploit the value of "dots" (as musical notation was termed), they proudly nurtured personal as well as professional relationships with artists such as Stanford and Elgar. Most of their sales were of a relatively small number of wildly successful songs, which, as they were fond of pointing out, cross-subsidized the many that were only modestly successful or that failed outright. The details of pricing, however, were regarded as confidential, and this encouraged rumors that the firms acted in concert to keep them artificially high. They actually sold songs at about a shilling and fourpence each, which does not seem exorbitant – unless you knew that a pirate would sell you the same song for twopence.¹

Two profound changes made such piracy possible, one of them technological, the other cultural.

The first was the development of photolithography. This allowed pirates for the first time to reproduce what was for all intents and purposes an exact copy of

an original. Gone were the typographical errors of earlier pirated versions of sheet music; it often took an expert to tell a reproduction from the original.

The second crucial development was the late-Victorian appearance of "piano mania." As middle- and lower-class incomes rose, money became available for leisure, and in the last quarter of the nineteenth century a number of novel ways of spending it came into being. Pianos were among the most notable. Suddenly every aspiring family wanted what one commentator called "that highly respectablising piece of furniture." The social character of music changed radically as professional virtuosity diverged from, and increasingly disdained, a burgeoning realm of amateurs trained by an equally burgeoning – and utterly unregulated – crowd of "professors." By 1910 there was one piano for every ten people in Great Britain.

Where pianos went, piano music had to follow. The result was a huge new demand among middle- and lower-class amateurs for sheet music – the cheaper the better.²

Music piracy had long existed, of course. Indeed, until the 1770s music was conventionally regarded as lying beyond the purview of copyright altogether, so publishers sold unauthorized reprints freely.³ By the late nineteenth century, legislation had eliminated that kind of freedom. But the new mass market transformed the nature and implications of piracy, making such laws practically moot. The implications extended from

1 D. W. Krummel, "Music Publishing," in N. Temperley, ed., *Music in Britain: The Romantic Age, 1800–1914* (London: Athlone, 1981), 46–59.

2 Cyril Ehrlich, *The Piano: A History*, rev. ed. (Oxford: Clarendon Press, 1990), 88–107.

3 David Hunter, "Music Copyright in Britain to 1800," *Music and Letters* 67 (1986): 269–282.

music-hall songs to works by Massenet, Sullivan, Gounod, and Mascagni. In the early 1900s, pirates copied any music that was genuinely popular, be it a Puccini aria or a Sousa march.

But if it was a mass market that drove piracy, what made it almost respectable was a widespread sense of resentment within musical circles. The music publishing companies, represented as a group by the Music Publishers Association (MPA), had encountered growing complaints from all sides. In 1899, a new association was formed to publish music on behalf of composers themselves. It aimed to give its members “the full benefit of any financial reward” from their efforts, in contrast to the music publishers’ practice of absorbing “nearly all the financial benefits.” On the other side of the industry, retailers too complained – about high prices, trade secrecy about the setting of those prices, and publishers supplying material to rivals at preferential rates. There was, then, a ready audience for the argument that the world of music publishing needed shaking up.

The problem facing the music publishers was not one of legal principle. The difficulty lay in enforcing the law. Although copyright violation, be it of books or sheet music, was illegal in Great Britain, it was a civil offense, not a criminal one. This meant that tracking down perpetrators was largely a matter for their victims. They had the right to search for copies, but not to enter private premises to do so – unless the pirates themselves admitted them, which was, obviously, unlikely. And even if they did succeed in getting hold of pirated music, the most they could hope for was the destruction of their haul. Any award of costs was likely to prove futile, since the hawkers and hacks they

apprehended tended to disappear before hearings, or else to claim poverty. There was no power to impose fines.

While all this was not a great problem for book publishers, since a book represented a relatively substantial capital investment and its seizure was consequently a serious matter for the pirate, for music publishers it was utterly insufficient. Each title amounted to only a sheet or two, and pirates freely allowed them to be seized *en masse*. The publisher would then find the pirate back on the streets within hours, clutching fresh bundles of stock. No wonder, then, that some among the publishers came to the conclusion that they needed to go beyond the law.

In January of 1902, the publisher David Day, of Francis, Day & Hunter, resolved to act. Day was already known for his hard line against piracy: in 1897 he had been described as “the mildest mannered man that ever cut the throat (so to speak) or scuttled the ship of the piratical song printer.” But what he planned now was far more risky than any strategy previously undertaken.

Hiring the services of a detective agency, he mounted his own raid on a piratical warehouse. The raid was almost certainly illegal, but the amazed occupants offered no resistance. Day walked off with five hundred copies of pirated sheet music. He and his men then moved to “attack” a north London cottage where hawkers gathered to pick up pirated copies. Pretending to be hawkers themselves, they seized fifteen thousand copies more. An unfortunate barrow boy yielded another four thousand. Yet another eight thousand came from a hawker’s house, twenty thousand from chambers in the City. Cock-a-hoop, Day

sat back and waited to see what the pirates would do.⁴

What they did, as it turned out, was nothing. Day had got away with it. Word of the victory then spread fast. An anonymous “antipirate” spelled out a plan: that the publishers should systematically recruit “commandos” modeled on Day’s raiding party, each comprising twenty or so men ready to target markets in London and beyond. It was a grimly appropriate word, coming as it did from South Africa, since many of the songs over which the publishers and pirates were fighting were jingoistic ditties for the Boer War. And before long the leading firms were indeed embarking on such a policy.

To that end, Day founded a new industry trade association, the Musical Copyright Association (MCA), becoming its president and plucking a junior clerk from Francis, Day & Hunter, John Abbott, to be secretary. Abbott found himself charged with devising an offensive against the pirates – an offensive that would skirt the fringes of illegality, that would be launched (it seems) against the advice of the MCA’s own lawyers, and that would depend for its success upon the reluctance of the pirates themselves to have recourse to the courts.

Abbott went about his task with alacrity. He rapidly recruited a small army of retired policemen and others with “some knowledge of the pugilistic art.”⁵ The campaign against the pirates

now began in earnest. Hawkers were confronted on the streets, distributors challenged in their premises and pubs, and printers raided in their cellars and garrets. Agents seized copies numbering in the hundreds of thousands.

Such vast numbers demanded attention, and in response Parliament passed a new musical copyright law. It came into force in October of 1902. Intended to strengthen Abbott’s hand, the new law permitted the police, on being given a written request by a victim of piracy, to seize pirated sheets without waiting for a warrant. For the first time, antipiracy actions would become official police business.

The police moved fast to put this new power into practice. At the same time Abbott’s agents spread out across the country. The level of seizures soon rose dramatically. In the following three months, 750,000 pieces of sheet music were stored in police stations, awaiting the bonfire.

But behind that impressive mass of material lay a plan that was deeply flawed. For one thing, not all pirates proved to be as quiescent as those encountered by Day. Some challenged the agents’ authority to act – an authority that was not materially improved by the new musical copyright law. Hawkers, for example, brought assault charges against the commandos, and sometimes won. Then, in August of 1902, a homeowning pirate found himself confronted in his doorway by half a dozen MCA men, who pushed their way into the house and threatened to “drop” him if he resisted. Although they found three thousand pirated copies of sheet music, the resulting case was of assault, not piracy, and the MCA found itself rebuked. Its policy, the magistrate ruled, exceeded legal limits; it amounted to “organized hooliganism.” The remark

4 James Coover, comp., *Music Publishing, Copyright, and Piracy in Victorian England* (London: Mansell, 1985), 84–85. Coover’s collection of primary source excerpts is the essential entry point to this story. In what follows, most of the material that does not come from Preston’s scrapbook may be found in Coover, although it has generally been checked against originals.

5 John Abbott, *The Story of Francis, Day & Hunter* (London: Francis, Day & Hunter, 1952), 31.

was to be much cited by opponents of the campaign in succeeding months. As such cases mounted up, it began to appear that the whole offensive might backfire. Assault, after all, seemed to many to be an altogether more serious crime than piracy.

At the same time, British music lovers expressed growing skepticism that the publishers were acting in anyone's interest but their own. Perhaps British music would be better off with the pirates.

Stories of composers fleeced by the publishers multiplied. Retailers too saw little benefit in high prices, and the very success of the pirates in selling vast numbers of copies showed that selling cheap could pay. Perhaps, remarked one, the crisis would compel a proper assessment of the worth of the retail network, "now that the publisher is in his death grapple with the pirates."

Embarrassingly enough, in several cases pirates turned out to be ex-MPA or MCA agents who said that they had been forced to turn pirate by the excessive prices charged by the legitimate publishers. "I can't help myself," said one such; "the publishers charge such an enormous price for their copies." Their inside knowledge had in the end only helped them become better pirates.

But the greatest problem was that the seizures were proving far more inconvenient to the police than they were damaging to the pirates. Pirates could quickly collect or print more copies of sheet music. Meanwhile, police stations were becoming warehouses for hundreds of thousands of useless pieces of sheet music. None of that music seemed to be going to the incinerators, and the flow of piracies was not being staunched. The stations were simply filling up with paper.

The reason for this was that the law

insisted on a hearing before destruction, and most hawkers disappeared without answering the summons. The seized copies thus fell into a legal limbo. Finally, in February of 1903, four months after the law had gone into effect, the Metropolitan Police had to suspend its enforcement. The implication was clear: the new statute was an exercise in futility. With no power to search private premises – magistrates were still ruling in favor of the pirates on this – and no fining of offenders, the pirates were scarcely being discomfited by the seizures.

With the campaign floundering and public criticism mounting, some in the trade saw a need to change tack. Day himself broke ranks first. He found himself forced to announce in the *Daily Mail* the launch of Francis, Day & Hunter's new sixpenny music series, which would reissue songs at a price far more competitive with that of the pirates.

A direct result of the combination of pianos and piracy, this new series was a radical departure for the trade. It amounted, one songwriter said, to "an admission of the claims made by the defenders of the pirates that publishers have been robbing the public." It was the "day of cheap music at last," hailed the piratical Popular Music Stores of Doncaster. For once, "the elect in the musical world must recognize the increasing desire of the masses to share in the refining pleasures of high-class music." Even the staunchly pro-publisher trade journal *Musical Opinion* announced the coming of a "revolution" in music publishing. Meanwhile, the MCA, its initial successes paling, fell silent. The pirates were on the verge of winning their war.

For want of a better strategy, the publishers decided to return to what Abbott called their "'smash and grab' method."

With the MCA more or less discredited, the older trade body, the Music Publishers Association (MPA), came back to the fore. And with it came the MPA's new agent in the fight against piracy, an MCA veteran named William Arthur Preston.

Like Abbott, Arthur Preston had been an employee of one of the big music publishers. In his case it was Boosey and Company, where he had worked since about 1890. But from late 1903 he enjoyed effective command of antipiracy efforts on behalf of the MPA. In this capacity he traveled the length and breadth of Britain and Ireland, seeking out pirates and dragging them through the courts. Apparently indefatigable, Preston single-handedly revived the publishers' offensive, extending it to the furthest provinces.

He did so in three distinct campaigns. The first was a sweep across the north of England and the Midlands, beginning in Liverpool in December of 1903. The second then concentrated on London itself and its suburbs. The third took in the south, ranging from the Medway towns in the east to Plymouth in the far west. In addition, Preston traveled to Dublin, Belfast, and Londonderry to hunt down pirates in Ireland, and even made a detour to the Isle of Man. There can have been few men who saw more of the British Isles in 1904–1905 than Arthur Preston.

Preston kept a remarkable scrapbook recording his progress.⁶ This scrapbook makes possible a detailed reconstruction of both the practice of piracy and the tactics he used to counter it.

To understand those tactics – which included subterfuge to get into pirates' premises – we need to go back to the 1902 law and ask why it was such a failure. The main reason was that it as-

sumed a truism about morality and place that had been ingrained in English society for well over two centuries. This was the conviction that the home was the fundamental site of sound morals. In the seventeenth century, when vagrancy acts were first instituted, it had been taken for granted that secure, patriarchal households were the basis of a stable society. Streets, fairs, and markets, on the contrary, were notorious for their licentiousness. Laws requiring peddlers to obtain licenses – laws that the publishers now sought to exploit against sellers of pirated sheet music – were another reflection of this idea, the tenacity of which it would be hard to overestimate. The reason why the 1902 act provided no right of forced entry into houses was that it assumed, *a priori*, that piracy must be a street-based crime.

The implications of existing British laws against piracy became plain to Preston in 1902, when he tried to prosecute pirates in Liverpool. In this industrial city, some two hundred separate songs were reputedly available as piracies, and the legitimate trade complained of a 60 percent decline in business. Shortly after he arrived, Preston seized pirated sheet music from “street-sellers.” Next he raided a private home, seizing seven thousand copies of pirated music from the residence of John O’Neile at 50 Hunter Street, and causing a “sensation” in the neighborhood. In court, however, O’Neile’s defense contended that there was no evidence that any of the music had actually been sold in the home – a point that Preston had to concede. Since, as the defense claimed, “the [musical copyright] act refers to street trading and not to anything in a house,” O’Neile could not be found guilty simply because he had stored pirated sheet music in his home.

Stymied, Preston had no option but to

6 British Library, Music Library, ms. M.55.

about the prosecution. “The act is rather weak,” his lawyer observed; “It would have been better to leave us alone and let us proceed under the old act.” Tellingly, a moment after O’Neile walked, a barrow boy who had had far fewer pirated sheets came before the same judge and found himself punished because he had been operating in the street.

Preston’s struggle with the pirates thus came to focus on questions of place. Responding to Day’s commando tactics, the pirates had begun to appear in courts and in the press as heroic defenders of domestic privacy, as well as upholders of diversity against monopoly and defenders of the people’s right to affordable songs. So Preston took care to think through a taxonomy of places and practices that would buttress the legitimacy of his raids.

Was the location of a given raid a home or a warehouse? Was it a place of sale or of storage? To what extent could police or MPA men legitimately claim access? What about a market stall: was it a sacred slice of domesticity in the midst of a public square or an open space?

These were real questions that Preston – unlike Abbott the previous year – took care to appreciate and answer. As a result, newspaper reports and the courts themselves increasingly classified piratical villains according to places of work. Four distinct classes of enemy took shape.

1) The first was that of men who sold sheets “in the public streets.” These were the small fry of the trade, the hawkers, who often reappeared with new stock mere hours after a confrontation. They rarely yielded more than ten to a hundred copies at a time, and they refused to betray their sources. Preston prosecuted large numbers of such men. While there was inevitably a feeling of

futility to these prosecutions, in fact the hawkers did change their practices as a result of his campaign, abandoning the thoroughfare as a place of trade. Increasingly they dropped printed catalogues through houses’ mailboxes and returned later to deliver any desired music to the householders. The pirates later took this strategy to its logical end by circulating catalogues by mail, eliminating the weak link of the street-seller altogether.

2) People with relatively fixed premises were an altogether more serious matter, since they often acted as local centers of distribution. Generally, hawkers would be supplied from houses or pubs, with the actual warehouse being a small distance away for security reasons. The most notorious example was the Rose and Crown in East London, where distribution was managed by a man known as Tum Tum. This kind of “wholesale man,” responsible for managing such an operation, was a figure that Preston particularly wanted to catch.

3) Preston also sought the hack printers who actually produced the piracies. But these were not as crucial as one might suppose. They were generally, in Preston’s much-repeated phrase, “men of straw.” Working in garrets or cellars, they exercised little control over the enterprise and used rented equipment so as to minimize capital losses if detected. They seem to have been concentrated in London, and especially in the East End. But plates could be distributed anywhere a willing worker could be found, via a secretive method involving railway station cloakrooms, so printers also operated in, for example, Kensington. From temporary and shifting workshops they produced copies rapidly – five thousand per man per day, according to one informer. The rail network then took them

across the country, to Leeds, Liverpool, Manchester, and Doncaster. There local organizers distributed them through the local network of piracy, first to the wholesale men, then to the hawkers.

4) But the real catch was the publisher's illicit *doppelgänger*, the pirate himself. This was the man who actually coordinated the whole network. He was the criminal capitalist, the musical Moriarty, the piratical patron of the arts who oversaw the whole enterprise while never getting his own fingers inky. The pirate alone had no predictable location, moving from address to address at will. He was therefore the one figure that Preston, Abbott, and their men had never managed to nab. He seemed to be, as the *Sheffield Telegraph* lamented, "ungetatable." For all its dynamism, Preston's campaign would not be a true success until it had trapped a real pirate. And on Christmas Eve, 1903, that suddenly became a possibility.

The great Victorian railway termini of London give rise to lines that snake out across the city atop stolid red-brick viaducts. It was in one of the arches beneath such a viaduct that the greatest music pirate of the age had his headquarters. For some time, John Abbott – still pirate hunting like Preston – had had this arch in the East End under observation, in what he called "the best Sherlock Holmes manner."

On December 24, he launched his raid. He discovered almost seventy-five thousand sheets of pirated music – ten times the largest of regular hauls. The batch had been about to be dispatched down the Great Western Railway to the pirate network. And the pirate himself was actually present. His name was James Frederick Willetts, although in his piratical capacity he tended to use the *nomme de guerre* John Fisher (coined, apparently,

because he had at one point been a fishmonger). But the press and his dealers alike knew him simply as "the pirate king."

The Christmas Eve raid was the first of a series of spectacular attacks over the next eighteen months, which progressively unveiled the extent of the pirate king's realm. Abbott himself raided a cottage in Finchley and found a printing operation with 12,000 copies of pirated music (its overseer, John Puddefoot, remarked that "they do worse on the Stock Exchange every day"). Ten thousand copies turned up in Hoxton. A raid in Hackney yielded nearly 240,000. Another in the north London suburb of Dalston yielded over 280,000 copies, from a warehouse rented by George Wotton on behalf of "the King of the Pirates." Subsequent raids across north London and the East End resulted in further big hauls: 6,500 in Devons Road, 150,000 in Upper Holloway, and 160,000 in a warehouse operated by William Tennent on behalf of "J. Fisher and Co."

Willetts was not idle in the face of these setbacks. Parliament itself had returned to the problem of music piracy, establishing a special committee to investigate. Both Preston and Abbott testified before it. But so too did the pirate king himself. Willetts's testimony – given at his own insistence – was reported at length by the press across the country. It was perhaps the only moment in modern history when a self-proclaimed master of the piratical trade volunteered to appear before the highest political powers and justify his conduct.

Willetts's justification began from the position that no author or composer should be given – or, as a matter of fact, possessed – a freehold on gifts that were God-given for the public benefit.

This was, in principle, uncontroversial.

sial. For the first time, however, musical works really did redound to the general good, since educational reform had made music a part of the cultural formation of every factory worker. Yet at the same time, the new mass market – the committee called it the “No. 2 market” – remained entirely distinct from the traditional public served by legitimate publishers. Willetts’s consumers were working-class. They did not necessarily desire different music – artisans as well as gentlemen, he insisted, appreciated *Tannhauser*, *Carmen*, and *William Tell*. But they did require music that they could afford, and this the traditional industry failed to supply.

Willetts therefore argued that, far from destroying an industry, his piracies had no significant effect at all on existing publishers’ sales. Indeed, it might even increase them, since it amounted to free advertising. (Willetts claimed that none other than David Day had confirmed as much to him privately.) In other words, Willetts insisted on the fractured nature of mass culture at a time when others were content merely to extol its size.

So why were legitimate publishers insensitive to this enormous new market? Because, Willetts explained, they had evolved into a cozy, familial trust – a “ring” dedicated to protecting high customer prices and low authorial remuneration by means of collaboration. But, Willetts argued, Parliament need not accept their conventions. For the sake of the public interest, changes must now be made.

Willetts urged that copyright return to what he took to be its original meaning: that of a “liberty” conferred for the public’s good, not the creator’s. The proper analogy was not with real property at all, but with the kind of monopoly that might be granted to a supplier of any public good, like a rail operator. Such a

monopoly did not give the operator an unrestrained right to charge whatever fares it wished, nor to cease to operate trains for all but the wealthiest portions of society, even though these both might be sensible policies for the company itself.

In fact, as Willetts reminded his audience, Parliament routinely decreed that train companies must run services at prices that the people could afford. And this, he maintained, was precisely what Parliament should do now for music. Where it had fostered the concept of cheap travel, so it should now foster the concept of cheap music. There should be first-class and third-class impressions of musical pieces, as there were first- and third-class railway carriages. In each case first-class and third-class products would produce the same end result, but would differ in their appurtenances and would appeal to distinct markets. This, he pointed out, was precisely what Francis, Day & Hunter was already doing with its cheap music series – an idea that Willetts claimed had originally been his.

So the pirate king was not against the notion of authorial right per se. Indeed, he claimed he could pay authors more than legitimate publishers did. But he denied the principle that copyright holders had a right to restrict the circulation of musical pieces themselves in the face of the public interest.

Instead he proposed that Parliament decree a statutory royalty: once published, anyone could reprint and sell a piece of music, but all who did so must pay the composer and author at the required rate. This would make alleged piracy into practical orthodoxy. It would recalibrate commercial propriety around a different kind of norm. And it was, in fact, exactly the policy that would be adopted to deal with the next great challenge to musical copyright. The next

generation saw gramophone recordings subsumed into intellectual property law under precisely this kind of principle.

In 1904, however, the Parliamentary committee was not yet ready to accept the logic of Willetts's argument. Instead, the committee recommended that a strict antipiracy bill be drafted. Yet his testimony did find some sympathetic hearers both within Parliament and without. The publishers' bid for a new law remained in the balance. And their campaign against piracy was hobbled in early 1905 when Willetts formed a limited company. From now on, however many copies of pirated sheet music Preston and Abbott might seize, Willetts himself would be invulnerable.

Backed into a corner, the publishers finally made a desperate gamble. They announced that piracy had grown so endemic that they could no longer justify investing in any new works whatsoever. The entire music publishing industry shut down.

The Parliamentary committee that Willetts had addressed remarked in its report that piracy amounted to a "common law conspiracy" against copyright. It was an almost casual aside, yet it caught the attention of William Boosey, chief pirate-catcher of Chappell and Company. It raised an interesting possibility. Although piracy itself was a merely civil offense, conspiracy was a different matter entirely. The act of conspiracy was criminal – and thus subject to far more serious penalties, including prison. Just when the war on piracy seemed lost, Boosey saw a chance finally to damage the pirates. After all, the evidence was already available, from all the raids carried out over the past eighteen months; it had simply never been put to use in

this way. He decided to make the attempt.

A new trial began in December of 1905. The alleged conspirators were all men who had been the subject of raids, including Wotton, Tennent, and Puddefoot. But the main target was their leader, Willetts. The hearing took seven weeks, with over fifty witnesses participating.

Willetts chose to mount what looks like a token defense, questioning the copyright status of the songs at issue and condemning the trade secrecy of the publishers. Perhaps he hoped that Parliament would render the whole case moot. It did not. Convicted, he was sent to prison for nine months.

For the first time, pirates faced severe penalties. They could not hope to resume operations quickly if they had to counter conspiracy charges. Soon after the Willetts trial, a second conspiracy case, this time against the "Leeds Pirate King," a man named John Owen Smith who had done extensive business with Willetts, resulted in a similar victory. Then a new music copyright law was finally passed, having received the all-important support of the government. The new law ended any hopes men like Willetts might have harbored that they would be decreed legitimate retroactively. Willetts never recovered, and piracy in general was soon reduced to virtually zero.

The defeat of the pirates – and the last-ditch survival of the publishers – rested on a redaction into legal argument of Arthur Preston's pilgrimages across the land. The publishers won by finally confronting the fact that piracy was a matter not just of immorality, but of complex social networks with their own channels

of communication and their own ideology. The conspiracy charge succeeded not by challenging the content of the pirates' networks, but by identifying them as networks.

So all of Preston's raids and seizures were not, it turned out, so futile after all. Preston and Abbott's efforts had yielded something immeasurably more valuable than the hundreds of thousands of copies they had amassed. What really counted were the tiny scraps of knowledge they had gained. Together those

scraps could be combined into a detailed understanding of piracy as a collective practice – and it was only when they were so combined that the pirates met their nemesis. Only by replicating the social knowledge of Willetts himself could Preston and Abbott defeat him.

The moral of the story is therefore simple. The best way to counter piracy is to appreciate the culture of the pirates themselves – and to understand it better than they do.

*Pop music
pirate
hunters*

Daniel J. Kevles

Of mice & money: the story of the world's first animal patent

In April of 1988, the United States Patent and Trademarks Office issued the first patent on a living animal in the history of the world's patent systems. Awarded to Harvard University, the patent covers a laboratory mouse that one of its scientists had genetically engineered to be supersusceptible to cancer. The Patent Office's adventurousness gratified biotechnologists, but it also disquieted many clerics. The World Council of Churches attacked animal patenting, declaring that it "removes the distinction between life and nonlife" and admonishing that "the gift of life from God . . . should not be regarded as if it were a chemical product." Other critics

warned that animal patenting would spread beyond the laboratory to agriculture, where it would work harmful economic effects. The Patent Office, they said, had been high-handed in expanding the scope of patent protection to higher life forms on its own. So controversial a policy initiative was properly a matter for Congress.¹

In a congressional hearing on genetically engineered animals the year before, Congressman Mike Synar, a wry Democrat from Oklahoma, remarked that few lawyers knew anything about patent law. "Everyone knows it is not part of the bar exam, so to hell with it."² But like many other branches of law – in the areas of, for example, business, regulation, and civil rights – patent law is also a branch of political economy. And in recent

Daniel J. Kevles, the Stanley Woodward Professor of History at Yale University, has written extensively about issues in science and society, past and present. His articles, essays, and reviews have appeared in a variety of scholarly and popular journals. He is the author of several prizewinning books, most recently "The Baltimore Case: A Trial of Politics, Science, and Character," and is a coauthor of the forthcoming "Inventing America: A History of the United States." He is currently at work on a history of the engineering and ownership of life. Kevles has been a Fellow of the American Academy since 1990.

© 2002 by Daniel J. Kevles

1 Testimony of Jaydee R. Hanson . . . United Methodist Church, and Andrew W. Kimbrell . . . on Behalf of the Coalition on Animal Patenting, U.S. Congress, House, Hearings before the Subcommittee on Courts, Civil Liberties, and the Administration of Justice, Committee on the Judiciary, *Transgenic Animal Patent Reform Act of 1989*, 101st Cong., 1st Sess., September 13 and 14, 1989, 258–272.

2 U.S. Congress, House, Hearings before the Subcommittee on Courts, Civil Liberties, and the Administration of Justice, Committee on the Judiciary, *Patents and the Constitution: Transgenic Animals*, 100th Cong., 1st Sess., June 11, July 22, August 21, and November 5, 1987, 27.

years, the part of it that concerns the patenting of life, especially animals and genes, has also become, for the first time, a branch of ethics.

What is patentable according to statute dates back to the patent law of 1793, which declared, in language written by Thomas Jefferson, that patents could be obtained for “any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement thereof.” Jefferson’s phrasing remained – and remains – at the core of the U.S. patent code, except for the eighteenth-century word “art,” which was replaced in a 1952 congressional overhaul of patent law by the word “process.”³

The code said nothing about patenting life, but a key precedent discouraging it was established in 1889, when, in a landmark ruling, the U.S. commissioner of patents rejected an application for a patent to cover a fiber identified in the needles of a pine tree. He noted that ascertaining the composition of the trees in the forest was “not a patentable invention, recognized by statute, any more than to find a new gem or jewel in the earth would entitle the discoverer to patent all gems which should be subsequently found.” The commissioner added that it would be “unreasonable and impossible” to allow patents upon the trees of the forest and the plants of the earth.⁴

3 Fritz Machlup, “Patents,” *International Encyclopedia of the Social Sciences*, ed. David L. Sills (New York: Macmillan, 1968), XI, 461–464; Bruce W. Bugbee, *Genesis of American Patent and Copyright Law* (Washington, D.C.: Public Affairs Press, 1967), 152.

4 *Ex Parte Latimer*, March 12, 1889, C.D., 46 O.G. 1638, U.S. Patent Office, *Decisions of the Commissioner of Patents and of the United States Courts in Patent Cases... 1889* (Washington, D.C.: Government Printing Office, 1890), 123–127. See also H. Thorne, “Relation of Patent Law to Natural Products,” *Journal of Patent Office Society* 6 (1923): 23–28.

The commissioner’s ruling formed the basis of what came to be known as the “product of nature” doctrine – that while processes devised to extract what is found in nature can be patented, objects discovered there cannot. They are not inventions, nor can they as a class be made anyone’s exclusive property. In the Plant Patent Act of 1930, Congress granted patentability to one class of living products: plants that could be reproduced asexually. There was no other extension of patent law to vital entities for forty years, but then along came Ananda Chakrabarty, a biochemist at the General Electric Company, who in 1972, having bioengineered a bacterium to consume oil slicks, filed for a patent on the living, altered bacterium.

The U.S. Patent Office denied him a patent, arguing that no patent could be issued on a living organism, not least because it was a product of nature. Chakrabarty appealed his case through the courts, and at the end of 1979 it reached the United States Supreme Court under the rubric of *Diamond v. Chakrabarty*, in recognition of the fact that the position of the Patent Office was formally defended by Sidney Diamond, the current patent commissioner.

By the time the case arrived at the Court, it had become highly charged by the social and economic stakes that surrounded the swiftly accelerating commercialization of molecular biology. In the 1970s the new techniques of recombinant DNA were beginning to be exploited by adventurous startups such as Genentech. Companies were being founded at a rapid pace, while major pharmaceutical firms as well as several oil and chemical giants were plunging into work with recombinant DNA, initiating research programs of their own, giving research contracts to the startups, and even obtaining an equity interest in

some of them. Biotechnology firms and firms eager to get into biotechnology sought connections with universities. In return, the universities could expect dividends from the biotechnology industry in the form of gifts, research grants, and license fees for the use of patents covering the valuable research products of their laboratories.

Chakrabarty had not used the technique of recombinant DNA to engineer his oil-eating bacterium, but the issue his case raised – the patentability of living organisms – spoke directly to the rapidly increasing stake in biotechnology patents. Ten *amicus* briefs were filed in the case. Most supported Chakrabarty and came from economically interested organizations including Genentech, the Pharmaceutical Manufacturers Association, the American Patent Law Association, the New York Patent Law Association, and the American Society for Microbiology. The University of California also submitted a friend-of-the-court brief. It was not more alive to the hopes of revenues from biotechnology than other universities, only more immediately interested, by virtue of the fact that Herbert Boyer, one of the inventors of recombinant DNA and a cofounder of Genentech, was a member of the faculty on its San Francisco campus.

The University of California's particular stake in the patenting of living products was echoed and generalized in a single *amicus* brief filed on behalf of the American Society of Biological Chemists, the Association of American Medical Colleges, the California Institute of Technology, and the American Council on Education as well as several faculty in biochemistry and molecular biology from Caltech and the University of California at Los Angeles. The brief was unabashedly frank in declaring the fundamental interest of each of these

friends of the court in the outcome of the case:

Some of the *Amici* receive contract funds from commercial corporations whose future funding of research in this field is certain to be influenced by this Court's decision. All of the individual *Amici* receive or plan to receive indirect funding from royalties on patents which are held by their respective universities.... They fear that adoption of a *per se* rule excluding all living things from patentability will inhibit commercial development of the advances they are making in recombinant DNA research.⁵

On June 16, 1980, the Court held, by the slim margin of 5 to 4, that whether the invention was alive or dead was irrelevant, that the bacterium was not a product of nature, that it was a product of Chakrabarty and hence deserved a patent. Chief Justice Warren Burger delivered the majority opinion, enthusing over the broad language that Thomas Jefferson had written into the patent law of 1793, calling it expressive of its author's "philosophy that 'ingenuity should receive a liberal encouragement'" and noting that all succeeding Congresses had left Jefferson's language virtually intact. Rejecting the contentions of the Patent Office, he found that the patent code as written was ample enough to accommodate inventions in areas unforeseen by Congress, including genetic technology, and to cover living microorganisms. Chakrabarty's bugs were new

5 *Brief Amicus Curiae of the Regents of the University of California*, January 1980; *Brief of Dr. Leroy Hood, Dr. Thomas Maniatis, Dr. David S. Eisenberg, the American Society of Biological Chemists, the Association of American Medical Colleges, the California Institute of Technology, the American Council on Education as Amicus Curiae*, January 28, 1980. The *amicus* briefs are with *Diamond v. Chakrabarty*, U.S. Supreme Court, Docket No. 79-136, 447 U.S. 303, January 1980.

compositions of matter, the product of his ingenuity, not of nature's. As such, they were patentable under existing law.⁶

The principal inventors of the Harvard mouse were Philip Leder, a distinguished biomedical scientist who had been appointed to the university's medical school faculty in 1981, and Timothy Stewart, a young biologist who in 1982 had come to work in Leder's lab. Their construction of the mouse hinged on an experimental technique devised in 1980 at Yale University by Jon W. Gordon and Frank H. Ruddle, who expected that it could aid research into the genetics of development. Like cancerous growth, normal development occurs in a living organism, not in a tissue culture dish. Only in a living organism does the genetic program for cellular differentiation, its triggers keyed to the organism's developmental stages, play itself out over time to transform a single cell – the newly fertilized egg – into a mature animal of various specialized parts. Gordon and Ruddle expected that important features of the program might be exposed by introducing foreign DNA into the living mammalian system. The immigrant DNA would be detectable by conventional techniques in the tangle of DNA native to the organism; its behavior could thus be monitored, revealing information about the regulation of genes and the physiological functions of the proteins for which they coded.

With the techniques of recombinant DNA, any specific piece of DNA could be isolated for insertion into an animal. And then, if the DNA were introduced when the embryo consisted of just one cell, it could integrate into and then pro-

liferate with the creature's native genome, eventually finding its way into every cell of the grown animal, including its sex cells. When the animal reproduced, the DNA would be transmitted to some fraction of its progeny, automatically supplying a large number of such genetically transformed animals.

Testing this research protocol, Gordon and Ruddle stitched together a plasmid from two different fragments of viral DNA, one containing a region involved in DNA replication, the other the code for a protein called thymidine kinase – an enzyme fundamentally involved in cellular growth – that was distinguishable from the version of the protein native to the mouse. They injected the plasmid into a pronucleus – that is, the nucleus of either the sperm or egg before one joins the other to form a single cellular nucleus – in several hundred newly fertilized mouse eggs, which were then inserted into females made pseudopregnant by coupling with vasectomized males. The females produced seventy-eight live offspring. Two of them possessed the plasmid DNA in all of their cells, indicating – a first in the annals of biology – that the two had incorporated the foreign gene and had thus been genetically modified. Gordon and Ruddle reported their experiment in December of 1980 in the *Proceedings of the National Academy of Sciences*, declaring their results to mean that “genetic transformation can be extended to whole mammalian organisms at a very early stage in their development.”⁷

The creation of mice with foreign genes – “transgenic mice,” to use the

6 *Diamond v. Chakrabarty*, 447 U.S. 303, 100 S. Ct. 2204 (1980), 2206–2212.

7 Jon W. Gordon, George A. Scangos, Diane J. Plotkin, James A. Barbosa, and Frank H. Ruddle, “Genetic Transformation of Mouse Embryos by Microinjection of Purified DNA,” *Proceedings of the National Academy of Sciences* 77 (December 1980): 7380–7384.

term that Gordon and Ruddle soon coined – attracted wide attention in the press (news stories appeared in *Time*, *Newsweek*, and *The New York Times*). However, the publicity did not stimulate a lot of immediate experimental commitment. Gordon and Ruddle noted that transgenic procedures, especially the insertion of foreign DNA into an early embryo, were difficult because newly fertilized mammalian eggs were delicate and small. In a conversation with Leder, I remarked that transgenic technology seemed simple. He bridled a bit, declaring, “It’s very simple in the sense that someone will say that playing the violin is fairly simple.” He pointed out that inserting the foreign DNA into an embryo, and then the embryo into a tiny opening in the mouse oviduct, which is thread-thin, requires not only some high-powered technology, particularly a very good microscope and very good micromanipulators, but also excellent hand-eye coordination. One of his post-doctoral fellows said that it’s a good idea not to have more than one cup of coffee on a day that you’re going to do microinjections, adding that otherwise your hand shakes too much and you can’t manipulate the embryo.

The difficulties notwithstanding, Leder tried transgenic experiments before he arrived at Harvard, unsuccessfully, but then tried again once in Cambridge – this time with several constructions of different genes, including an oncogene called the *myc* gene. Timothy Stewart had come to Leder’s Harvard group from the Institute for Cancer Research at Fox Chase, in Philadelphia, where he had collaborated in a transgenic experiment. Leder said, “Stewart was a very good biologist, an extremely talented young man, both gifted intellectually and very well coordinated.”

Part of what Leder hoped to accom-

plish by creating a transgenic mouse was to see whether *myc* could be made to operate as an oncogene in a living animal, especially in its breast, and to test his hypothesis about how it worked as an oncogene – namely, by a deregulation that permitted the superproduction of its normal protein. Leder wanted to concentrate the expression of the *myc* gene at high levels primarily in the cells forming the animal’s mammary tissue. So targeted, the gene would be little or unexpressed in male mice, since they do not develop mammary tissue, and expressed in females, making them a model for the study of breast cancer. Leder accomplished the targeting of *myc* by replacing some fraction of its promoter region by the DNA of the mouse mammary tumor virus that is activated in the breast.

In 1983, Leder and Stewart created a colony of ten transgenic mice that possessed and passed to their progeny various versions of a fused gene – a construction of mammary tumor virus DNA and the region of the mouse’s normal *myc* gene that codes for its protein. From these founder ten, they established thirteen lines of *myc*-mice. By mid-1984, they had suggestive preliminary data, including a key set of results: Two of the ten founders, both females, developed cancer of the breast during an early pregnancy. One produced three daughters with the fused *myc* gene, each of which developed breast cancer in the course of a second or third pregnancy.

Leder proceeded to test whether superexpression – that is, high activation – of the fused *myc* gene in the mammary tissue was sufficient by itself to provoke malignancy. Scrutiny of the mouse breasts showed that it was apparently not sufficient: although the oncogene was expressed in all the mammary tissue, only some of the breast cells had

turned tumorous. These observations were explainable by the multiple-hit theory of oncogenesis. The transformation of a normal cell into a cancerous one requires mutagenic hits that activate two or more oncogenes. Leder's results suggested that cells with elevated *myc* activity required a second hit to be made malignant – the kind of second hit that the two founder females with breast cancer and their three similarly diseased daughters had each presumably suffered.

Leder had not devised what came to be known as the “oncomouse” for the sake of producing a patentable product. But once the mouse was constructed, he recognized that it might have commercial possibilities. Indeed, his initial results indicated that it could serve a variety of different purposes, some purely scientific, others highly practical. Superexpression of the fused *myc* gene might be induced and controlled in any type of tissue by the administration of an appropriate amount of hormone, say, glucocorticoid. Leder and his collaborators thus expected that the mice could be deployed to investigate how different levels of *myc* activity influence normal development. They might also supply oncogenetic tissue from most any region of the body to laboratories for cell cultures. The tissue might be of the one-hit variety, containing just the fused *myc* oncogene, or it might be of the two-hit type, taken from tumors that might occur in any organ or cell of the mouse.

Most practical was the role that Leder's *myc* mouse could play in determining the power of a chemical to stimulate carcinogenesis or mutagenesis (genetic mutations). Leder explained:

Much carcinogen testing goes on in inbred strains of mice that have a very low incidence of malignancy. The test comes

down to giving them varying doses of a mutagen or carcinogen and observing whether malignancies develop. Such experiments are very time-consuming – the mice may be held for two years or more – very hard, and very expensive. But if you want to use a chemical for some purpose – say, in crop dusting or fertilization – you want to have an answer to the question of whether it's carcinogenic as soon, as safely, and as sensitively as you can.

Well . . . we know that the activation of the *myc* gene is necessary, but not sufficient, for carcinogenesis. It requires some additional hit. The likelihood of any gene in any cell suffering a mutational hit is roughly about one in a million – ten to the sixth power – per generation. The probability of any one cell's experiencing two such hits is the product of the probability of each occurring – or ten to the twelfth power. So that's six orders of magnitude difference in probability.

Insertion of the fused *myc* gene into the mouse imposes a first carcinogenic hit on every cell in the animal. Although the probability that any one cell will experience a second hit is one in a million, the chance that such a hit will occur in the body is far higher: because the body contains millions of cells, at least one of them, somewhere, is likely to undergo a second hit. Leder said that animals with a built-in first hit will come down with malignancies at a faster rate than normal animals, explaining, “For example, if we start with a 100 percent tumor-free group of animals from some of our strains, 50 percent of them develop tumors by the age of 150 days. But we can provoke a quicker second hit by treating the animals with a chemical mutagen or a carcinogen. If we do that, 50 percent of our animals develop tumors in only 45 days. So our transgenic

mouse provides a test for the mutagenicity or carcinogenicity of a chemical that is much faster than the conventional trial with ordinary mice.”

In conjunction with Leder’s recruitment to Harvard, the DuPont Corporation had given the university \$6 million for support of Leder’s research. The principal *quid pro quo* was simple: while Harvard would own any patents that might arise from Leder’s investigations, DuPont would be entitled to an exclusive license on any and all such patented properties.

Under the circumstances, Leder considered himself required by Harvard to inform the university about any development in his laboratory that might be sufficiently useful and original to warrant a patent. He realized that no animal had ever been patented, but he knew that patent protection for living bacteria had recently been established in the *Chakrabarty* case. Indeed, after the *Chakrabarty* ruling, several critics had insisted that the decision appeared to leave no legal obstacle to the patenting of higher forms of life – plants, animals, and possibly human beings – or, by implication, to the genetic engineering of such life forms.

Leder wondered whether his mice might be eligible for patent protection because they formed a man-made model system for the study of cancer, including the testing of its causes and therapies. During his early work on the mice – about the end of 1983 – Leder brought them to the attention of the Office of Technology Licensing and Industry Sponsored Research, the patents arm of Harvard Medical School. To explore the issue, the Office of Technology Licensing assembled a small group, including, along with Leder and several DuPont intellectual property lawyers, a patent

attorney named Paul Clark, from the downtown Boston law firm of Fish & Richardson, Harvard’s principal outside patent counsel. Clark later recalled in a conversation with me that “the work’s most apparent and compelling manifestation was the animal itself,” continuing, “it became clear immediately that it was important to claim the mice, to give Harvard and its licensee, DuPont, all the legal rights to which they were entitled. Claims on methods of using the mice, or on plasmids, although of some importance, would not have adequately protected the invention.” Clark’s reasoning was standard among patent lawyers: better to protect the product as well as the processes used to produce it; otherwise, competitors, using different processes, could develop similar products.

Clark also saw that Leder’s transgenic animals were, like the bacteria in *Chakrabarty*, new compositions of matter made by man, and he knew that the Supreme Court had admonished in the *Chakrabarty* case that a court cannot properly consider the state of being alive when deciding whether something falls within the protection of patent law. Thus, Clark explained, “it was hard for me to see any legal basis for excluding claims on animals.”

On June 22, 1984, on behalf of Harvard University, Clark filed an application for a patent on Leder and Stewart’s invention. The main utilities that he claimed were straightforward, including the use of such animals as sources of malignant or protomalignant tissue for cell culture and as living systems on which to test compounds for carcinogenicity or – in the case of substances like vitamin E – power to prevent cancers. However, Clark was not at all conservative in what he claimed as the actual invention. It was not simply a transgenic mouse with

an activated *myc* gene, which would have been extraordinary enough. It was any transgenic mammal, excluding human beings, containing in all its cells an activated oncogene that had been introduced into it – or an ancestor – at an embryonic stage.

The same year that Harvard filed for a patent on Leder's mouse, a marine biologist named Standish K. Allen and collaborators at the University of Washington applied for a patent on a version of *Crassostrea gigas*, a variety of the Pacific oyster, which they had improved by making it chromosomally triploid. The claim was partly for the triploidy process, which made the oyster more edible. However, it also covered the improved oyster as such, which challenged precedent.

The examiners in the U.S. Patent Office denied the claim, holding that neither *Diamond v. Chakrabarty* nor any other patent ruling authorized the grant of a patent on a higher animal, even if only an invertebrate. The examiners also found that the triploid oyster was not patentable on the technical ground that the innovation was obvious to anyone schooled in the art of oyster breeding. Allen and his colleagues appealed. In 1987, the Board of Patent Appeals and Interferences of the U.S. Patent and Trademark Office issued a decision, since known as *Ex parte Allen*. The Board upheld the examiners on the point that obviousness of art disqualified the oyster for a patent. However, it also declared that patents could in principle be granted on nonhuman animals.⁸

The ruling in *Ex parte Allen* did defuse one important public fear about law and biotechnology by stipulating that human beings cannot be patented by reason of

the 13th Amendment to the U.S. Constitution. Since it outlaws slavery, it in effect prohibits one human being from holding a property right on another. But following *Ex parte Allen*, the patent examiners had no problem granting Leder and Stewart's claim on their mouse.

The ethical objections to the patenting of animals had been adumbrated at the time of the *Chakrabarty* case. During arguments in the case, vigorous objection to Chakrabarty's claim had come from the People's Business Commission (PBC), an activist group headed by Jeremy Rifkin. Rifkin was a social agitator and sleepless critic of biotechnology. The PBC's dissent was partly economic – patents on living organisms would foster monopoly in vital areas such as the food industry. It was quasi-religious, too, holding that “*the essence of the matter*” was that to permit patents on life was to imply that “life has no ‘vital’ or sacred property,” that it was only “an arrangement of chemicals, or mere ‘compositions of matter.’”⁹ In its ruling on the case, the Supreme Court majority took note of these and other apprehensions, observing that they “present a gruesome parade of horrors” and “that, at times, human ingenuity seems unable to control fully the forces it creates.” The majority observed, however, that genetic research with its attendant risks would likely proceed with or without patent protection for its products and that neither legislative nor judicial fiat as to patentability would “deter the scientific mind from probing into the unknown any more than Canute could command the tides.”

The patenting of animals made the debate over the patenting of life more

⁸ *Ex Parte Allen*, *United States Patent Quarterly* (1987): 1425.

⁹ *Brief on Behalf of the People's Business Commission*, *Amicus Curiae*, 1979.

charged and brought into it new groups – notably animal rights activists, environmentalists, clerics, and farmers’ representatives. Their objections were well aired in hearings held in 1987 and 1989 before the House Judiciary Subcommittee that dealt with patents, chaired by Congressman Robert Kastenmeier.¹⁰ The objections raised to the patenting of animals tended to be specific to the groups raising them: animal rights activists contended that such patents would exacerbate the degradation of animals; environmentalists argued that genetically engineered animals would escape and threaten the integrity of wildlife; clerics claimed that patenting reduced God’s creatures to mere material objects; and farm spokespersons worried about the economic effects of patented animals on small farmers.

Strong defenses of animal patenting came from other witnesses, notably representatives of the biotechnology industry and of major universities. Their arguments, echoing those advanced in the large majority of the *amicus* briefs submitted in the *Chakrabarty* case, emphasized the role of patents in stimulating biotechnological innovation, fostering American competitiveness, and advancing medical research, including diagnostics, therapies, and cures. No significant objection was raised against animal patenting by university representatives or scientists on grounds that such

10 U.S. Congress, House, Hearings before the Subcommittee on Courts, Civil Liberties, and the Administration of Justice, Committee on the Judiciary, *Patents and the Constitution: Transgenic Animals*, 100th Cong., 1st Sess., June 11, July 22, August 21, and November 5, 1987; U.S. Congress, House, Subcommittee on Courts, Intellectual Property, and the Administration of Justice, Committee on the Judiciary, *Transgenic Animal Patent Reform Act of 1989*, 101st Cong., 1st Sess., September 13 and 14, 1989.

patenting would impede access to or use of transgenic research materials.

Kastenmeier and his subcommittee responded to the debate pragmatically – ignoring most of the objections raised by Rifkin and his allies but paying attention to those that touched directly on issues of public policy concerning the key interest groups involved, particularly agriculture. In 1988, Kastenmeier produced a bill that would exempt farmers from any restraint, including the restraint of royalty payments, on what they did with the progeny of their patented animals. It declared explicitly that human beings cannot be patented. The bill passed the House, but it was not taken up in the Senate before the end of Congress. Since then, no bill addressing animal patents has reached the floor of the House or Senate.

Moreover, advocates of biotechnology insisted on distinguishing between issues of political economy and issues of ethics. The former had a place in disputes over patent policy; the latter, at least in the United States, did not, even though they might be legitimate in principle. The appropriate venues for considering them were the legislative and regulatory arenas of government, not the Patent Office.

In contrast, the European Patent Convention – which was established in 1962 and governs the national patent systems of its adhering nations – specifically excludes two types of inventions from eligibility for patents. Article 53(a) prohibits patents on any invention that is contrary to public order or morality. And Article 53(b) prohibits them on plant or animal varieties, or anything produced by a natural biological process, except for microbiological products. Article 53(a) seems to have its roots in Roman law. Article 53(b) was adopted to prevent

interference with the international system for the protection of breeders' rights – it is known acronymically as UPOV and was created in 1961 – in new varieties of plants. At the time of the creation of UPOV, the extension of the exclusion to animal varieties was undoubtedly an afterthought.

However, both articles were brought into play when the European Patent Office (EPO), which administers the convention and which is headquartered in Munich, took up Harvard University's application, filed in 1984, for a European patent on its oncomouse. Ruling in June of 1989, the EPO found that oncomouse did not violate the public-order-and-morality clause of the convention, but it rejected Harvard's application on grounds that the mouse did violate Article 53(b). In the view of the EPO examiners, oncomouse was a new variety of animal, the product of a natural biological process, and, hence, ineligible for a patent under the convention.¹¹

Harvard quickly appealed the rejection, insisting that its mouse was not a new variety but a new type of animal that transcended varietal classification, and that it was not a natural biological product but – echoing Chakrabarty's claim – a biological entity made by man. The appeal provoked an unprecedented degree of third-party filings. (Under the European Patent Convention, interested third parties can file comments for or against pending applications and appeals, an option that is unavailable in the American patent process.) Many of the filings were identical, the products of organized opposition to animal patenting in Europe from public-interest organizations concerned with animal rights, Third World agriculture, and

environmental issues. The dissent mobilized by these public-interest groups appears to have been centered in England, where animal welfare groups are powerful, and in Germany, where opposition to genetic engineering and concern with environmental protection are vigorous. The arguments raised by these groups closely resembled those advanced in the United States against animal patenting. However, the European agricultural community appears to have been more profoundly split on patents for plants and animals than its American counterpart, with considerable opposition coming from countries where small-scale agriculture (as distinct from agribusiness) continues to flourish – for example, Denmark.

The third-party filings evidently contributed significantly to the decision of the appeals board, which in 1990 returned the Harvard application to the original examiners for reconsideration. The appeals board, agreeing with Harvard, declared that the rejection on grounds of Article 53(b) was without merit, but it held that the examiners had to review the application against Article 53(a), the morality clause. The examiners were compelled to reconsider issues raised by the third-party filings, particularly whether a patent on oncomouse would lead to animal suffering (mice with cancer) and environmental danger (the spread of oncogenes into the natural mouse population if the oncomice were to escape). However, the appeals board also instructed the examiners to weigh those matters against the likely benefit to human beings that might arise from research with oncomice.¹²

Harvard's lawyers in Europe contended that the mice would, of course, con-

11 European Patent Office, Press Release No. 10/89, "EPO Refuses Patent Application for Oncogenic Mouse."

12 European Patent Office, "Decision of the Technical Board of Appeal 3.3.2 of 3 October 1990."

tribute to the battle against cancer, making them distinctly beneficial to human beings. They also argued that, since the mice were supersusceptible to the contraction of cancer, fewer of them would be required to test for carcinogens, and thus fewer mice would suffer in such testing. Finally, they pointed out that the mice posed only a minute environmental risk, because they were to be confined to the laboratory rather than released into the wild, and while unintended release might occur, the danger was surely a matter not for the patent system but for the agencies concerned with the control of hazardous materials.¹³

The Harvard lawyers' arguments persuaded the European Patent Office, which incorporated them in a ruling, issued in October of 1991, indicating that a patent on the mouse could and likely would be granted.¹⁴ Under the terms of

the convention, the ruling was liable to still further third-party objections; the comment period closed in February of 1993, having drawn many more filings of dissent, most of them advancing the same arguments and coming from roughly the same sources as in the first round.

The third-party dissidents did not prevail, just as the opponents to animal patenting have not prevailed in the United States. The biotechnology complex, having had its way politically on the western side of the Atlantic, had worked its will on the eastern side, too, given the pressures of high-technology competitiveness and the apparent lack of persuasiveness of the antipatenting arguments. However, even though American patent law continues to be literally amoral, anyone seeking a patent on a living organism in Europe will have to satisfy the requirements of Article 53(a). In the globalizing political economy of biotechnology, American innovators must now attend to the ethical features of their innovations.

13 "European Patent Application No. 86 304490.7, President and Fellows of Harvard College, Response to the Official Letter of 11th December 1990...."

14 European Patent Office, Press Release 3/92, "European Patent for Harvard's Transgenic Mouse."

Rebecca S. Eisenberg & Richard R. Nelson

Public vs. proprietary science: a fruitful tension?

What should be public and what should be private in scientific research?

The competitive sprint of public and private laboratories to complete the sequence of the human genome has brought this question to the fore. The same question frames the developing struggle over terms of access to human embryonic stem cell lines and the conflict between Microsoft and the open-source movement over how best to promote software development.

We expect such conflicts to become

Rebecca S. Eisenberg is the Robert and Barbara Luciano Professor of Law at the University of Michigan Law School. She has been an active participant in public-policy debates regarding intellectual property in biomedical research and is a member of the Panel on Science, Technology and Law of the National Academies. Professor Eisenberg is also a member of the advisory committee to the director of the National Institutes of Health.

Richard R. Nelson, the George Blumenthal Professor of International and Public Affairs, Business and Law, at Columbia University, focuses his research on long-term economic change, including technological advances and the progress of economic institutions. His recent publications include "The Sources of Industrial Leadership" (with David C. Mowery, 1999).

more widespread as the role of for-profit research expands in a broader range of scientific fields. Will science progress more swiftly and fruitfully if its findings are in the public domain, or if they may be captured as intellectual property? What kinds of research should be funded publicly and what kinds left for private financing? Is competition between public and private science stimulating and constructive, or is it wasteful and counterproductive?

Our aim in this essay is to bring these issues into clearer view. They have been kept in the analytic shadows until recently by the presumption that science and technology are largely distinct enterprises. In fact, the problems arise in areas where science and technology overlap.

We thus begin our discussion by reviewing the conventional distinction between science and technology. We then consider different perspectives on the appropriate public and private spheres in fields where science and technology are intertwined, first in general, and then in the context of the Human Genome Project. We conclude with a brief analysis of policy options.

It is often assumed that science and technology are – or ought to be – inde-

pendent enterprises. In a classic series of essays, collected in his 1973 book *The Sociology of Science*, Robert Merton described science as a public enterprise generating public knowledge. This has become the standard view, accepted by many working scientists.

According to this theory, the goal of scientific research is to advance fundamental knowledge about the world. This effort need not be directly useful, much less profitable, at least in the near term, although sponsors and practitioners of science generally expect that advances in scientific understanding will foster later useful advances in applied technology. The principal venues for science are universities and government laboratories, and the principal reward for success is recognition and acclaim from the scientific community. Open disclosure of research results, through timely publication and other mechanisms permitting free access, is the norm. Since researchers do not earn financial returns from this work, they rely on philanthropic or public funding.

Most social theorists, including Merton, have drawn a sharp contrast between basic science and applied technology. While basic science is a public enterprise pursuing fundamental knowledge, applied technology is a private enterprise pursuing proprietary solutions to practical problems. The goal of the individuals and firms doing such applied research is to solve practical problems in the hope of earning profits. Such research draws freely on the pool of public scientific knowledge, but does not contribute to that pool. Intellectual property rights protect the profits of those who invest in successful technology research, preserving incentives to provide additional funding.

There is considerable truth in this conventional account and the distinction

between science and technology on which it rests. Basic science and applied technology often differ in important ways and flourish under different institutional regimes. Horace Freeland Judson's fine history of molecular biology, *The Eighth Day of Creation*, illustrates the power of a research regime in which all scientists can draw freely upon the prior work of others, each pursuing their particular interests and bets regarding the most promising lines of inquiry, checking, correcting, and building upon each other's results. At the same time, the history of technological progress in such fields as pharmaceuticals shows the power of profit incentives to promote the development of products that meet human needs.

What the conventional account leaves out, however, is the often complex ways in which basic science and applied technology frequently overlap. Such cases of overlap raise difficult questions about where, and how, to draw lines between the public and private spheres. Moreover, in cases where science and technology do overlap, public and private interests may conflict – which only makes more pressing the question of where, and how, to distinguish between what ought to be public and what ought to be private.

From the start of modern science, many scientists have been interested in practical problems, and the challenge of solving those problems has driven their search for fundamental knowledge. Universities long have dedicated a considerable portion of their research efforts to understanding and solving practical problems, particularly in the United States, where, until World War II, agriculture occupied a large share of academic research. In the postwar era, medical schools have accounted for a large and growing share of research at U.S.

universities, currently amounting to roughly half of the total. Much of this work is motivated by the practical goal of improving human health.

More generally, much academic science lies in what the late Donald Stokes called “Pasteur’s Quadrant.”¹ Standard taxonomies place the pursuit of fundamental knowledge and the solution of practical problems at opposite ends of a one-dimensional spectrum from “basic” to “applied” research; Stokes’s taxonomy recognizes that the work of many scientists combines both objectives simultaneously. Like Niels Bohr, Louis Pasteur sought fundamental understanding, and like Thomas Edison, he sought solutions to practical problems. For scientists conducting research within “Pasteur’s Quadrant,” the objective is to achieve the fundamental understanding necessary to solve practical problems.

This hybrid motivation characterizes most research in the biomedical sciences as well as in material science, computer science, and theoretical work in engineering. These fields are not exceptional: they are in the mainstream of contemporary academic research, posing a serious challenge to a taxonomy that draws a sharp distinction between basic science and applied technology. In recent years private industry has been a growing source of funds for academic research in these areas, and universities have been increasingly inclined to patent their discoveries.

The other side of the coin is that corporate research and development (R&D) often involves the pursuit of fundamental knowledge. Many technologies depend on scientific knowledge, and

focused scientific research is often essential in order to advance these technologies. Some private firms perform basic research, and many of their researchers publish scientific papers, although for-profit firms are less inclined than universities to place their findings in the public domain without restrictions.

In fields where scientific advances have conspicuous commercial potential (such as pharmaceutical research), the pursuit of profit and the pursuit of knowledge often converge, creating substantial overlap in research pursued in academic and industrial settings. Research results are at once part of a growing corpus of scientific knowledge for use in further research and an important step toward a promising commercial product. Within this zone of overlap, Mertonian public science and market-driven proprietary research coexist, setting the stage for conflict over what should be public and what should be private. The challenge for public policy is to devise arrangements that preserve the great advantages of an open system for basic science while still preserving profit incentives for the creation of valuable new products.

In our view, a common way of thinking about how to draw the line between public and private science is seriously misleading. It is often said that public science ought to focus only on research that private firms will not conduct. If certain areas of research appear to have high social value yet promise relatively low returns, then public financing may be necessary to correct for the failure of markets to get the job done. Private sponsors might not expect to capture enough value to justify R&D costs if anticipated research results are far removed from practical applications, if they are unlikely to be patentable, or,

1 Donald E. Stokes, *Pasteur’s Quadrant: Basic Science and Technological Innovation* (Washington, D.C.: Brookings, 1997).

more generally, if profits are highly uncertain. On the other hand, if the research offers a reasonable prospect of yielding practical benefits, if intellectual property law permits the sponsor to appropriate a sufficient share of the value of those benefits, and if private firms are therefore willing to undertake the research, so much the better. In this case, it is commonly argued, public funds are not needed and should be spent for other purposes (or left in the pockets of taxpayers).

This analysis assumes that the only argument for public support of science is that important research would not occur without it. Although this is an excellent reason for public support of research, it is not the only reason. Even if expected practical benefits make patentable outcomes likely and motivate private firms to pay for the research, public funding might still be justified in order to increase the open domain of commonly owned knowledge upon which scientists may draw freely in future research.

From an economic standpoint, patents are not an unmixed blessing. Patent rights motivate private firms to invest in research, but they also introduce significant inefficiencies that may inhibit future research. Patents permit innovators to restrict access to, and thus raise prices for, their inventions. Although sometimes necessary to allow firms to recover R&D costs and thus profit from innovation, such pricing is inefficient, because it excludes users who would be willing to pay enough to cover marginal production costs but not the additional patent premium. The resulting losses could be considerable if the excluded users are not merely private consumers, but publicly funded researchers performing a socially valuable activity.

While the effect of patents on prices

has been a central concern of economists, we think another inefficient aspect of patents is especially important in the context of scientific research: patents on essential materials and processes may require researchers to seek licenses before they proceed, which can impose significant transaction costs. In biomedical research today, exchanges of proprietary research materials, techniques, and data are increasingly governed by material transfer agreements, patent license agreements, and database access agreements.

At a minimum these agreements need to be reviewed and approved before research proceeds; often they must be renegotiated, leading to further delays and sometimes to bargaining breakdown with the potential for future litigation.² Having the relevant knowledge and materials freely available in the public domain minimizes transaction costs by relieving users of the need to identify and bargain with intellectual property owners.

A third problem patents present for research activity is that they may give patent holders broad control over future research paths, allowing them to block research by rivals. Patents on fundamental discoveries that open up new research areas are typically broader than patents on incremental technological advances in established fields, because the principal constraint on the scope of

2 Rebecca S. Eisenberg, "Bargaining Over the Transfer of Proprietary Research Tools: Is This Market Failing or Emerging?" in *Expanding the Boundaries of Intellectual Property: Innovation Policy for the Knowledge Society*, ed. Rochelle Cooper Dreyfuss, Diane Leenheer Zimmerman, and Harry First (New York: Oxford University Press, 2001), 209–249; Michael A. Heller and Rebecca S. Eisenberg, "Can Patents Deter Innovation? The Anticommons in Biomedical Research," *Science* 280 (1998): 698–701.

patent claims is the prior state of knowledge in the relevant field.³ Broad claims on early discoveries that are fundamental to emerging fields of knowledge are particularly worrisome in light of the great value, demonstrated time and again in the history of science and technology, of having many independent minds at work trying to advance a field. Public science has flourished by permitting scientists to challenge and build upon the work of rivals. Intellectual property rights to fundamental discoveries threaten to limit the number of players in the system at an early stage, thereby diminishing its power.

On the other hand, private enterprise has been an extraordinarily powerful engine for the generation of new products and processes, and in some fields (notably pharmaceuticals) strong patent protection has been a vital part of the system. Businesses, driven by the hope of profit and the fear of competition, have a far better feel than government agencies for the kinds of new products the market wants and can respond more quickly to emerging demand and technological opportunities.

For the most part, the inefficiencies associated with patents do not generate strong pressures to substitute public R&D for proprietary R&D, even for products such as pharmaceuticals that meet important public needs. Although we might lament the high cost of patented drugs, the advantages of promoting private investment in new product development generally outweigh the inefficiencies of patents. Rather than displacing private R&D, the government can subsidize access to patented inventions for needy users (such as AIDS patients in

sub-Saharan Africa or Medicare patients in the United States).

The problem that concerns us arises when the domain of public science becomes entangled with the domain of proprietary product development. This zone of overlap has been growing steadily since the late 1970s. An important factor has been the development of molecular biology, a science squarely in Pasteur's Quadrant, as a field of both public and private research. Partly because of a series of laws often referred to collectively as "the Bayh-Dole Act," by which businesses and universities can claim property rights to technology created under publicly funded programs, universities have become active participants in the patent system.⁴ A large share of university patents are in molecular biology. Many of these patents cover basic discoveries:⁵ as the Patent and Trademark Office (PTO) and courts have allowed such "upstream" patents, a significant private industry has grown up around pre-product development research in molecular biology, seeking to profit by patenting and licensing discoveries to other firms that use them to develop commercial products. The result has been a considerable blurring of the public-private divide, with universities and other one-time champions of open science claiming their own intellectual property, while private firms extend proprietary research further upstream, sometimes in collaboration with aca-

4 Rebecca S. Eisenberg, "Public Research and Private Development: Patents and Technology Transfer in Government-Sponsored Research," *Virginia Law Review* 82 (1996): 1663–1727.

5 David C. Mowery, Richard R. Nelson, Bhaven N. Sampat, and Arvids A. Ziedonis, "The growth of patenting and licensing by U.S. universities: an assessment of the effects of the Bayh-Dole Act of 1980," *Research Policy* 1 (30) (2001): 99–119.

3 See 35 US Code §§ 102, 103; Robert P. Merges and Richard R. Nelson, "On the Complex Economics of Patent Scope," *Columbia Law Review* 90 (1990): 839–916.

democratic scientists and sometimes in competition with them.

Although the convergence of public and private resources for biomedical research has accelerated progress, we believe that current policy and practice may have gone too far in promoting patenting of fundamental research discoveries.

Patents on inventions with clear practical applications may well facilitate product development, but patents on discoveries that may spur future basic research impose serious costs on the scientific enterprise and are much harder to justify. The Bayh-Dole Act ignores this distinction, although it is becoming increasingly important to federal agencies that support fundamental research and to private firms that draw on emerging knowledge to develop new products. The Human Genome Project provides a useful focus for exploring these issues.

Public and private efforts to complete the DNA sequence of the human genome vividly illustrate the interests at stake in mediating the public-private divide in Pasteur's Quadrant. Although the Human Genome Project began in the late 1980s as a government funded "Big Science" project, from the outset it promised both new fundamental knowledge and practical payoffs with the potential for commercial profit.⁶

By the late 1980s private firms already had a substantial presence in genetics and molecular biology and had devel-

oped proprietary tools that would greatly accelerate the Human Genome Project, including automated DNA-sequencing machines and the polymerase chain reaction. The mass-production character of sequencing 3 billion base pairs of DNA, and the "top-down" organization such a task seemed to entail, set it apart from the investigator-initiated proposals for creative, small-scale, academic investigations that had been typical of NIH-funded research. Yet talk of private initiatives to sequence the genome repeatedly provoked concerns about ensuring access to the data for use in future research, renewing enthusiasm for public funding.

Private investors have repeatedly funded targeted projects within the broad scope of the Human Genome Project that seemed likely to yield commercially significant results, sometimes taking advantage of the reluctance of the public project to focus on "cream-skimming" projects that could jeopardize later support for the more costly job of completing a definitive reference sequence of the human genome.⁷ In the early 1990s private firms focused on sequencing the estimated 3 percent of the genome that cells use to make proteins, using an approach called "cDNA sequencing." One such firm, Human Genome Sciences, was founded to exploit a research strategy pioneered by Dr. J. Craig Venter, then at the NIH, of using automated DNA-sequencing machines to obtain partial sequences (called expressed sequence tags, or ESTs) for genes expressed in human tissue samples.

6 For a definitive account of the origins of the Human Genome Project, see Robert Cook-Deegan, *The Gene Wars: Science, Politics, and the Human Genome* (New York: W. W. Norton, 1994). For an early analysis of the project from leading scientists, see National Research Council, *Mapping and Sequencing the Human Genome* (Washington, D.C.: National Academy Press, 1988).

7 Two recent histories offer excellent overviews of these events. See Kevin Davies, *Cracking the Genome: Inside the Race to Unlock Human DNA* (New York: Free Press, 2001); and Gary Zweiger, *Transducing the Genome: Information, Anarchy, and Revolution in the Biomedical Sciences* (New York: McGraw-Hill, 2001).

While academic researchers debated the wisdom of pursuing this strategy given available technology, resources, and priorities, private investors seized the opportunity to bypass skeptical government sponsors and peer reviewers and created a nonprofit research institution to support Venter's work, reserving commercial rights for Human Genome Sciences. This and similar efforts created valuable private databases of information, but academic institutions soon complained about the restrictive terms of access offered by the database owners.

In the mid-1990s, when new technology made it feasible to detect and identify single base-pair differences in the DNA of different individuals (single nucleotide polymorphisms, or SNPs), private firms invested in SNP identification. Like gene fragments, SNPs promised to be a valuable information resource for both academic research and product development. Recent experience with proprietary databases of gene fragments led some scientists to worry that proprietary SNP collections might not be accessible to them on reasonable terms, prompting the public Human Genome Project to compete with the private sector by allocating some of its own funds to SNP identification.

In May of 1998, just as the public Human Genome Project had completed its initial mapping goals and was entering the phase of large-scale sequencing of the genome, a new private company came on the scene with the goal of completing the sequence several years ahead of the public project – under the scientific direction of Craig Venter, who by then had left the NIH. The new company, to be called “Celera” after the Latin word for speed, would use a new generation of DNA-sequencing machines and

pursue a “whole-genome shotgun sequencing” strategy that Venter had used successfully to sequence microbial genomes.⁸ Like cDNA sequencing, whole-genome shotgun sequencing was a strategy that the academic community had so far passed up for the human genome,⁹ leaving an opportunity on the table that private investors seized. But this was a more surprising plan from a business perspective. By this time cDNA sequencing had revealed many of the commercially promising genes (and generated patent applications on them). Although more genes were expected to surface in the course of completing the genome, most of the remaining sequence was presumed to be “junk DNA” of greater interest to scientists than to investors. Nonetheless, investors were sufficiently optimistic to drive the market capitalization of Celera up to over two billion dollars by the end of 1999.

The sponsors of the Human Genome Project responded by accelerating and increasing their financial commitments to complete the public version of the sequence more rapidly. At first, they criticized Celera's proposed sequencing strategy, charging that it would leave significant gaps in coverage that would be difficult and costly to finish. Soon, however, the public project changed its own course in order to provide an unfinished “rough draft” of the genome as quickly as possible. The two groups claimed substantial completion of their respective efforts in simultaneous publi-

8 J. Craig Venter et al., “Shotgun Sequencing of the Human Genome,” *Science* 280 (1998): 1540–1542.

9 See James L. Weber and Eugene W. Myers, “Human Whole-Genome Shotgun Sequencing,” *Genome Research* 7 (5) (1997): 401; Philip Green, “Against a Whole-Genome Shotgun,” *Genome Research* 7 (5) (1997): 410.

cations in *Science* and *Nature* in February of 2001.¹⁰

The brief history of public and private involvement in sequencing the human genome shows conflicting views from the two estates regarding the importance of making knowledge freely available in the public domain. Free access to the genome has been a mantra within the public genome community, repeatedly invoked as a motivation for accelerated disclosure policies and justification for accelerated funding to complete the sequence before private competitors capture it as a proprietary resource. Although it is a common ploy to invoke public-spirited justifications in support of requests for public funding, it is harder to dismiss the many concurring views emanating from the private sector, sometimes backed by private funds to generate information in the public domain.

From the beginning, scientists worried that it would be difficult to enforce norms of public disclosure and access for sequences generated by different scientists in different institutions. The usual trigger for disclosure in academic research – publication of results – would not serve as a timely enforcer for release of accumulating data that might not be ripe for journal publication until long after it was generated. The presence of commercial interests and the looming prospect of intellectual property claims heightened these concerns.

Controversy over the public or private character of the genome erupted more urgently in 1991 when the NIH filed

patent applications on the first few hundred gene fragments (or ESTs) sequenced by Craig Venter. This was a provocative act on many levels. The patent filings, although consistent with U.S. laws encouraging government agencies to patent discoveries and license them for commercial development,¹¹ were in tension with rhetorical justifications for public funding of the Human Genome Project to ensure public access to the sequence. Foreign governments viewed the patent filings by a U.S. government agency as inconsistent with efforts to promote the Human Genome Project as an international collaboration to reveal the universal heritage of humanity. Patent claims for the discovery of mere fragments of genes struck many scientists as a premature reservation of commercial rewards for incomplete research results that were not yet meaningful and required further research to identify useful applications. Industry trade groups feared that patents on gene fragments would inhibit research to understand the role of genes in disease and would add to the costs of drug development.

Databases of ESTs quickly proved to be a valuable information resource for both private and academic scientists. But the two groups faced different constraints on their ability to gain access to the proprietary databases. As pharmaceutical firms signed database access agreements with price tags ranging from under \$10 million to over \$100 million, academic institutions balked at signing agreements that would commit them in advance to share future intellectual

10 J. Craig Venter et al., "The Sequence of the Human Genome," *Science* 291 (16 February 2001): 1304–1351; International Human Genome Sequencing Consortium, "Initial sequencing and analysis of the human genome," *Nature* 409 (15 February 2001): 860–921.

11 See Bernadine Healy, "Special Report on Gene Patenting," *New England Journal of Medicine* 327 (1992): 664; and Reid G. Adler, "Genome Research: Fulfilling the Public's Expectations for Knowledge and Commercialization," *Science* 257 (1992): 908–912.

property rights with the database owners. Finally, in a dramatic inversion of traditional public and private roles, the Merck pharmaceutical firm agreed to sponsor a competing cDNA sequencing effort at Washington University, with newly identified sequences to be promptly disclosed in a public database.¹² Paradoxically, a controversy that began with patent filings from a government agency ultimately gave way to an extraordinary private-sector endorsement of the value of the public domain.

Another variation on traditional public and private roles occurred a few years later when ten pharmaceutical firms joined the Wellcome Trust Foundation to form the SNP Consortium, a private venture to identify common points of variation in the human genome for disclosure in the public domain. SNP identification had begun as proprietary research in the private sector, provoking the public Human Genome Project to call for a consortium of federal agencies to fund SNP discovery and to place the results in unrestricted public databases.¹³ The candid justification for public funding was to prevent private appropriation of SNPs as intellectual property. But this strategy was constrained by the Bayh-Dole Act, which allows grant recipients to retain title to inventions unless the funding agreement specifies otherwise based upon an appealable finding of “exceptional circumstances.”¹⁴ Loath to invoke this rarely used and

cumbersome provision, the NIH took a different approach. In its request for grant applications, the NIH stressed the importance of making SNP information readily available to the research community, advised grant applicants that their plans for sharing results would be considered by NIH staff as one of the criteria for an award, and warned that the NIH would monitor grantee patenting activity.¹⁵ This approach was arguably in tension with the spirit, if not the letter, of the Bayh-Dole Act. Ultimately, the private sector again came to the rescue of the public domain with the formation of the SNP Consortium, which unabashedly proclaims a strategy of identifying and disclosing SNPs in order to prevent other firms from patenting them. Once again, in the Bayh-Dole era it appeared to be simpler for private firms to endow the public domain than it was for the federal government to do the same.

The importance of public access to the human genome figured prominently in the case for continued funding of the public Human Genome Project following Celera’s entry into the field. Celera’s founders acknowledged the importance of free access by promising initially to release Celera’s raw sequence data to the public on a quarterly basis,¹⁶ although the timing and details of this commitment wavered thereafter. The public sponsors of the Human Genome Project stressed the importance of prompt and unrestricted access to the sequence,

12 Eliot Marshall, “A Showdown Over Gene Fragments,” *Science* 266 (1994): 208–210.

13 Francis S. Collins, Mark S. Guyer, and Aravinda Chakravarti, “Variations on a Theme: Cataloging Human DNA Sequence Variation,” *Science* 278 (1997): 1580–1581.

14 35 US Code § 202(a), (b)(1), (b)(4), 203(2).

15 National Institutes of Health RFA HG-98-001, “Methods for Discovering and Scoring Single Nucleotide Polymorphisms” (9 January 1998) <http://www.nhgri.nih.gov:80/Grant_info/Funding/RFA/rfa-hg-98-001.html> (visited 1 August 2001).

16 Venter et al., “The Sequence of the Human Genome.”

which they ensured by requiring grantees to deposit new sequence data in the publicly accessible Genbank database within twenty-four hours.¹⁷ Celera's business model, which involves selling access to proprietary data and bioinformatics capabilities that subscribers would not pay for if they could get them for free, constrains its disclosure policies. Although Celera's promised quarterly data releases never occurred, Celera agreed to provide limited access to its data free of charge on its own web site as a condition of publication in *Science*, subject to restrictions that preserved the market for its proprietary products.

Celera has had more success than prior owners of proprietary genomics databases in marketing database access agreements to academic and government subscribers. It has made agreements on undisclosed financial terms with a number of major research universities and academic hospitals, as well as with the National Cancer Institute. Evidently Celera has something to sell over and above the information and tools that are freely available from Genbank, and evidently Celera's terms of access are not prohibitive for publicly funded investigators. Celera's database should be at least as good as the public database, given that Celera itself has free access to Genbank. At the same time, the existence of a public database with much of the same information presumably limits what subscribers are willing to pay (and what Celera is able to demand) for access to the proprietary database. The existence of Genbank may thus con-

strain Celera's market power in ways that make the proprietary data more affordable for all researchers.

The story of the Human Genome Project in the public and private spheres is not yet over. Although most of the genome has now been sequenced, the hard work of figuring out what it all means has barely begun. So far, the most significant intellectual property constraint on use of the sequence in research has come from the terms of database access agreements rather than from patents. But many patent applications are pending on genes, gene fragments, SNPs, and even DNA sequences stored in computer-readable medium, and many of these patent applications were filed before the same sequences were deposited in Genbank. Although the patenting of DNA molecules that encode therapeutic proteins is a well-established practice, the patentability of DNA sequences with more speculative utility is much contested and has not yet been addressed by the courts. Depending on how these issues of patentability are resolved, scientists might soon discover that they need patent licenses to make use of sequences they thought were in the public domain.

Although it may never be known whether public or private research efforts ultimately contribute more to future biomedical research and product development, it is probably safe to say that neither of these efforts would have achieved as much as quickly without the other. Apart from providing additional and complementary capabilities and enabling technologies, the private sector has repeatedly provided funding for productive research strategies that public sponsors passed over.

In a Big Science project that allocates government research funds according to a coordinated plan, the existence of a

17 Testimony of Francis S. Collins, Director, National Human Genome Research Institute, at a Hearing on the Human Genome Project before the Energy and Environment Subcommittee of the House Science Committee, 17 June 1998 (Lexis).

vigorous private-sector research enterprise limits the risk that good ideas will go unfunded, at least when they offer a reasonable chance of yielding practical payoffs. The peer-review process for allocating government research funds does much to ensure the political independence and high quality of public science, but it may tend to favor conventional approaches and prevailing beliefs over bold new ideas. Competition among researchers pursuing different strategies with similar goals speeds science along and improves the likelihood of success.

At the same time, freely available data from the Human Genome Project has undoubtedly accelerated research in both the public and private sectors. In addition to providing a free resource for users of genomic information, it has improved the completeness of proprietary databases (by providing data that owners may incorporate in proprietary products and by setting a benchmark that they must exceed in order to have something to sell) and improved terms of access to proprietary databases (by providing a free alternative that limits how much owners may demand). Although proprietary databases might be more profitable if there were no Genbank, the free database plainly has neither destroyed the market for proprietary databases nor undermined incentives to create them.

Numerous public-policy choices determine the balance between public and private research in Pasteur's Quadrant. These choices include legal rules about what may be patented and how patents are used and managed, as well as decisions about what kinds of research the government will fund and what strings are attached to public funding.

If science and technology were entire-

ly separate estates, one might preserve an open domain for science by limiting what may be patented to technology while relying on public funding to promote science. This is arguably the intuition behind traditional legal exclusions from patent protection for natural products and laws of nature and for inventions with no demonstrated practical utility.¹⁸ But steady pressure to provide patent protection for discoveries in Pasteur's quadrant has eroded these restrictions. Perhaps the erosion has gone too far.

Long before the advent of commercial genomics, the courts had narrowly construed the exclusion dealing with products of nature to uphold patents on purified preparations of products isolated from nature.¹⁹ Although intuitively appealing, excluding the stuff of nature from patent protection has no clear basis in the patent statute, and judicial opinions recognizing the exclusion have failed to articulate a consistent rationale for it. It has thus been vulnerable to the same systematic erosion of judicial limits on patentability that has recently made way for patents on computer algorithms and business methods.²⁰

The utility requirement has a clear statutory basis,²¹ and academic scientists have urged the PTO to use this

18 On exclusions from patent protection for natural products, see *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 US 127 (1948). On patents on inventions with no demonstrated practical application, see *Brenner v. Manson*, 383 US 519 (1966).

19 E.g., *Merck & Co. v. Olin Mathieson Chemical Corp.*, 253 F2d 156 (4th Cir 1958) (upholding patentability of purified vitamin B12).

20 See *State St. Bank & Trust v. Signature Financial Group*, 149 F3d 1368 (Fed. Cir 1998), cert. denied, 515 US 1093 (1999); *AT&T Corp. v. Excel Communications, Inc.*, 172 F3d 1352 (1999).

21 35 US Code §§ 101, 112.

requirement to reject patent claims on DNA sequences until their biological function is understood. But an appellate court sharply rebuked the PTO just a few years ago for applying a strict utility standard to biotechnology products; the court reminded the PTO that “usefulness in patent law, and in particular in the context of pharmaceutical inventions, necessarily includes the expectation of further research and development.”²² At least as presently understood, the utility requirement does not seem to preclude patenting fundamental discoveries with practical implications that remain unproven.

These time-honored limitations on the reach of the patent system have arguably been degraded without explicit attention from Congress and may now need to be fortified to preserve the freedom of scientists to study the natural world. A necessary first step would be a careful analysis of the purposes these rules serve in mediating the public-private divide in science and technology. On one hand, withholding patent protection could prove costly if it undermines private R&D incentives. On the other hand, the benefits to future research and product development of preserving the scope and vigor of public science might outweigh these costs.

Another option would be to carve out an exemption from infringement liability for researchers. Ideally, this approach would retain effective protection against competition in the commercial marketplace while minimizing the impact of patents on the research community.

But it is difficult to define the proper scope of such an exemption when there is no clear line between the commercial and research spheres. Should researchers in academic and commercial laborato-

ries be treated similarly? Should patents on research tools that have no significant market outside the research community be subject to a research exemption that effectively eviscerates their commercial value? The Human Genome Project offers numerous examples of patented research tools that were marketed to both academic and commercial researchers to the great benefit of the research community. Such tools might never have been developed without patents, making the ultimate impact on research of such a change in the law difficult to predict. On the other hand, many important research tools have come out of government-funded university research, and their invention arguably did not require patent protection.

Yet another option, which would not require changing the patent rights of private firms, would be to provide public funding to generate research results in the public domain, even if the private sector is already performing similar research on a proprietary basis.

This was ultimately the strategy pursued by the public sponsors of the Human Genome Project, although they had to maneuver around the Bayh-Dole Act to do it. The extraordinary commitment in the scientific community to making the human genome sequence freely available offered the sponsors protective cover for a policy that grantees might otherwise have challenged as contrary to the law. But if the Bayh-Dole Act impedes the ability of public research sponsors to enrich the public domain of science, perhaps it needs revision.

The flourishing of a robust private genomics industry alongside the public Human Genome Project calls into question the strong presumption under the Bayh-Dole Act that the results of government-sponsored research must be pat-

22 In re Brana, 51 F3d 1560 (Fed. Cir 1995).

ented in order to preserve incentives for follow-on research in the private sector. That the pharmaceutical industry has repeatedly conspired with public sponsors to get genomic information into the public domain at its own expense is compelling evidence that proprietary control of information can impose significant costs on subsequent research and thereby obstruct, rather than promote, product development.

But public science is more than a prelude to product development. At its best, it is a social commitment to disinterested investigation of the world by credible

experts operating under the critical scrutiny of their peers. It is a shared archive of an expanding knowledge base, a training ground for future researchers, and the germ from which future advances in human understanding will grow. Its social value does not depend on the ultimate profitability of the advances it spawns. If we need profit-seeking firms to tell us that the public domain has value, something important is missing from our understanding of science.

*Public vs.
proprietary
science*

Marcia Angell & Arnold S. Relman

*Patents, profits & American
medicine: conflicts of interest in
the testing & marketing of new drugs*

In the fall of 2001, the editors of thirteen of the world's medical journals made headlines when they jointly announced that they would not publish research reports about new prescription drugs unless the authors provided assurance that they had full access to the data and were responsible for the work.

This extraordinary step was a reaction to the growing control over clinical trials by corporate sponsors. Some of these sponsors do not permit investigators to see all of their own data, or to publish papers without prior approval.

The action of the editors – and the reason for their action – is merely one aspect of the story of the enormous economic power now wielded by the pharmaceutical industry over research, med-

ical education, and clinical practice. At the center of the story are the industry's attempts to exploit and extend patents on new brand-name drugs. These patents are one of the most lucrative forms of intellectual property in America today. This essay describes what happens when the drive to bring patented new drugs to market begins to control medical institutions and professionals who are supposed to be independent and unbiased.

The public agency responsible in the United States for overseeing the production and marketing of prescription drugs is the Food and Drug Administration (FDA). For most of its existence, the FDA has had the authority to regulate manufacturing standards and to require drug companies to prove the safety of their products.

In recent decades, the FDA has also usually required that the effectiveness of a newly patented drug be demonstrated in clinical trials, the results of which are submitted to the FDA and often published in peer-reviewed medical journals. Although some of the most important clinical trials are supported by the National Institutes of Health (NIH), the vast majority are sponsored by drug companies.

Marcia Angell, MD, is Senior Lecturer in the Department of Social Medicine at Harvard Medical School and a former editor in chief of the "New England Journal of Medicine." A predecessor in that post was Arnold S. Relman, MD, Professor Emeritus of Medicine and of Social Medicine at Harvard Medical School, who has been a Fellow of the American Academy since 1965. In the past two decades, Angell and Relman have played leading roles in criticizing the financial ties of medical researchers and academic institutions to the pharmaceutical industry.

In the year 2000, the pharmaceutical industry spent about \$3.77 billion on grants for clinical trials, compared with \$750 million spent by the federal government through the NIH. But even when a clinical trial is paid for by a drug company, the trial itself normally requires the participation of physicians and other experts. Many of these experts teach in academic medical centers, where the trials are designed and conducted. Increasingly, however, the researchers are doctors in private practice, who participate in clinical trials organized by private research companies.

The fact that investor-owned businesses sponsor most of the clinical trials that bring newly patented drugs to market presents multiple conflicts of interest for nearly everyone involved. That includes the drug companies themselves, whose essential business mission is to sell profitable drugs – not necessarily those that are optimally useful in medical treatments. It also includes the clinical investigators who receive funding from the companies to study the drugs, yet are supposed to be impartial, and the academic medical centers where much (but by no means all) of this work is done. Medical educators also find themselves with conflicts, since they receive industry support to conduct educational programs for doctors. And practitioners are constantly risking compromise by accepting the favors lavished on them by an industry determined to influence their professional judgment.

For millions of Americans, many of the drugs marketed by the pharmaceutical companies are essential for health, and even for life. Unlike most commodities, prescription drugs are often not optional goods. Furthermore, expenditures for drugs now account for the fastest-growing component of the national health

bill, and they will soon replace physicians' fees as the largest item on the bill, apart from the cost of hospitalizations. Prescription drug costs are a major and growing burden on individual patients and on public and private health insurers. As a result of these facts, the public has an interest in prescription drugs that it has in few, if any, other patented products.

Patents are the lifeblood of the drug industry. Without a patent, a company has no incentive to bring a drug to market. Patents, which are now usually granted for twenty years, give a company a monopoly that protects them from competitors as they develop the product and carry out the clinical trials necessary for FDA approval. Once approved, the drug can be sold on the market for the remaining lifetime of the patent, without risk of duplication by competitors. In addition, the effective patent life of many drugs is often extended by specific statutes and FDA regulations. The only price constraints – and they are weak – are those provided by a few competing companies with similar patented drugs and the pressures from large purchasers for bulk discounts. The theory behind patents and other forms of exclusivity is that they will provide an appropriate but limited incentive for companies to develop important and innovative new drugs. But, as we will explain later, the theory does not always work out in practice.

Most innovative drugs – that is, drugs that act in a different way from anything on the market – are now developed initially with NIH research funding, usually in academic medical centers. The drugs are then licensed to drug companies to be further developed and brought to market.

This subsidization of drug companies by the taxpayers became officially sanc-

tioned by Congress in 1980, when the Bayh-Dole Act was passed. Among other things, the Bayh-Dole Act (in conjunction with the lesser-known 1980 Stevenson-Wydler Act and several subsequent amendments) permits academic medical centers to patent drugs discovered through NIH-funded basic research. The academic centers are then permitted to license these drugs to private companies and receive royalties – which are shared with the investigators who conducted the research. The NIH itself is also permitted to set up collaborations with industry and to license drugs developed in its intramural program.

The ostensible purpose of the Bayh-Dole Act was to hasten the transfer of technology from government or academic laboratories to the marketplace. There was a general perception that the United States was lagging behind other parts of the world, especially Japan, in technology transfer. Whether that was true of the development of important new drugs is doubtful. The academic medical centers and their faculty nevertheless warmly embraced the Bayh-Dole Act – and so did the pharmaceutical industry.

Once public institutions had decided to join the drug companies in seeking patents whenever possible, little attention was paid to some of Bayh-Dole's constraints, particularly those that established the right of taxpayers to some sort of accountability, and also to some sort of return on their investment. Among these neglected provisions of the law was the requirement that the benefits of the "invention" be made "available to the public on reasonable terms." If that provision were violated, the law said, the government could "march in" and reassign the patent. The government also retained the rights to use the product itself. Some commentators have

interpreted this as a justification for some sort of price restrictions on drugs licensed to industry under the terms of Bayh-Dole. In addition, the research institutions were supposed to keep the government informed of all patents they obtained on NIH-funded work. Together, Bayh-Dole and Stevenson-Wydler contained provisions that would allow the public to recoup a portion of profits under certain limited circumstances.

In practice, virtually all of these provisions have been ignored or revoked. In 1995, the NIH itself advised against requiring "reasonable pricing," and in a report last year, it argued against trying to recoup a portion of profits. It emphasized that only four of forty-seven drugs with yearly sales above \$500 million were known to have been developed with NIH funding. What was not emphasized was the fact that there was no way of knowing about the other forty-three drugs, since the NIH had not required the medical centers to fulfill their obligation to supply information about patents they had obtained on taxpayer-funded work.

The chief effect of the Bayh-Dole Act has been to increase dramatically the number of partnerships between academic institutions and the pharmaceutical industry. There were many reasons why the drug industry wanted closer collaboration with medical institutions, but one was the need for companies to obtain human subjects for the clinical trials they needed to get FDA approval. Drug companies have money to support clinical research, but they don't have patients, so they need to look for them elsewhere. As the number of drugs being tested grows, so does the number of clinical trials, and human subjects are becoming increasingly difficult to find. Teaching hospitals are an important source, although no longer the only one.

Clinical trials have become a multibillion-dollar business, involving tens of thousands of investigators and millions of human subjects. There are now perhaps as many as sixty thousand ongoing clinical trials (no one knows the exact number).

Since companies usually sponsor trials only after they obtain patents, the time spent in trials eats directly into the time they have to market the drug with the protection of a patent. Consequently, the drug companies are in a great rush to get the trials done, and the rate-limiting factor is the difficulty in acquiring human subjects. In fact, to find subjects, drug companies routinely pay bounties to doctors – anywhere from \$500 to \$15,000 per subject enrolled – plus large bonuses for rapid enrollment.

Because the drug companies are in such a rush, they can no longer rely exclusively on academic medical centers to conduct the trials. They find they can get much faster service in the private sector. In just the past decade, the fraction of industry-sponsored trials done in academic medical centers has dropped from 80 percent to less than 40 percent. Many clinical trials are now organized instead by hundreds of for-profit companies, called contract research organizations (CROs). These companies often work with other companies that recruit human subjects through the media. CROs also organize community doctors to supply patients and collect data, or they work with still other satellite companies that do. These community doctors have become an army of amateur investigators. There are now about fifty thousand clinical investigators registered with the FDA, many of whom are community doctors involved in their first clinical trials.

Academic medical centers are trying to be more accommodating to drug

companies to win back the business being lost to CROs and other private research businesses. Conducting clinical trials for industry is a good source of revenue to help offset losses from low Medicare and managed care reimbursement. Some academic medical institutions are even setting up separate clinical research organizations to provide a convenient, single access point for drug companies and to provide them with the administrative services they need to deal with the FDA.

Many institutions are also permitting drug companies to attach strings to their grants that were unheard of just a few years ago. For example, in some arrangements with academic institutions, the companies may design their own trials, retain and analyze the data, write the papers or at least review them before publication, and even decide whether to allow publication at all. Under such conditions, investigators become little more than hired hands, and their institutions little more than drug company outposts. These are the abuses that provoked medical editors around the world to issue the announcement we mentioned at the start of this essay.

We have pointed out that many of the really innovative drugs are derived from NIH-funded research. For example, the anticancer drug Taxol was developed at Florida State University with NIH funds, then licensed to Bristol-Myers-Squibb. Indeed, nearly all of the major anti-cancer and anti-AIDS drugs were developed with the help of NIH funding.

What about the others? Nowadays, while some new drugs coming out of the pharmaceutical industry pipeline represent important new discoveries, most “new” drugs being developed by industry are not really new – they are simply variations on an existing theme. In fact,

the number of innovative drugs reaching the market has actually declined over the past several years, from a high of fifty-three per year in 1996 to twenty-seven in 2000.

At the same time, the market is being flooded with highly profitable drugs that usually belong to a family already on the market. For example, Claritin, one of the most profitable of all proprietary drugs, is simply one of a number of similar antihistamines used to treat allergies. Top-selling drugs like Claritin are often called “blockbusters,” and it is a revealing commentary on the pharmaceutical industry that most blockbusters are competing with several other, similar drugs that are also very profitable. Thus, the two blockbusters Zocor and Lipitor are members of a family of statins – drugs that lower blood cholesterol levels by inhibiting production of cholesterol in the liver. And the antidepressant blockbusters Zoloft and Paxil share a common mechanism of action with Prozac, itself a mega-blockbuster antidepressant that recently came off patent.

Drugs with similar actions (and frequently with similar or related chemical structures) are often referred to as “copycat” or “me-too” drugs. They are far easier to turn out than innovative drugs, although they require huge marketing campaigns to persuade doctors and patients to choose one over the other. In contrast, marketing costs for a truly groundbreaking drug, like a cure for cancer, would probably be small, because the drug would sell itself to physicians and the public – based on the published scientific evidence of its safety and effectiveness.

Marketing and administrative costs now equal roughly 30 percent of the revenues of the major drug companies, while research and development (R&D) amount to only 12 percent of revenues.

The profits of the drug companies also greatly exceed the money spent on R&D; on average, profits equal 19 percent of revenues.

The industry claims it spends \$500 million on each new drug brought to market, counting expenditures on failures. But most independent analysts believe that to be a highly inflated figure, and estimate the real figure to be closer to \$100 million. Regardless of what it is, the industry reaps huge profits. That fact would certainly seem to belie the contention of the drug companies that the high prices they charge are needed to offset the costs of their R&D.

A large share of the marketing budget of the pharmaceutical industry, about \$15 billion annually, is spent on wooing physicians in a variety of ways that cause serious conflicts of interest for the medical profession.

One of the principal ways is through educational programs. Physicians are required to obtain “continuing medical education” (CME) to renew their licenses. Increasingly, drug companies help fund and thereby influence these programs, which are usually sponsored by hospitals and medical schools. Physicians are often enticed to attend these CME programs with free meals and other favors and gifts. Drug companies also help professional societies with the expenses of scientific meetings, and they conduct their own satellite educational programs at those meetings. Most such meetings also feature commercial displays and eager salesmen pitching their company’s products. The problem with drug company involvement in CME is that sponsoring companies cannot be expected to evaluate their own drugs objectively, particularly in comparison with competitors’ drugs. Yet the impartial, comparative evaluation of drugs

should be an important function of CME programs.

Another expensive avenue by which drug companies seek to influence the prescribing practices of physicians is through what is called the “detailing” of practitioners in their private offices. This involves more than eighty thousand drug company representatives, who, at an annual cost of several billion dollars, visit doctors’ offices to tout their company’s drugs and to gain favor by plying doctors with free samples and other gifts.

Hoping to gain their share of a competitive market full of similar drugs, the drug companies find detailing to be an effective technique for influencing practitioners’ choices. But when doctors accept favors and receive information about drugs from company salespeople, they risk abdicating their responsibility to their patients, who have a right to assume that physicians will rely on their own interpretation of the best available information rather than on information supplied by necessarily biased drug companies.

Still another method used by drug companies to promote the prescribing of their top-selling drugs is to advertise directly to consumers in the popular media. In recent years, much money has been poured into an effort to persuade people to “ask your doctor about” a wide variety of drugs for common conditions. The medical information conveyed in these ads is fragmentary and sometimes misleading. The purpose, of course, is to increase popular awareness of a brand-name drug, which will then lead physicians to prescribe that brand in order to satisfy consumer demand. This practice fits well with the currently popular notion of “consumer-driven” health care, but it contributes little or nothing to the quality of medical services, and it cer-

tainly increases the costs of care.

Drug companies owe it to their investors to produce profitable drugs. But as the successful marketing of me-too drugs shows, a drug need not be especially medically useful to be profitable. In fact, one way to increase profitability is to market drugs for minor ailments aggressively. After all, there are more healthy people than seriously ill ones – at least in countries where people can afford to purchase expensive drugs. Therefore, an antihistamine or an agent that claims to help irritable bowel syndrome or one that dampens premenstrual mood swings has a much larger potential market than a drug for a serious illness.

A critical task for the drug companies is to obtain patents on me-too drugs or to extend patents on successful drugs. The drug companies accomplish this in a variety of ingenious ways. They try to find slightly new uses for old drugs or sell them in new combinations or dosage forms. Eli Lilly’s newly patented Sarafem is the same drug as Lilly’s Prozac, which has just gone off patent, but Sarafem is sold for premenstrual syndrome instead of depression. The antidiabetes drug Glucophage XR is Bristol-Myers-Squibb’s newly patented once-daily replacement for the twice-daily Glucophage, whose patent recently expired. Except for their duration of action, the two drugs are the same.

Two years ago, the *Wall Street Journal* reported a proposed complicated business deal between Merck and Schering-Plough for the marketing of two new drug combinations, one to lower serum lipid levels and the other to relieve allergies. Each combination would pair one company’s blockbuster drug, whose patent as a single product will soon expire, with a drug with supplementary

action owned by the other company. The combination drugs would have new patents, and their profits would be shared by both companies.

Not satisfied with twenty-year patents, the industry tries to extend them in other ways. The most direct but least certain way is to have a friendly member of Congress introduce a bill to extend the patent on a particular drug. Other methods are less direct but more effective. Thanks to a 1997 law, drug companies that agree to test their drugs in children automatically receive an extra six months of exclusivity – even if the drug would rarely be prescribed for children.

Companies also routinely file patents on some trivial feature of their brand-name drugs – for example, the shape of the tablets – and then sue a generic company for patent infringement when it is about to enter the market. The suit automatically extends the patent for another thirty months, or until the case is resolved. When patents finally do expire, according to allegations in several lawsuits filed by consumer groups, drug companies sometimes collude with generic companies to keep prices high.

In principle, both the FDA and the U.S. patent office have the power to prevent the kinds of abuses we have been describing – but in practice, neither agency exercises it. Over the past decade, the FDA has become increasingly friendly with the industry it regulates. Indeed, it sometimes seems as if the FDA views the drug companies, and not the American public, as its primary client.

There is some reason for that impression. In 1992, Congress passed the Prescription Drug User Fee Act. This act requires drug companies to pay a user fee – currently it is more than \$300,000 – to the FDA for every drug the agency reviews. Such fees at present constitute about half the budget of the FDA's drug review center.

The *quid pro quo* is simple: in return for the fees, the FDA reviews more drugs more quickly. Since 1992, the FDA has doubled the number of drugs reviewed annually, and cut in half the time spent on the average drug review. (In the past year or so, in the wake of several widely publicized withdrawals of drugs found to be dangerous, the FDA has slowed down a little.)

One can see from this brief overview of the clinical research system that it is permeated with financial conflicts of interest. Drug companies exert a major influence over the evaluation of their own products, either indirectly or directly, through for-profit organizations that are dependent on them. Yet the fiduciary responsibility of the drug companies is to increase the value of their stock. It is not to provide unbiased evaluations of their own products.

Even the nonprofit academic medical centers, now facing hard times in the managed care environment, are so eager for drug company business that they are ceding substantial control to the companies over the way academic research is conducted and reported. Researchers who run the clinical trials in academic centers are being allowed to enter into financial arrangements that compromise their independence. Meanwhile, most of the new, nonacademic researchers are private practitioners with no research experience who are paid large bounties and bonuses for enrolling their patients in trials.

Oversight of this situation falls, finally, to the FDA – an agency now partially supported by the industry it regulates. That support is precarious and almost certainly conditional on the agency's cooperation with industry. The Prescription Drug User Fee Act must be renewed by Congress every five years. But as the FDA well knows, the pharma-

ceutical industry has enormous clout on Capitol Hill. If the industry decided to withdraw its support for the Act, the budget of the FDA's drug review center would be slashed, and many people would lose their jobs.

These conflicts of interest are having exactly the effects on clinical research that might be predicted, and some of the consequences are worth emphasizing.

First, drug companies now broadly influence the kind of research being done. Drug companies are increasingly funding trials not to discover new agents and new approaches to treatment, but to get FDA approval of me-too drugs and to buttress marketing claims. For example, huge trials may be undertaken to show that a new statin is in some way marginally better than the other five already on the market. The research may result in successful marketing campaigns but is unlikely to yield much of any scientific or clinical value.

Second, there is growing evidence that financial conflicts of interest are compromising the integrity of the clinical research enterprise. As we have noted, drug companies now often control how and whether research is reported. Many clinical trials are never published because the results do not favor the sponsor's product. There have been several widely publicized cases of investigators who published negative results anyway and were harassed by their industry sponsors for doing so. For example, investigators in a recent trial of an HIV vaccine refused to allow the company to alter the report to make it more favorable to the vaccine. The company then tried to stop publication altogether. According to news reports, when the authors published anyway the company demanded \$7 to \$10 million in damages on the grounds that publication had hurt the company's financial prospects.

The publicized cases concern investigators who refused to tailor their results to suit their sponsors. More worrisome are the cases of investigators who quietly allow negative results to be suppressed, or who publish misleading work. Several studies have shown that papers with industry support are much more likely to favor the company's product than papers with NIH support. Bias may be extremely difficult to detect, particularly when it involves selecting only certain data to present. (Having exclusive control of the data, as drug companies often do, makes surreptitious selectivity all too easy.)

There is also evidence that human subjects are being enrolled in clinical trials for which they are not eligible – for example, because they do not have the disease in question. According to a recent Inspector General's report, physicians in one study stood to make a \$30,000 bonus when they enrolled their sixth patient. Under those circumstances, it's hard to imagine that eligibility criteria will not sometimes be stretched.

What we have, then, is a system riddled with abuses and conflicts of interest and badly in need of reform. How should it be changed?

First, we believe the Bayh-Dole Act should be enforced in all its original provisions, not just the ones that are lucrative for industry and academic institutions. Provisions that should be enforced include: 1) the stipulation that the government be notified of all patents obtained that are based on publicly funded research, and 2) the requirement that the fruits of the research be available to the public on reasonable terms. In the statute, the second provision is stated in only general terms, but it could be translated into specific regulations. Doing so

would help to ensure a reasonable *quid pro quo* between a protected and favored industry and the public that supports it and depends upon it for products essential for medical care.

Second, we recommend that full control of clinical research be restored to the medical institutions and the medical professionals responsible for the health and safety of the patients being studied. The FDA should not allow clinical trials to be controlled by for-profit businesses whose major or only clients are the drug companies. In other words, they should ban contract research organizations (CROs).

That would leave several alternatives. One would be to set up some sort of independent public agency that would function much as the CROs now do, but without having to compete for drug company business. Another alternative would be a return to the days when trials were mainly done in academic medical centers with arm's-length drug-company funding. In those days, academic investigators designed the trials, analyzed the results, wrote the papers, and published them no matter what the outcome. They had no other financial ties with the companies that funded the research, and neither did their institutions.

The academic medical centers should not have strayed from this model in the first place, despite their desire for drug company funding. In any case, FDA approval of new drugs should be contingent on assurances that investigators are not constrained by sponsors in the publication of study results and that they have no other financial ties to the sponsors. This would add strength to the new policy announced by the group of medical editors.

It will be protested that academic medical centers alone can no longer han-

dle the volume of industry-proposed clinical trials, and that is true. But that raises another issue. Is the volume of clinical trials now being undertaken by the pharmaceutical industry reasonable? Can we justify asking human subjects to participate in research that may be quite trivial?

One way to winnow out the trivial research is for the FDA to require that clinical trials, wherever feasible, compare the newly patented drug with the best existing one, not with a placebo. The FDA could also require that approval of a drug be contingent upon a clinically significant effect as well as a statistical one. For their part, the academic medical centers should not undertake clinical trials unless they have some scientific merit.

These reforms would cut down on the total number of clinical trials. They would encourage drug companies to concentrate their efforts on drugs of potentially significant medical value and not spend so much of their resources on the development of drugs with more commercial than medical promise. It is understandable that the industry should want to maximize its revenue, but not that a government agency or the academic medical centers should be its partners in this venture.

Third, Congress should increase the FDA's budget, to enable the agency to expand its responsibilities. The FDA should be shored up as a truly independent agency. It should not be permitted to continue down a road that will make it the captive of the drug industry.

Accordingly, the Prescription Drug User Fee Act should not be renewed in 2002. The FDA is, after all, a public agency charged with protecting the public health. The support it now receives through user fees should be replaced by public funds, and increased.

Fourth, we think that the terms of the collaboration between academic medicine and the pharmaceutical industry need to be reevaluated. Academia and the drug industry can serve the public interest well when they collaborate in research, but only when they do so under arrangements that keep their separate missions distinct and do not encourage academic institutions or their faculties to go into partnership with the companies or to become businesses themselves.

We believe that all financial ties between clinical investigators and the companies whose products they are testing for clinical use should be prohibited – either by law, or through the joint policies of academic medical centers. The only remedy proposed so far has been disclosure – to the institutions, to human subjects, and/or to the editors and readers of medical journals. But disclosure will no longer suffice. The pervasiveness and influence of these financial associations, and the scope of the public's stake in the matter, demand stronger action. We are convinced that the time has come simply to eliminate all such conflicts of interest.

Fifth, and finally, we think it is time to separate continuing medical education (CME) from the marketing of drugs. The former is the responsibility of independent educational institutions; the latter is the legitimate province of industry. The drug industry should not encroach on the intellectual independence of the medical profession – even if this means that physicians have to assume more of the financial burden of their own continuing education.

But the primary responsibility for reforming the current troubled state of CME clearly lies with the medical profession. The medical schools, the hospitals, and the professional organizations that ought to be responsible for the education of physicians should simply refuse financial help from the pharmaceutical industry, unless it is totally free of any industry participation.

We need to remember that the missions of the drug companies and of academic medicine, while in some respects complementary, are in most respects quite different. The primary mission of the pharmaceutical industry is to make money by developing, patenting, and then selling safe and effective drugs. The best of these drugs may make an important contribution to medical care.

The mission of academic medical centers, which are almost all nonprofit, is to educate physicians, advance medical knowledge through basic and clinical research, and provide clinical care of the highest quality.

Industry and the academic centers can sometimes collaborate very fruitfully in research leading to the development of new drugs. But if they wish to preserve the public's trust, and if the centers want public support, they should avoid financial arrangements that blur the essential distinctions between their separate missions. Unfortunately, competitive pressures in the health-care system and the lure of huge profits from pharmaceutical patents are causing industry and the academy to ignore this caution – with potentially grave implications for the public good.

Poem by Paul Muldoon

Unapproved road

I

When we came to the customs post at Aughnacloy, as at Cullaville or Pettigoe,
I was holding my breath
as if I might yet again be about to go

underwater ... The fortieth
anniversary of 1916 had somehow fizzled out, the New Year's Eve attack
on Brookeborough ending in the deaths

of O'Hanlon and South, while Dev was likely to bring back
internment without trial ... As we drew
level with the levelled shack

I was met by another black-coated, long fellow, though he wore a sky-blue
winding-cloth or scarf
wrapped round his mouth and nose, leaving only a slit for him to peer through.

II

"In the late fifties I was looking for a place," he nestled his coffee-cup on its zarf
and turned to me, thirty years later, in Rotterdam ...

"An ancestral place ... A place my ancestors knew as *Scairbh*

na gCaorach." "*Scairbh na gCaorach,*" I chewed on my foul madams,
"is now better known as 'Emyvale'
though the Irish name means 'the sheep-steeps' or 'the rampart of rams.'"

"'Rampart of rams'? That makes sense. It was the image of an outcrop of shale
with a particularly sheer
drop that my ancestors, the 'people of the veil,'

held before them as they drove their flocks from tier to tier
through Algeria, Mali and Libya all the way up to Armagh, Monaghan and Louth
with – you’ll like this – a total disregard for any frontier.”

*Unapproved
road*

III

“Patrick Regan?” A black-coated R.U.C. man was unwrapping a scarf from his
mouth
and flicking back and forth from my uncle’s licence to his face.
“Have you any news of young Sean South?”

The last I heard he was suffering from a bad case
of lead poisoning. Maybe he’s changed his name to Gone West?”
I knew rightly he could trace

us by way of that bottle of Redbreast
under my seat, that carton of Players, that bullion-chest of butter.
I knew rightly we’d fail each and every test

they might be preparing behind the heavy, iron shutters
even now being raised aloft
by men carrying belt-saws and blow-torches and bolt-cutters.

IV

As he turned to me again, thirty years later in Rotterdam, the Tuareg doffed
his sky-blue scarf. “Back in those days I saw no risk
in sleeping under hedges. As a matter of fact I preferred a thorn hedge to a
hayloft

because – you’ll like this – it reminded me of the tamarisks
along the salt route into Timbuktu.”
He crossed his forearms lightly under his armpits as if he might be about to frisk

himself, then smiled as he handed me the sky-blue
winding-cloth and a clunking water gourd.
“It had been my understanding that *Scairbh na gCaorach* meant ‘the crossing of
ewes’

Poetry by
Paul
Muldoon

for *scairbh* means not ‘a ledge’ but ‘a ford’ or, more specifically, ‘a shallow ford.’”
And he immediately set off at a jog-trot down an unapproved road
near Aughnacloy or Swanlinbar or Lifford.

V

“It had always been my sense,” I hear him still, “that the goat fades into the goad
and the spur fades into the flank
and the fastness fades into no fixed abode

and the Black Pig’s Dyke fades into the piggybank
and your Hams fade into your Japheths
and the point fades into the point-blank

and the Cristal fades into the crystal meths
where the ends somehow begin to fade into the means
and the sheugh fades into the shibboleth

and the timbre fades into the tambourine
and the quiddity fades into the *quid pro quo*
and – you’ll like this, I know – the bourne fades into the bureen.”

Paul Muldoon, a Fellow of the American Academy since 2000, is the Howard G. B. Clark Professor of the Humanities and Creative Writing at Princeton University. In May of 1999, he was elected Professor of Poetry at Oxford University, the forty-second poet to hold this honorary position. His publications include “Poems 1968 – 1998” (2001) and, forthcoming in October of 2002, “Moy Sand and Gravel.”

© 2002 by Paul Muldoon

Fiction by Frederick Busch

The rescue mission

I worked hard, that year, at jobs that repaid me only in wages. I received no pleasure from what I did, and no one praised or honored me. But no one struck me, either, and I was forced to wake up in the early afternoon, to shave and bathe, to put on laundered clothing, and to leave the Polk Street apartment for what, in Syracuse, New York, could be called the world at large.

On the job, I lined my desk with small clay figures I pinched and prodded from a moist, gray ball I carried in a plastic

bag in my backpack, along with my sketch book and pencils. I made misshapen dogs, deformed beasts of the barnyard, and creatures inspired by movies about outer-space wars. The desk was in the stubby trailer maintained by the Rescue Mission, and the trailer was in the giant parking lot of a supermarket famous for the quality and cost of its meat and produce. Very good cars circled the trailer in which I sat to mind the goods left off by high-class shoppers with a conscience, or those afflicted with slightly flawed microwave ovens, or good clothing into which they could no longer slide with ease. Whatever they dropped off, whether wearable, repairable, or edible and tinned, the Mission accepted. I spent my shift fixing what I could, and people who really knew household machines worked on the rest; the Mission gave the food away and sold the appliances in its store downtown in the medical district. This was a gloomy neighborhood of low, boxy office buildings and wet, broad streets, with a psychiatric hospital, a medical center, and the office of the county medical examiner where people went to identify their dead. The Mission used its income to buy food for the homeless and for families in need. Can you name a family that is not in need?

Frederick Busch, Edgar W. B. Fairchild Professor of Literature at Colgate University, is the author of twenty-four books, including novels, volumes of short fiction and essays, and literary criticism. His most recent publications are a collection of stories entitled "Don't Tell Anyone" (2000) and the novels "The Night Inspector" (1999) and "Girls" (1997). His latest nonfiction work is "A Dangerous Profession: A Book About the Writing Life" (1998). Busch, a Fellow of the American Academy since 2001, is the recipient of many awards and honors, among them the National Jewish Book Award for his novel "Invisible Mending" and the PEN/Malamud Award for Excellence in Short Fiction. He recently received the Award of Merit Medal for the Short Story, given once every six years to an outstanding short story writer by the American Academy of Arts and Letters.

© 2002 by Frederick Busch

I accepted the generousities of shoppers on their way from work. I wrote out the receipt and handed over the list of suggested tax credits they might claim. I smoked a lot of Lucky Strikes and tried to convince myself to read about Hans Hofmann in New York. I had just left New York, and I kept wishing I was there. As for Hofmann, I didn't want to read about him. I wanted to be him, or any artist that purposeful. So I smoked, I sketched, I made clay figures, I fought the tightness in my stomach which wasn't hunger (I never ate much during that time in Syracuse) and I tried to convince myself that I would emerge – from this gray, cold, sorry city in its necklace of bright suburbs – with a postgraduate degree in fine arts and a future consisting of work I liked among people who thought me excellent. The graduate courses met mostly in the late afternoon or early evening. I worked my jobs to afford the tuition I wasted by coming to work instead of to class. But, then, can you name an art student who is not in need?

Early in February, after the January thaw had hardened into mud-colored ruts of ice, when it was not only cold but always damp, so your elbows clicked and your fingers worked without precision, during what you might think of as the dinner hour, a maroon-haired girl climbed the rough wooden steps built clumsily from unmilled spruce planks and opened the door to tell me, “Knock knock.”

Now, what I detested most in life could be summed up as people who stand in your doorway and say, “Knock knock.” So I stared, in no friendly way, and said nothing she could mistake for a welcome.

Her hair was ear-length and its very bright maroon, at the top of her head, seemed to go golden and then into a

trace of blondish bright green at the ends. She stood in the doorway under her shiny head that was everything Titian knew never to be about, and she looked like a fugitive. Her jeans appeared damp, even soggy, and her tan lace-up boots were dark with moisture.

I said, “You intend to donate your hair to someone in need?”

She wore a shade of lipstick that represented an effort to match her hair. It failed. She was very pale, and the color of her hair made her skin look muddy.

“Do you think I could warm up in here a few minutes?” she asked me. We had electric baseboard heaters, and I kept the thermostat high. She clasped her hands in front of her and shivered. Sleet and granules of hail, in epaulets, lay along the shoulders of her jacket. When I was a kid, they were called Eisenhower jackets, and I recalled them as made of unlined wool. Bad girls in my high school wore their boyfriends'. Now, I supposed, hers was a fashion statement. She didn't look terribly Commander in Chief to me, so I nodded. She nodded back, and she took two steps in and squatted near an electric can opener that made the can-opening noises but didn't take the top off anything: the can hung in place and shook, not unlike the maroon-haired girl.

The way she crouched there annoyed me, and I said, “Come here, for Christ's sake.”

“Where?”

“In this chair.”

“Are you getting out of it?”

“You do not have to sit on my lap to get warm. Correct.”

She nodded again, I nodded again, I shifted from the chair, she passed carefully in front of me, and then she sat down with her arms across her chest while I took a Philips-head screwdriver from the metal shelf near the door and

began to work on the can opener, which, so far, was useful only as a paper weight.

She was very small, with short, stubby fingers and almost-chubby hands. She looked, at first, like a child. With that hair, she could have passed as a child's doll. But her face was lined as well as dirty, I saw, and her eyes were hazel-colored and quite grown up.

She coughed and wiped at her nose. Then she clasped her hands on the desk and seemed to study the animals I'd left there.

"You make these?"

I said, "It's like doodling. It kills the time."

"Boring, huh?"

I said, "It's a job."

"I get jobs," she said.

"Good."

"Then I lose them. I have this way of messing things up." Her voice was rich, and coarsened by cigarettes, I thought.

"We must be from the same family." I looked up, prepared to smile, but she kept looking at the animals.

"I don't think so," she said.

"No, it was just a kind of joke."

"My boyfriend says I never get the joke, so the joke's on me." She looked at the figures and said, finally, "These are weird animals. But you being a guy and all, I'd have expected you to have them locked in mortal combat."

"Mortal combat," I said. "No, I hate that stuff." I asked her, "Who hits you?"

"What am I," she said, "some kind of a waif? And you're the whatever – the rescuer guy? The protector? I'm begging you for a little *warmth* in here is all."

"You're getting it," I said. "You got it. Forget I asked."

"Yeah. 'Who hits you?' And then forget it." She lit one of my cigarettes and coughed as the unfiltered smoke hit her lungs.

"Help yourself," I said. "And nobody

hits you."

"What – it shows?"

"Just the little yellow thing along your jaw. Next color is brown. Then green-y blue. Then your basic black and blue. The makeup never works. Anyway, you're too light-skinned to wear enough of it to do a very good job. I could try for you. Have you got your stuff?"

"What, are you, like, gay? You do makeup with your friends?"

"Right," I said, "I'm gay."

"No, you're not. I could tell."

"Okay," I said, "I'm not."

"I know you're not."

"That's right."

"So how do you know about putting makeup on girls?"

"My mother was kind of a girl when I knew her."

"What?"

"She was young, that's all. What's your name?"

"What would you guess?" she said, moving the clay figures about as if she were a child at play. Her expression wasn't playful, though, and I wondered if when she dreamed or, say, chased a bus on Erie Boulevard, she forgot enough of her life to look less wary.

"With hair like that," I said, "it's a definite Monique. Possibly a Lauren."

"Lauren Hutton," she said. "With that gap tooth? My boyfriend's horny for Lauren Hutton."

"Is he the guy who hammers you?"

"But it's Jill. Dumb, huh? Who're you?"

"Edward."

"Ed?"

"No. Edward. I never got too much into Ed, or Eddie, or any of that."

"Yeah, you're a formal guy. I can tell that. Edward. Okay."

"How old are you, Jill?"

"I thought they'd have nuns in here," she said. "Parish priests and nuns. You

know: 'Rescue Mission'?"

"I think maybe you want a church," I said. "Some kind of sanctuary? You want me to help you get to a church? Or the women's shelter?"

She stood. She very carefully flicked her finger into a cow with four horns and sent it softly over. "Been to the shelter. Been back from it. Thanks for the heat, Edward."

"Good luck," I said. The can opener whirred. I tested it on a donated tin of fruit cocktail. "Take care of yourself, Jill."

She said, "Same to you." She righted the clay mutant cow, put her hands in her jeans pockets, and left the trailer, passing me as she did with a little light-footed nonchalance neither of us believed.

I had wasted the fruit cocktail because I'd sliced my left thumb on the open can, bleeding a red that clashed with the rusty color of the maraschino cherry. I considered drawing with my blood instead of ink, but I was simply too old for a stunt like that. I cleaned my mess and began a sketch, while holding my left thumb up in the air, like a parody of someone who indicates to you that life is just dandy. I drew with my right, and I got through the rest of the late shift without talking to anyone except a teary, tall woman who brought her dead father's sportcoats and slacks in a couple of plastic bags. You give me the dead guy's clothing, I give you a receipt and I either say Thank You or Sorry, depending on your attitude. Then I go back to the picture. Then I turn down the heat, switch off the lights, lock up the trailer, and drive my corroded Chevrolet station wagon, its paneling held on with duct tape, across the lot to the 24-hour market. That night, I strolled among the solvent and well-nourished and bought myself a six-pack of Anchor Steam Beer,

which cost me a couple of hours' wages, and then I drove home, about six miles west, then two blocks up, and quite a few socioeconomic notches down, to my apartment.

I drank beer and worked some more on a sketch I'd started before locking up the Mission trailer. It was not a cartoon for a grand canvas by Tintoretto, nor was it the trail of a masterful hand like Ellsworth Kelly's, but it was not too bad a sketch by someone who worked the late shift at the Rescue Mission trailer and who could clearly benefit from the instruction he managed to avoid. *My boyfriend says I never get the joke. And I have this way of always messing up.* I heard them like lines in a love song on a jukebox in a bar. Like lines in a love song, when you think you're dying from the love, you understand them, you believe, because you're an expert. You know they mean more to you than to anyone else, and you are so tipped off, and so clued in, that you could weep to celebrate your wound and your awareness. But all you are, of course, is high on a very high dose of yourself. This was how I sneered at myself that night, drinking beer, and switching from pencil to conte crayon. But I did know what she meant, and I knew what her boyfriend meant.

The next day was Friday: me in the Mission trailer from two in the afternoon until eight. I woke up early and drove to the university, where I threw clay in the hope of being seen by my sculpture teacher. I didn't know why I made occasional awkward efforts to stay a part of the degree program when I attended few lectures and came to no critiques. I thought I was holding myself in readiness, I believe. I believe I was telling myself about open options, about pouncing on opportunity in case it came to the door – "Knock knock" – when what I was really doing, I guess, was pan-

icking in slow motion.

Jill came back to the trailer at something like five, her khaki Eisenhower jacket open, her white T-shirt stained, her eyes enormous and miserable, her pale skin chapped-looking, mottled. I was accepting, from a man who kept a little white dog on a long lead, a portable television set he had taken away from his son whose grades had slumped.

"Knock knock," she said from the doorway.

"Damn it," I said. "Why don't you just knock on the goddamned door? Instead of *saying* it?" The man pursed his lips and raised his eyebrows, and I asked him, "What? You want to donate the dog?"

Jill said to him, "Edward always cracks jokes." Her face was a mask of amiability: she wanted so much to appear to be my friend, to be able to know and explain me to small men in charge of small dogs who could never know me as well as she. I thought I could smell her across the trailer and over the ripeness of slow-leaking canine gas. She bore a vegetable smell, dark as old carrots and onions, a funk of fear and, I figured, of pain. It was the smell of the end of the long flight.

The man smiled at neither of us, indicated with his head that his dog should follow; he left and the dog went, the lead looped between them on the floor like a signature on a contract.

"Smart dog," I told her. "How's life?"

"I'm in a little bit of shit," she said, looking away from me. "That TV work?"

"The guy said it does, yeah. You want it?"

"I don't think I have a plug, anymore, to plug it into."

"He threw you out."

"No," she said proudly, looking young while she tried on old expressions, "I got the hell out on my own."

I said, "It's staying the hell out, right? That's the hard part?"

She said, "It's staying *in* that's hard. No. I don't know. Who says any of it's easy?" Her eyes were red, and the tears stained her face as if they were mascara tracks. They weren't, but they dropped, very visibly, straight down to the corners of her narrow mouth.

"Heavy tears," I said. I got to her slowly and was raising my right forefinger with care to touch a tear. She flinched anyway, and I put my hand at my side.

"Sorry," she said.

"You didn't do anything. You don't have to let people touch your tears. Where did he hurt you this time?"

She pulled up the sleeve of her jacket, and I saw the two red patches on her upper forearm. "Indian burn," I said. "He put both his hands there and he twisted one of them up and one of them down. Right?"

"Native American burn," she said, laughing while she cried. It sounded like a cough.

"Is he Indian?"

"Native American," she said. "Part Onondaga, some French-Canadian, some I don't know. He's beautiful, though. He's got this, like, copper-colored skin, almost. It's beautiful."

"That's what you said when you told your parents about him before you left."

"My mother," she said. "I stopped talking to my father."

"Did your father hit you?"

"Sure," she said. "What else?"

"Exactly," I said. "What else. Exactly. Well, they do rape you, sometimes, fathers."

"You know about this shit."

"Would you like a hot shower and a meal?"

She held her breath, then let it out. "Nobody ever tried to fuck me with a lead-in like that." She almost keened the

words, and each syllable was pitched on the same sharp note.

“Lead-in? You’re a singer?”

“I used to think about music college. I used to think about singing and music college up in Potsdam. You’re not trying to fuck me because who’d want this?” She held her hands out, indicating the best evidence – herself – of her unwor-thiness.

“Name your favorite food,” I said, backing away and indicating the desk, where she might sit and warm herself.

She went there, and she sat. I had shaped, in clay, a large mouth, belonging to no creature I knew about, from which protruded, instead of a tongue, another bestial mouth. She held it, then put it down, and wiped her hands on her sleeves. “You’re crazy,” she said. Then: “Oatmeal.”

“That’s it? Oatmeal?”

“Yeah.” She nodded. “Yeah, that would be my favorite. With brown sugar.”

“I’ll make oatmeal for you.”

“You can cook?”

“I can cook that much,” I said.

“Is that what you do? Like, I’m a waitress and a punching bag, you’re a rescuer and a cook?”

“No,” I said, “but I used to run deliveries for a fancy food place in New York. So I had a small connection to food.”

“New York’s cool. Why aren’t you there?”

“Had to come up here.”

“For what? Come on. Come on. What?” Her face was furrowed with impatience, and she looked, then, almost my own age, middle twenties, instead of like a full-time high-school cutter of classes.

“You want anybody else’s story, right? Anything except yours.”

“You’re in trouble, right?” She said,

“You’re in hiding up here. You’re in the

deep end of the deep shit, like me.”

“I got on-the-job training,” I said. “I may be stranded here, but I’m a total authority on being you.”

She sat very still. I thought she was going to erupt and leave. But her face went placid, almost as if she had fallen asleep, or as if she were a child who listened to a story. Once upon a time, there was you. . . .

I said, “My mother got herself knocked around a lot. Kicked. Punched. Cut. Slashed. Broken. Fucker broke her arm two times. Broke her jaw. Broke her nose. She stopped looking like her.”

“Did she make it?”

“So you do know the chances are good that you’ll die of it,” I said.

“The lady at the shelter told me. First thing. ‘Know that they tend to kill you,’ she said, like she was telling me the weather. I knew it was a set-up deal. But still. You know: dying. I heard around. You hear things at work. I work in bars, restaurants. Ruby Tuesday’s. Bennigan’s. Colorado Mining Company. Theme parks with food. You know. Where you can just get by without a master’s degree. You hear it, though. Like it really happens. But the way she said it, at the shelter – like it was a pitch for something.”

“That’s what it was,” I said. “She was trying to sell you some staying alive.”

“But did your mother make it?”

I shook my head. “She only got involved with men who hurt her. So I had to come up here for her.”

“Because she died?”

“I had to identify her body.”

“Jesus.”

“At the county medical examiner’s building.”

“They just go, like, *here*? And you go, that’s right, it’s my mother, thanks a lot for inviting me over this afternoon?

What’d she look like? Jesus, Edward.

How did you *feel*?”

“I had to walk into this living room setup they have. A room off the lobby of the building, you walk in, and there’s a rug and a coffee table, I think, and a sofa. I do remember that. And some chairs, and a set of dark drapes. Who installs the drapes? Who picks out the furniture? I kept wondering if they knew why. I remember the chairs are this terrible blue, this optimistic, cheerful, cerulean blue. It’s like a TV show, except Dad’s not reading the paper and Mom’s not folding laundry and being cute about life. They ask you if you’re ready, and then the guy pulls the drapes. They’re blue, too, except very dark, and very shiny. It looks metallic, the cloth, the drapery looks like it weighs a couple of hundred pounds. And I guess I felt the way I’d feel if it was you. An off-yellow sheet around your body and your face uncovered.”

“And it would be me,” she said.

“There you’d be,” I said. “Dying’s a cliché,” I said, “because she honestly looked like she was sleeping. Everybody says that, I hear. Well. It’s true, though. Well. Except her jaw was thick where it used to be fine, and her nose was knobby where it used to be thin. And her forehead was all yellow and brown where he broke it. I could see the caved-in part. The medical examiner said he tried to fix it a little before I looked, but he could not. How could he fix it? Her boyfriend broke it with a steam iron. You don’t fix it when they come to bat with the big-league swing. But maybe you and your boyfriend don’t have a steam iron in the house.”

“House,” she said. “It’s one of those apartments on Kinney.”

“We’re neighbors,” I said. “I’m on Polk Street.”

“I take the laundry when we have enough money, you know, out to the cleaners. *They* iron it.”

“Well, then, that’s a weapon he wouldn’t have access to.”

“Right.”

“Jill,” I said, “I wish you could hear us.”

“I *do*, Edward, I hear us. You think I’m stupid?”

“No.”

“Nice?”

“Yes.”

“Cute?”

“Sure. Cute.”

“You think I’m a furball.”

“I’m offering hot oatmeal, a shower, clean clothes, twenty-four safe hours, no conversations you don’t want to have, and no extracurricular activities. All of it almost around the corner from you. In the navel of bleakness.”

“It’s pretty in the spring.”

“In the spring, if spring ever comes, it could be pretty. And I’ll throw in a guarantee: no more descriptions of my mother.”

“Who got beat to death.”

“Who – yes. That’s right.”

“Who got domestic abused to death.”

“Yes.”

“If I took a shower and washed my hair, I’d be cute.”

“Jill, I don’t care if you’re cute.”

“You should. Edward, are you *sure* you aren’t gay? Makeup on your mother. Clay stuff. Drawings. That’s pretty gay stuff.”

“Okay,” I said, “fine, I’m gay.”

“You really did her makeup?”

“We were both young. It was how we talked about it without talking about it.”

“Your old man?”

I nodded.

“He beat on you.”

I nodded.

“But she didn’t put makeup on *you*?”

I shook my head.

“So that’s how you got not to be gay.”

“That’s how I got not to be gay. We

need to shop some oats later on," I said.

She fell asleep sitting at the desk while I rewired a lamp that was made from a ceramic batter jug. At eight o'clock, I woke her and turned the heat down and the lights off and locked the trailer. We drove over to the market, and she was asleep before I'd finished locking her in the car. I thought it was at best a half-way probability that she would be there when I returned with oats, brown sugar, butter, raisins, and Anchor Steam Beer. Inside the market, I saw three men with interesting skin, one of them a little scarred at the forehead and chin whose flesh looked almost golden. He had big hands on long arms, and his hair was glossy black, gathered in a ponytail, and he looked dangerous. Of course, you look hard enough for dangerous people, you're going to find them in abundance. The golden man's scars were yellow-white, and it was difficult to look away from them because you don't always see that clearly what people like us might be passing. But there they were: the gifts from parents or other elders which we handed on to girlfriends or wives or kids. I wondered, of course, if I would do the same, as a father, as a lover, as a man who didn't live alone. That was a reason I lived alone, I think – to keep the gifts to myself.

I was staring, and the golden-skinned man looked at me. I was disgusted by how I flinched and turned to study a bottle of fermented soy, holding my breath – truly: not breathing in or out, as if I cowered in the brush of a dark forest – until he was past.

The air, which had been damp as well as cold when I went into the market, was almost liquid now, and the temperature was falling. Fog was beginning to freeze on windshields and light stanchions and trees. The night was turning white. The city, black and brown with slush and

with filthy, coarse snow in roadside mounds, started to look clean. Jill was sleeping when I returned to the car, and she slept as I drove us on Erie Boulevard, past the kind of joint she waitressed in, and cut-rate furniture stores, and burger franchises, and then up, past the sex club which that night was featuring a naked dancer named Cricket.

"Home," I told Jill.

She woke up with huge eyes, fluttering lids, she made a sound like a sick sigh. I knew she didn't remember where she was. I knew it all, didn't I?

"Edward's place," I told her.

"Oatmeal."

"With brown sugar," she said. "Right. Okay. The Rescue Mission Man."

You walked down a narrow flight of stairs from the entrance on the side of the three-story building – my apartment in the basement, one larger apartment on each floor – and you entered my little living room, which led into the kitchenette straight ahead or, to the left, my bedroom and bath. None of it was filthy, but little of it was worth looking at except the walls and refrigerator, on which I had taped reproductions of pictures, postcards from museums, some of my own sketches, and a letter from my mother's final boyfriend's lawyer.

I said, "Familiar, huh?"

"Nice pictures," she said. "I'll bet you one of these days we'll live better."

"Really?"

"Sure," she said. "Why not? Hey! This is me!" She was looking at my sketch of her, taped onto the wall near my calendar.

"It's supposed to be, anyway," I said.

"No, it is. It's good. Except I look weird. Am I supposed to look, I don't know, sick?"

I was putting a saucepan of water on to boil. "No, you're not."

"Well, I look it."

“You’re supposed to be sleeping,” I said.

“You saw me sleeping?”

“Tonight, but not when I made the picture.”

“You imagined me,” she said.

“I did.”

“That’s pretty intimate, imagining someone asleep.”

“I didn’t mean it to be.”

She said, “Oh, no?” I shook my head. “Well, as long as I’m not a weirdo made of clay, or dead or anything,” she said.

“Clean shirts, undershirts, boxers if you want: in the bureau in there. Long shower now, and I’ll make oatmeal.” I said it with the modesty you use before stepping into the operating theater for a little neurosurgery, but it was mostly reading directions on the can, stirring the oats into the boiling water, and being alone for a few minutes to think about the heavy, tearing noise the drapes made when they scraped open and harsh white light fell on her gray and yellow skin, her broken head.

Jill called out, “I was thinking you’d be a jockey shorts guy. Whoops. I don’t mean I was, you know, going around thinking about your underwear.”

I actually said to the man who pulled the drapes, “She looks like she’s asleep.”

He didn’t say anything. Then he opened his mouth. I heard his lips pull stickily apart and I heard him say, “I wish she was, buddy.”

That was when I cried. When he tried, that way, to be kind to me.

I sat at the table and smoked cigarettes until Jill came, wearing the same clothing she’d worn into the bathroom. She’d made a decision, and I was relieved that she wasn’t small and cuddly in my big bathrobe, or available in my boxer shorts. She smelled of deodorant soap and, I’d have sworn, my shaving cream. I disapproved of the pleasure it gave me to

think of her in my bathroom, rubbing my stuff on her face. At that time, I didn’t want to receive anything from anyone nor, I suppose, to give much, either.

I put the oatmeal in front of her. She watched me pour milk and sprinkle the sugar on, then stir it again until the raisins were coated.

“This is what you eat when you’re a kid,” she said, blowing on a spoonful.

“And you’re a kid,” I said. I went to the other side of the table with a bottle of beer and my cigarettes.

“I haven’t been a kid for years,” she said. She ate and stopped, closed her eyes, swallowed. When she opened them, they were wet.

“Hot,” I said.

“Hot.”

“Your mother made it for you?”

“No,” she said, “my mother never made it for me. I don’t think I ever ate it before in my life. No, I had this girlfriend in school – well, she wasn’t my friend. We went on a date together with these guys who were friends, one of them had a car, and we both kind of gave it up at the same time, her in the front seat and me in the back. So we had to act like friends so we wouldn’t think each other was a slut. That would be my analysis, looking back at it. But we both acted pretty much like sluts, no way around that. And this girl, her mother always made her oatmeal for breakfast, she said. I was so jealous. Imagine your mother cooking breakfast for you. Jesus.” Her face was smooth, that instant, and then it clenched again. She said, “You’re really a trip, Edward, you know? And I –”

She went so pale that I stood, a cigarette in my mouth, the bottle of Anchor Steam still in my hand. “What?”

She raised a finger to her lips. She swallowed. She shook her head. “The door?” she whispered.

“No.”

“Yes.” She covered her mouth with her hand, and it was as if each belonged to separate people. Her eyes blinked and blinked, and I thought she was going to faint. I figured that the golden-skinned man with the scars had followed us from the market. I realized that was who was at the door. He was going to smile when I opened the door, and show his healthy teeth, and say, “Knock knock.” But of course it was my father who had come to the door like that, before he shook his head and gritted his teeth and shook his head faster and faster and made the long, wordless sound, like a circular saw biting wood, and began with his fists.

It wasn't my father at the door, I remembered. It was the man from the market. And I didn't have to let him in.

I didn't have to let him in.

“Maybe he isn't mad,” Jill whispered.

“Maybe,” I whispered back.

“He's gentle, you know, sometimes.”

“I know.”

“You do?”

I sickened myself. I hated myself. I said, “Yes, I do. It's the same damned thing again, Jill. So I know it. But I don't think I *heard* anything. Maybe you really *didn't* hear him? You think?”

She closed her eyes and stirred the oatmeal. Then, her eyes still closed, she set the spoon against the side of the bowl. She lowered her face almost into the oatmeal and finally she looked at me. I drew in most of the cigarette and dropped the butt into the beer bottle. I sat down. I lit another one.

I said, “It could be habit. It – because you aren't used to being alone that much. Because he needs you with him all the time, doesn't he?”

“He needs me all the time, that's right.”

“And maybe you only thought you heard the door. And, anyway, even if it

was the door, maybe it wasn't him.”

“So open it,” she said, staring at the oatmeal. “Just open it and let him in. I mean: why not?” I moved from the table and she said, “No! Edward!”

“Open it like ‘I dare you to open the door’? Open the door, Jill?”

“No,” she said. “Please. Edward, please.”

“Because I *will* open the fucking door,” I said. I went around the table and across to the door and I set my hand on the latch.

“Edward, why are you *angry*? Don't be mad at me. Please don't open the door, Edward. Please don't be mad.”

It stopped me. I took my hand away from the latch. I said, “I'm not mad at you.”

“You looked very angry, Edward.”

“No,” I said, thinking of all of us who passed our gifts along. “I'm not angry, Jill. It's fine, it's all right, and nobody's here. But I won't open the door. You're safe. You can stay here, if you need to, and we can both be safe.”

I listened to us, breathing hard.

But I had taken away the safety, and she said, with her own anger, “And you can put my makeup on for me. And cook me oatmeal.”

“I wasn't mad at you,” I said. “I was mad at myself.”

“And make me little clay cow things and mouth things. But you were mad at me, Edward. It's not like you're not a good guy. You never put a move on me, and I'm walking around here taking off clothes and putting them on, naked in the shower and defenseless and everything. And the oatmeal and all.”

“Which you didn't eat.”

“I think I wanted somebody to make it for me more than I wanted to eat it. If that doesn't upset you.”

“No way you can upset me. Would you like a cigarette? A beer? Glass of milk?”

“No, thank you,” she said.

“I have bread, I could make you toast.”

She shook her head. “I think I better go back, because what if it *was* him?”

“You can stay here,” I said. “Or you could come back. You could always come back, if you needed to.” She stood in front of me, several steps away, and looked up out of her light eyes surrounded by furrow, all of it under that hideous, metallic maroon. I didn’t feel any emotion, I thought. “So you could let me know,” I said.

“Let you know what? I don’t *know* anything you don’t.”

“Please let me know you’re okay.”

I didn’t think she could trust me again, but I waited to hear – at the apartment, and at the Rescue Mission trailer, and at

school. Every now and again, I drove, though not too slowly, down Kinney Street. For a while, I bought the *Post-Standard* and looked for news of small, beaten women. There were several, of course, but none that sounded like Jill. I was watchful, always, for a golden-skinned man with scars, but I never saw him. And, though I thought I had come to a kind of an ending, I surprised myself by living through the season in that city, and then through the year, and then the others. I always hoped to see her, but I also always thought – and I think Jill always knew – that it would finish for her at the window where, when the drapes drag apart, one of you will look inside, and one of you will look like she’s asleep.

Wendy Doniger

*on the
Kamasutra*

The *Kamasutra*, which many people regard as the paradigmatic textbook for sex, was composed in North India, probably in the third century C.E., in Sanskrit, the literary language of ancient India. There is nothing remotely like it even now, and for its time it was astonishingly sophisticated; it was already well known in India at a time when the Europeans were still swinging in trees, culturally (and sexually) speaking.

The *Kamasutra* is known in English almost entirely through the translation by Sir Richard Francis Burton, published

Wendy Doniger is Mircea Eliade Distinguished Service Professor of the History of Religions at the Divinity School of the University of Chicago. Her research and teaching interests revolve around two basic areas, Hinduism and mythology. The author of numerous books, including most recently "The Bedtrick: Tales of Sex and Masquerade," she is currently working on a translation of the last four books of the "Mahabharata"; a novel, "Horses for Lovers, Dogs for Husbands"; and a book about infinite regress and self-imitation in mythology. Doniger has been a Fellow of the American Academy since 1989.

over a century ago, in 1893. A new translation that I have been preparing, with my colleague Sudhir Kakar, for Oxford World Classics, reveals for the first time the text's surprisingly modern ideas about gender and unexpectedly subtle stereotypes of feminine and masculine natures. It also reveals relatively liberal attitudes to women's education and sexual freedom, and far more complex views on homosexual acts than are suggested by other texts of this period. And it makes us see just what Burton got wrong, and ask why he got it wrong.

Most Americans and Europeans today think that the *Kamasutra* is just about sexual positions. Reviews of books dealing with the *Kamasutra* in recent years have had titles like "Assume the Position" and "Position Impossible." In India, *Kamasutra* is the name of a condom; in America, one website offered *The Kamasutra of Pooh*, posing stuffed animals in compromising positions (Piglet on Pooh, Pooh mounting Eeyore, and so forth). The part of the *Kamasutra* describing the positions may have been the best-thumbed passage in previous ages of sexual censorship, but nowadays, when sexually explicit novels, films, and instruction manuals are available everywhere, that part is the least useful.

The real *Kamasutra*, however, is not the sort of book to be read in bed when drinking heavily, let alone held in one hand in order to keep the other hand free. The product of a culture quite remote from our own, it is in fact a book about the art of living: about finding a partner, maintaining power in a marriage, committing adultery, living as or with a courtesan, using drugs – and also about the positions in sexual intercourse. In the Burton translation, read now in the shadow of Edward Said, it seems to be about Orientalism. Read in the wake of Michel Foucault, it seems to

be about power, and in the wake of Judith Butler, about the control of women and the denial of homosexuals. I do not think these are its primary concerns, but it certainly is about gender, and to that extent Said, Foucault, and Butler are essential companions for us as we read it today.

We can learn a lot about conventional Indian ideas of gender from the *Kamasutra*. The author, Vatsyayana, describes typically female behavior: “dress, chatter, grace, emotions, delicacy, timidity, innocence, frailty, and bashfulness.” The closest he has to a word for our “gender” is “natural talent” or “glory” (*tejas*) [at 2.7.22]: “A man’s natural talent is his roughness and ferocity; a woman’s is her lack of power and her suffering, self-denial, and weakness.”

What happens when people deviate from these norms? The *Kamasutra* departs from conventional contemporary Hindu views in significant ways.

First, it has what appears to be a third gender: “There are two sorts of third nature, in the form of a woman and in the form of a man. The one in the form of a woman imitates a woman’s dress, chatter, grace, emotions, delicacy, timidity, innocence, frailty, and bashfulness. The one in the form of a man, however, conceals her desire when she wants a man and makes her living as a masseur” [2.9.1 – 6]. Though the *Kamasutra* quickly dismisses the cross-dressing male, with his stereotypical female gender behavior, it discusses the fellatio technique of the closeted man of the third nature in considerable sensual detail, in the longest consecutive passage in the text describing a physical act, and with what might even be called *gusto* [2.9.6 – 24].

In addition, the book’s long passage about the woman playing the role of a man while making love on top of a man blurs conventional Indian ideas of gen-

der. Vatsyayana acknowledges that people do, sometimes, reverse gender roles: “Their passion and a particular technique may sometimes lead them even to exchange roles; but not for very long. In the end, the natural roles are reestablished” [2.7.23]. This switch of “natural talents” is precisely what happens when the woman is on top [2.8.6], a position that most Sanskrit texts refer to as the “perverse” or “reversed” or “topsy-turvy” position (*viparitam*). Vatsyayana never uses this term, referring to the woman-on-top position only with the verb “to play the man’s role” (*purushayitva*). Even while she is playing that role, however, she mimes her own conventional gender behavior [2.8.6]: “And, at the same time, she indicates that she is embarrassed and exhausted and wishes to stop.”

A thirteenth-century commentary (by Yashodhara) spells out the gender complications: “She now does these acts against the current of her own natural talent, demonstrating her ferocity. And so, in order to express the woman’s natural talent, even though she is not embarrassed, nor exhausted, and does not wish to stop, she indicates that she is embarrassed and exhausted and wishes to stop.” Now, since Vatsyayana insists [at 2.8.39] that the woman “unveils her own feelings completely/when her passion drives her to get on top,” the feelings of the woman when she plays the man’s role seem to be both male and female. Or, rather, when she acts like a man, she pretends to be a man and then pretends to be a woman.

In this way, Vatsyayana acknowledges a woman’s active agency and challenges her stereotyped gender role. He is also a strong advocate for women’s sexual pleasure and for the importance of ensuring that she has her orgasm before he has his [2.1.10 – 23 – 6, 30]. He even

knew about the G-spot: “When he is moving inside her, and her eyes roll when she feels him in certain spots, he presses her in just those spots” [2.8.16]. The commentator clarifies the passage: “When she feels him moving in a certain spot inside her, the pleasure of that touch makes her eyes whirl around in a circle. . . . There is some argument about this. Some people say that, when the man is stroking inside her, whatever place the woman looks at, either specifically or vaguely, that is the place where he should press her.”

In his translation of this passage, Sir Richard Burton makes a basic mistake that plagues his entire translation: when the text puzzles him, as it often puzzles all who read it in Sanskrit, he translates the thirteenth-century commentary and presents it as the text. In this passage, he also gets the commentary wrong:

“While a man is doing to the woman what he likes best during congress, he should always make a point of pressing those parts of her body on which she turns her eyes.” There is nothing about what “he” likes either in the text or in the commentary; this is Burton’s fantasy.

In fact, Burton’s translation distorts gender issues throughout. His main contribution was the courage and determination to publish the work at all; he was the Larry Flynt of his day. To get around the censorship laws, Burton set up an imaginary publishing house, The Kama Shashtra Society of London and Benares, with printers said to be in Benares or Cosmopoli. Even though it was not formally published in England and the United States until 1962, the Burton *Kamasutra* soon became one of the most pirated books in the English language, constantly reprinted, often with a new preface to justify the new edition, sometimes without any attribution to Burton.

His translation remains precious, like Edward Fitzgerald’s *Rubaiyat*, as a monument of English literature, though not much closer to Vatsyayana than Fitzgerald was to Omar Khayyam. For the Sanskrit text simply does not say what Burton says it says.

In general, Burton gets the gender wrong. For instance, at 4.1.19 – 21 Sudhir Kakar and I have translated the text like this:

Mildly offended by the man’s infidelities, she does not accuse him too much, but she scolds him with abusive language when he is alone or among friends. She does not, however, use love-sorcery worked with roots, for, Gonardiya says, “Nothing destroys trust like that.”

The Burton translation here reads:

In the event of any misconduct on the part of her husband, she should not blame him excessively, though she be a little displeased. She should not use abusive language towards him, but rebuke him with conciliatory words, whether he be in the company of friends or alone. Moreover, she should not be a scold, for, says Gonardiya, “there is no cause of dislike on the part of a husband so great as this characteristic in a wife.”

Notice how Burton has watered down the passage, padded it, and made it almost twice as long as our more direct translation. He mistranslates the word for “love-sorcery worked with roots” (*mulakarika*), which he renders as “she should not be a scold.” His use of the English word “misconduct” is not so much a mistranslation as a serious error of judgment, for the word in question (*apacara*) does have the general meaning of “misconduct,” but in an erotic context it usually takes on the more specific meaning of “infidelity,” a choice that is supported both by the remedy that the

text suggests (and rejects) – love-magic – and by the commentator’s gloss (*aparadha*). But the most serious problem with Burton’s translation is his use of the word “not,” which negates the wife’s right to use abusive language against her straying husband, a denial only somewhat qualified by the added phrase, “rebuke him with conciliatory words.” (Was this an innocent error or does it reflect a sexist bias? We cannot know.)

Most unfortunately, Burton adroitly managed to escape the smell of obscenity by using the Hindu terms for the sexual organs, *yoni* and *lingam*, throughout. This decision was problematic in several ways. First of all, these terms do not represent Vatsyayana’s text, which only rarely uses the word *lingam*, and never *yoni*. Instead, Vatsyayana uses several different words, primarily gender-neutral terms (*jaghana*) that can be translated as “pelvis,” or “genitals,” or “between the legs,” or other terms (such as *yantra* or *sadhana*, “the instrument”) that are neither obscene nor anatomically precise. In some places, he circumvents, by indirection or implication, the need to employ any specific word at all. Where Vatsyayana does use *lingam* [at 2.1.1], the context suggests, and the commentator affirms, that it is [like *jaghana*] gender-neutral, meant to apply to both men and women.

More significantly, Burton’s decision to use *yoni* and *lingam* had Orientalist implications for most English readers. The use of a Sanskrit term in place of an Eng-

lish equivalent anthropologized sex, distanced it, made it safe for English readers by assuring them, or pretending to assure them, that the text was not about real sexual organs, *their* sexual organs, but merely about the appendages of strange, dark people, far away, who have *lingams* and *yonis* instead of the naughty bits that we have. This move dodged “the smell of obscenity” through the same logic that allowed *National Geographic* to depict the bare breasts of black African women long before it became respectable to show white women’s breasts in *Playboy*. It enabled the authors to pretend that the book was not obscene because it was about India, when they really thought it was about sex, and knew that English readers would think so too.

In fact, the Burton translation is most accurate in the sections that deal with the sexual positions, the topic for which the book became famous. Was this because this was what Burton cared about most, or worked on most carefully? Or was it because sex is easier to understand, being universal, than the cultural information that is specific to India?

Whatever the answer, the *Kamasutra* deserves its classic status, not just because it is about essential, unchangeable human attributes – lust, love, shyness, rejection, seduction, manipulation – but also because we learn from it deeply intimate things about a culture that could well be described as long ago and in a galaxy far away.

Leo Breiman

*on McCarthyism
at Berkeley: the
enemy is us*

As a longtime statistician, I'm concerned about the persistent gap between black and white SAT scores even after correcting for income and the socioeconomic status of parents. Recently I asked a fellow faculty member, a developmental psychologist, why there weren't more early childhood studies on the subject. His answer was chilling. "There are some things we don't talk about or do research on." These words brought back memories.

In 1950, when I arrived on the Berkeley campus as a graduate student in mathematics, Joe McCarthy had America in his grip. The University was convulsed by

Leo Breiman, professor emeritus of statistics at the University of California, Berkeley, has been a Fellow of the American Academy since 1999 and is a member of the National Academy of Sciences. He was president of the Santa Monica School Board and active in the education of Mexican children from small agrarian villages. His current research interests are in computationally intensive nonlinear methods for pattern recognition and prediction in high-dimensional data spaces.

the loyalty oath. Some faculty openly condemned McCarthyism, but there was no student opposition. A few graduate students formed the first ACLU student chapter. I was the first president.

It was, for years, the most active non-social student organization on campus. We worked for repeal of the loyalty oath legislation and were tireless and highly visible advocates of free speech on campus (in those days, no political activity was allowed on campus). Free speech, to us, meant free speech for all – liberals and conservatives, Nazis and Communists, no matter how odious their beliefs. To me, it still does.

There was a personal cost to my belief. In 1954, I became a Ph.D. in mathematics and a buck private in the Army. McCarthy accused the Army of promoting "subversives and fellow travelers." Cowed, the Army had promised to weed out new inductees suspected of previous disloyal activities. Army investigators found out about my ACLU involvement. I spent almost two years under harsh restrictions and harassment awaiting a court-martial to decide whether I should be given an undesirable or dishonorable discharge. In the end, the embarrassed court-martial officers granted me an honorable discharge, but I still have nightmares about that period.

The McCarthy era began a few years after the end of World War II when we realized that the Soviet Union was a dangerous enemy committed to the global spread of its totalitarian system. McCarthy gathered power by constructing an enemy within. His charge, endlessly repeated, was that our society was filled with spies and subversives working to overthrow the American system.

Starting with legitimate enemies – "Communist Spies" – he expanded the enemy to "Subversives," then to "Fellow Travelers and Pinkos," and then to all

those who disagreed with him. The armed forces issued antisubversive regulations; universities instituted loyalty oaths; the entertainment industry black-listed writers, actors, and directors. His power over these institutions would not have been possible without the fear he had built of the vast and vaguely defined enemy within.

Regretfully, I have come to acknowledge that there is more repression of free speech and free research on my campus now than in the McCarthy era. There are subjects of vital importance to our society that are taboo both for speech and research unless the “correct” position is taken. Examples are affirmative action, diversity, racial differences, the effects of cultural differences, and the poor performance of black students.

It is not the beliefs behind the taboos that surround these topics that trouble me. There are things to be said both for and against affirmative action. What most concerns me is the chill that has been placed on rational debate, scholarly discourse, and research.

For example, many of my Berkeley colleagues favor admissions based on academic merit and not on affirmative action. But they have been cowed into keeping silent. When the regents voted to discontinue the consideration of race in admissions, protests arose in all of the University of California campuses, and their academic senates voted almost unanimously to condemn the regents’ action.

At a meeting of the Berkeley academic senate that I attended, a second and even stronger condemnation of the regents was favorably received by the hundred or so faculty members in attendance. I requested a mail ballot so that the fourteen hundred faculty members not present could vote. The request could hardly be refused. It was accepted, but the mail

ballot was never issued.

In the same period, a respected survey organization conducted a survey of the UC faculty on affirmative action with anonymity guaranteed. Over 50 percent of the respondents said they were against affirmative action. Inferring from the study, over seven hundred of the Berkeley faculty oppose affirmative action. Yet only a handful of the faculty have made public statements to that effect.

Currently, there is silence and self-censorship among many faculty members who do not hold the “correct” views. If one wishes to speak one’s mind about certain topics, one risks being branded a “racist.” I am not saying that faculty are cowering in their basements; only that they have tacitly agreed not to get “involved,” to avoid publicly speaking and writing about certain subjects.

The group of students and faculty responsible for this atmosphere of fear have a set of core beliefs that are not arguable. Their picture of reality is the unending, unremitting persecution and repression of blacks, women, Hispanics, and homosexuals by white heterosexual males. They have constructed their enemy well.

Consider racism. Webster defines racism as “the belief that race is the primary determinant of human traits and capacities and that racial differences produce an inherent superiority of a particular race.”

Starting with unquestioned racists like Bull Conner and George Wallace, “racist” has been expanded to include, for instance, those doubting the value of affirmative action; those who think that diversity in faculty should not come at the cost of academic excellence; those who think that reparations are unwarranted; and those who dispute the idea that blacks still suffer unending, unremitting repression.

An even more expansive definition of the enemy is given by the psychoanalytic approach: although it may be buried deep in the unconscious, every white heterosexual male is racist, sexist, and homophobic. Denial is impossible, since we are not aware of the contents of our unconscious. The perplexing nature of this definition is that it removes the behavior of individuals from the arena – no matter how decently they act, they are still the enemy.

Ironically, the statistical signs are that economic disparities between blacks and whites are in fact rapidly decreasing – one welcome result of the Civil Rights movement. For instance, in 1999 the median two-parent black family income (\$47,382) was not far below that of two-parent white families (\$54,845).

From 1970 to 1999, the percent of black families earning more than \$50,000 a year (in 1998 dollars) went from 15.2 percent to 28.4 percent. Census data gives the percent of blacks employed in various occupations in 1983 and 1999. In high-status occupations such as management, engineering, mathematical and computer sciences, chemistry, medicine, and the law, increases over this sixteen-year period were dramatic, with an average increase of 60 percent.

When a black woman who is the president of an elite women's college was asked on a recent television talk show whether discrimination still exists, she replied, "of course – we get passed up by taxis and get suspicious looks from store clerks." If the worst of discrimination is down to being refused rides by a few taxis, we have come a long way.

My mother and father saw anti-Semitism everywhere – for poor immigrants from Ukraine in the early 1900s, this perception was realistic. As a Jewish boy growing up in an Irish-Polish working-class neighborhood, I was repeatedly beaten up for being a "Christ killer." I

walked the streets knowing that I was surrounded by hostile enemies. But it would be farfetched for me to believe that America today is filled with rampant anti-Semitism. American society has changed, and so have my perceptions.

But the true believers in an unremitting "racism" seem to have a vested interest in denying that any changes are occurring. They either dispute or discount the statistical evidence of progress that I've briefly summarized. Their preferred picture is of a static system of battle lines on which the all-powerful and pervasive enemy continues its relentless oppression. It is this picture that justifies the repression of free speech and research on campus.

The beginning of the end of the McCarthy era was marked by a moment on nationally televised hearings in 1954 when Joseph Welch, a short dapper lawyer from New England with impeccable patriotic credentials, looked at McCarthy and said, "Until this moment, Senator, I think I never really gauged your cruelty or your recklessness. Let us not assassinate this lad further, Senator. You have done enough. Have you no sense of decency, sir, at long last? Have you no sense of decency?" These words are indelible in my memory.

It's hard to see any light at the end of the present tunnel. The repression of free speech and writing continues unabated with almost no dissent. The McCarthyite repression was fanned by a relatively small number of demagogues. The present repression has its source in the guilt, anger, and self-righteousness of many faceless individuals, and the self-censorship of the others. Courageous individuals stood up to McCarthy and brought about his downfall. But I don't see many Joseph Welches on the Berkeley campus.

W. G. Runciman

*on Darwin &
sociological
theory today*

Sociological theory has been significantly influenced by biological theory ever since the publication of Charles Darwin's *The Origin of Species* in 1859. But although Karl Marx and Herbert Spencer both paid tribute to Darwin, neither the Historical Materialist followers of Marx nor the Social Darwinist followers of Spencer ever grasped the significance of Darwin's achievement in taking teleology out of the concept of evolution altogether.

Since then, other theories that are evolutionary without being authentically Darwinian have also had careers of their own in sociology. The Neo-evolutionism of the 1950s postulated a unilinear progression from bands to tribes to chiefdoms to states, while the Modernization theory of the 1960s projected tendencies

W. G. Runciman is a Senior Research Fellow at Trinity College, Cambridge, and President of the British Academy. He has been a Foreign Honorary Member of the American Academy since 1986. His most recent book, "The Social Animal," was published in the United States in 2000.

selectively discerned in the history of Western societies onto the future of the societies of the less "developed" world. But what Darwin had shown was that long-term qualitative change can and should be explained without the assumption of any predetermined goal, sequence, or outcome, all the way from the chemical evolution that preceded biological evolution through the evolution of human cultures and societies to the evolution of machines with some, at least, of the properties of the human mind.

That is why the philosopher Daniel C. Dennett, in his 1995 book *Darwin's Dangerous Idea*, credits Darwin with "the best single idea anyone has ever had." But the behavioral scientist who first appreciated the full implications of the "dangerous idea" for the study of cultural and social change was the psychologist Donald T. Campbell (1916 – 1996). Campbell's argument for what he called "blind variation and selective retention" as the process driving intellectual discovery became well known to historians and sociologists of science in the 1960s. But Campbell has also been a major influence on the analysis of cultural evolution as a process analogous but not reducible to biological evolution, of which the leading current exponents are Robert Boyd and Peter J. Richerson.

The research program inspired by Campbell has been overshadowed to some degree by debates about sociobiology in which both supporters and opponents of Edward O. Wilson assume that if neo-Darwinian theory can be applied to human social behavior at all it must be by direct application of the theory of natural selection itself. But it has increasingly come to be recognized across the human behavioral sciences (not least archaeology) that, as Campbell saw, what Darwin called "descent with modi-

fication” furnishes the paradigm for universal nonteleological explanation of teleological effects.

This is not to deny that the growing influence of neo-Darwinian theory on sociology is partly due to the ways in which natural selection now appears to explain more about human behavior than all but a handful of twentieth-century sociologists were willing to believe. Neo-Darwinian behavioral ecologists, evolutionary psychologists, and behavioral geneticists have all contributed findings directly relevant to sociologists’ traditional concerns. Large twin and adoption studies are presently recasting the terms of the old debate over “nature versus nurture,” and it is no longer as surprising as it would have been fifty years ago to find the leading authority on early Greek religion, the classicist Walter Burkert, tracing apotropaic and sacrificial rituals back to the biological inheritance of the human species. But the idea that culture – defined as information (or, more specifically, instructions) affecting phenotype passing from mind to mind by imitation or learning – can be modeled as an inheritance system has given rise to a growing literature in which human behavior patterns are explained by reference to both the independent and the reciprocal influences of natural and cultural selection.

Of course, cultural transmission is in many obvious ways different from genetic transmission, not least in the capacity of the receiving mind actively to reinterpret the information transmitted. But in cultural, as in natural, selection, information governing behavior is being transmitted with the possibility of mutations whose relative chances of further replication and diffusion in response to the given environment determine the direction in which the population evolves – evolves, that is, away from its

previous state, but not along any predetermined path or toward any predetermined end-state.

At the same time, social scientists as well as biologists have come increasingly to agree that what the process of selection selects are whatever units, or bundles, of information affect the observable attributes of the various individual organisms with minds whose behavior they seek to explain. It was the zoologist Richard Dawkins, in his book *The Selfish Gene*, who coined the term “meme” for such units of cultural information in 1976. But a year earlier, the anthropologist F. T. Cloak had already pointed out that “The survival value of a cultural instruction is the same as its function; it is its value for the survival/replication of itself or its replica(s).” Since Cloak and Dawkins, other researchers, including the philosopher David Hull, have further clarified the relation between the units of selection on whose extended phenotypic effects the environment brings selective pressure to bear and the organisms (with minds or without them) that are their “vehicles” or “carriers.”

The claim of self-styled “memeticists” to have founded a science analogous to genetics remains controversial. But it is a virtual truism to say that the diversity of human cultures in the archaeological, historical, and ethnographic record is the outcome of heritable variation and competitive selection of instructions affecting phenotype. The difficulty, and therefore the challenge, is to say exactly how the process works and how far models drawn from population genetics and game theory can usefully be applied to it.

For sociologists, however, whose concerns embrace not only cultural diversity and change but institutional relationships of domination and subordination, “sociocultural” evolution is a process in

which the “social” may need to be explicitly distinguished from the “cultural.” To take a familiar example, the evolution of capitalist societies based on wage labor involves a good deal more than the mutation, replication, and diffusion of cultural instructions transmitted by parents, teachers, role models, or peer-group members. It also involves the displacement of one complex set of linked institutional practices by a fitter one. The carriers of the mutant and recombinant practices are not just individuals learning from or imitating their mentors, but pairs or groups interacting as incumbents of complementary social roles.

Capitalist employers and propertyless wage-workers both behave in accordance with instructions encoded in institutional rules that govern their reciprocal behavior toward one another as such, whatever their individual traits. The practices by which a society’s constituent roles are defined can always be renegotiated by their carriers, just as the memes by which a culture is defined can be reinterpreted by theirs. But the evolutionary outcome depends not on the hopes and wishes of the carriers whose hopes and wishes they are but on the features of the ecological, demographic, cultural, and social environment that favor the replication of one bundle of instructions over another.

Many sociologists are willing to accept that the unintended consequences of purposive actions explain more about the evolution of distinctive behavior patterns than the purposive actions themselves. But the idea that practices, memes, and genes should all be treated as units of competitive selection, and the consequential threefold distinction between “evoked” (i.e., instinctive), “acquired” (i.e., cultural), and “imposed” (i.e., institutional) behavior, are as far

from general acceptance as the suggestion that there is an autonomous science of “memetics.”

Three objections, in particular, are quite widespread. The first is that neo-Darwinian sociology is no more than a purely metaphorical application of terms borrowed from biology; the second is that selectionist theory denies the purposive character of self-conscious human agency; the third is that the idea of competitive selection implies a Panglossian view that whatever has evolved is the best of possible worlds.

To the first objection, the answer is that much of the language of science in general, and of biology in particular, is metaphorical and none the worse for it (e.g., “hitch-hiking” genes). The objection would have force only if the vocabulary of mutation, replication, and adaptation, when deployed in the context of cultural and social selection, added nothing meaningful to the language in which social change was being narrated already. But it does; and it is neither more nor less a metaphor in discussion of cultural and social than of biological evolution to speak of behavior as driven by heritable information for which there is positive or negative selective bias. Information transfer is no less real when it is exosomatic than when it is genetic. If “cultural selection” is a metaphor, then “natural selection” is too.

To the second objection, the answer is that neo-Darwinian theory, far from denying that human (and not only human) action is purposive, generates hypotheses intended specifically to explain why the instructions affecting phenotype carried by one rather than another set of purposive agents are replicated and diffused. This is clearly apparent in game-theoretic models where one chosen strategy (or, to take account of the multiple algorithms involved, “strategy set”)

displaces another in the population under study. Perhaps the reason many sociologists are reluctant to look at social evolution in this way is that it reverses the conventional presupposition that purposive agents are the driving force of change and the environment is the repository of obstacles standing in their way. In selectionist theory, by contrast, agents' purposes are seen as more or less random inputs into the evolutionary process, and the mistake to be avoided above all is that of falling into the Genetic Fallacy whereby the cause of a mutation is presumed to explain its effects.

To the third objection, the answer is that no more in cultural or social than in natural selection does heritable variation result in anything more than relative replicatory advantage to one over another mutation within the population concerned. Competitive selection does, of course, generate improvements in design, as much in the "arms races" of the animal world as in those of the weapons industry. But marginal relative improvement is very different from optimization by some absolute standard. Nor, in any case, could a best of possible evolutionary worlds ever be best for everyone. For all its short-term success, the human species may in the end be less successful than the bacteria.

Whether the by now unarguable influence of neo-Darwinian theory on the human behavioral sciences amounts to a Kuhnian paradigm shift is largely a matter of words. There is no radical incommensurability of the kind that would prevent neo-Darwinians and their opponents from understanding one another, and many behavioral scientists have put forward explanations of cultural and social change that, however they are worded, are not only innocent of teleological presuppositions but consistent with the

paradigm of heritable variation and competitive selection of instructions affecting phenotype. But it would be wrong to underestimate the difference made when adaptation, defined not in terms of advantage to the carriers of the units of selection but to the units of selection themselves, is seen as the driving force of natural, cultural, and social evolution alike. Not all mutations are adaptive. But it is those mutations that are adaptive that have made species, cultures, and societies of different kinds into what we observe them to be.

The sociological agenda implied by this way of looking at the world extends all the way from seeking to reconstruct the evolution of social institutions as such in the period between the Upper Paleolithic and Neolithic "revolutions" (if such they were) to analyzing the selection of competing practices that will decide the future modes of production, persuasion, and coercion of the formerly communist societies of Eastern Europe in the twenty-first century.

All evolutionary hypotheses risk being criticized as "Just-So" stories, and in the absence of the quasi-experimental contrasts which the archaeological, ethnographic, and historical record so seldom provides, the criticism may be difficult to refute. But a Just-So story has to be the right one, however hard it may be to validate the counterfactual hypotheses that it implies and to assign the correct relative importance to the forces of natural, cultural, and social selection.

Some historical and comparative sociologists may find the prospect more daunting, rather than less, once deprived of the spurious comfort of teleological explanations underwritten by convictions of a Historical Materialist, Social Darwinist, or some other such kind. But the task of sociological theory is no different from the task of biological theory

as formulated by Francis Crick: “to see through the clutter produced by evolution to the basic mechanisms lying beneath them, realizing that they are likely to be overlaid by other, secondary mechanisms.”

Roald Hoffmann

*on poetry &
the language
of science*

There was a time when poetry and science – these two luxuriating, contraentropic glories of the human spirit – walked hand in hand:

See the blind beggar dance, the cripple
sing,
the sot a hero, lunatic a king;
The starving chemist in his golden views
Supremely blest, the poet in his muse.

Thus Alexander Pope (1688 – 1744) aligned – with his sharp wit – the muse of the poet with the “golden views” of the chemist.

Roald Hoffmann, Frank H. T. Rhodes Professor of Humane Letters at Cornell University, shared the Nobel Prize in Chemistry in 1981 for his theoretical work on the course of chemical reactions. A Fellow of the American Academy since 1971, Hoffmann is a playwright, poet, and essayist as well as a chemist. His research group looks at the electronic structure of molecules of any complexity, whether organic or inorganic, discrete molecular structures, or extended arrays in one, two, or three dimensions; it is interested in why molecules have the structures they do, how they might react, and whether they are stable or good conductors.

And not only in their delusions. . . . In Pope's day, it was not unusual for a 'natural philosopher' to be both a poet and a chemist: trying to understand the world around and within us required all the resources of art and science. But in the beginning of the nineteenth century things changed. Small wonder – it was getting awfully dark, the smog and stink of the industrial revolution coming down over the Midlands and the Ruhr, and there were all these distracting wild noises, romanticism beating its chest.

Art and science developed in divergent ways. Most scientists took on a creative analysis of quality and quantity in nature, yet one bound to prose in its method, while most poets turned nature into a mirror for the self.

Shall we complain? One result has been two centuries of glorious poetry, from Goethe to Inger Christensen. Another has been the greatest explosion of reliable knowledge that humanity has ever seen. So what, if anything, was lost in this obviously productive divorce of art from science?

One answer will come if you open an issue of a modern chemical periodical, for example *Angewandte Chemie*. Inside one finds riches upon riches: reports of new discoveries and accounts of marvelous molecules, unmakeable and unthinkable yesterday, made today, reproducibly, with ease.

But look now at the way what is written is, in fact, written. There is a ritual form: "The structure, bonding, and spectroscopy of molecules of type X have been subjects of intense interest.^{a-z}"

There is a general use of the third person and a passive voice. Accounts of historical development are few and overtly expressed personal motivations nonexistent. Here and there in the neutered language one glimpses deflected personal claims of achievement or priority – "a

novel metabolite," "the first synthesis," "a general strategy," "parameter-free calculations." But on balance there is a mind-deadening monotony to the language – and this in a field filled with fresh discoveries!

I am as guilty of this as anyone else.

In Pope's day, the scientific article was a personal, first-person account, attesting to the reality of phenomena. That changed in nineteenth-century Germany. In an effort to counter the pernicious (so it was perceived) influence of romanticism and its *Naturphilosophen*, German scientists, formalizing what their scientific French colleagues had begun the century before, purged the scientific article of its last vestigial links with poetry. The new ideal was dry, impersonal, dispassionate: the facts being reported had to be believable independent of the identity or emotions of the person reporting them. Neither the structure nor the causality of the facts was to be prejudged. It followed that findings should be presented in the third person, and in a passive and cautious voice.

I love the complexities of molecular science. But I also know that its richness was created by human beings. So I'm unhappy to see a significant part of the humanity of creative scientists being suppressed in the way they express themselves in print. The periodical article system of transmitting new knowledge has worked remarkably well for two centuries or more. But there are real dangers implicit in its current canonical form.

By removing emotion, motivation, the occasionally irrational, we may have in fact done much more than chase away the *Naturphilosophen*. What we have created is a mechanical, ritualized product that 6×10^5 times per year (that's the rough number of chemical articles pub-

lished annually) propagates the notion that scientists are dry and insensitive, that they respond only to wriggles in a spectrum.

I would argue for a general humanization of the publication process. The community should relax its strictures against expressing emotions and personal motives. So what if it takes a little more space? As it is, we can keep up with the literature and tell without much trouble the mass of hack work from what is truly innovative. And we recognize hype ever so easily. I think we have much to gain from acknowledging more directly in our scientific papers the personal and emotional elements in our struggle to discover, and create, the molecular world.

Admittedly, a young chemist trying to carve out an academic career, and anxious to have his or her research published in the established journals, is unlikely to follow my advice. Conservative editors and anonymous reviewers of scientific papers, struggling to find something moderately intelligent to say, are likely to look askance at colloquialisms, plain talk, and touches of literary style – any language, in short, that deviates from the ossified conventions of the scientific journal article.

Indeed, I myself have had difficulty in practicing what I preach. As a theoretician, I want to join a conversation among fellow chemists, in an effort to shape current thinking. Much of my audience (which I take as graduate students and young academics) would be put off if I wrote in an entirely offbeat way, inventing batteries of neologisms. So on matters of style, I go easy. Still, here and there I do sometimes try to sneak in a word or a phrase that may momentarily shock the reader into the realization that he or she is empowered to see things in a different light.

The contemporary poets I most admire – such as the late A. R. Ammons – are similarly subtle in the ways in which they use language to transfigure our perception of the natural world. Here, for example, is his poem “Planes”:

The whirlwind lifts
sand to
hide holy
spun
emptiness or erect a
tall announcement
where formed
emptiness is to be found

The image of the whirlwind is natural, but the questions it raises are deeply metaphysical: How is nothingness to be defined? How are we to reconcile one of the essential tensions, the quietude sculpted by impelled motion? The image also evokes the whirlwind in the Book of Job, from which the Lord asks Job: “Who put wisdom in the hidden parts?”

Ammons’s poem also reveals another characteristic of great poetry. I will clumsily call it “turning back to climb higher.” Look at the word “holy” in the third line. It is unclear whether what is “holy” is sacred, or simply has a hole, or rather establishes an enriching acrophonic relation to wholeness. “Holy” becomes the center; to me the poem caroms back and forth around that word, like a laser beam amplified by mirrors.

It is sometimes said that scientists have purged the world of poetry, because they have reduced the miracle of the living world to a set of cold, hard facts gained by the logic of dissection. Surely this cannot be right. What I know as a scientist about the physics of whirlwinds does not diminish my pleasure in the natural phenomenon. Or the poet’s language.

Few writers, of course, can turn that

Note by
Roald
Hoffmann

Tsunami

A soliton is
a singularity
of wave
motion, an edge
traveling just
that way. We saw
one, once
filmed moving heed-
lessly cross
a platinum surface.
Solitons pass
through
each
other
unperturbed.

You are a wave.
Not standing, nor
traveling, satisfying
no equation.
You are a wave
which will not be (Fourier)
analyzed.
You are a wave; in
your eyes I sink
willingly.

Not solitons,
we can't pass through
unaltered.

– R. H.

kind of scientific knowledge into poetry. That Ammons was one means only that he was a very great poet – not that modern science and poetry are irreconcilable.

As for myself, I have no problems doing research as a scientist and trying to write poetry. Even if these activities are most often not in the same space-time. Both science and poetry emerge from an attempt to understand the universe around us – and from a wish to share that understanding with others in words.

I think there is, in fact, a richness in the scientific background, which in the hands of someone better than myself might be a real advantage in writing poetry.

After all, the language of science is a language under constant stress. The practice of science demands precise meanings – which must be defined in beautifully imprecise words. Mathematical equations and chemical structures are absolutely necessary. To be explained in words. New concepts, begging for new words, force themselves on us.

Because it is a natural language, yet always under tension, the language of science is inherently poetic. Which may be why this chemist feels compelled to turn his understanding of science into poetry.

Letters to the Editor of *Dædalus*

Terrorism & evil

February 24, 2002

To the Editor:

I was dissatisfied by the “comment” by Ira Katznelson on “Evil & politics,” in the Winter 2002 issue of *Dædalus*. The essay’s importance is underlined by its placement at the beginning of the first issue of the American Academy’s distinguished journal in its redesigned format under a new editor. It is evidently intended as an expression of response to the terrorist attack on the United States last September 11, and as such, however well-meaning, it seems to me to fail badly. Its misty abstractness, moral flabbiness, and ambivalence make it almost irrelevant as a reaction to the magnitude of the events of that September day and their consequences. In his discussion of the subject, Katznelson gives no sign of having even attempted to achieve an imaginative realization of the suffering, damage, and loss of life caused by the terrorists’ attack. He says nothing concerning its import as an act of war against the American people, nor about the proof it provides of our previous failure to understand the Islamic world and the forces within it that harbor and cultivate a deadly envy, hatred, and enmity of free and open pluralistic societies.

Katznelson unhappily decided to base his article on the theme of “radical evil” taken from Hannah Arendt, and quotes her words that the fundamental question of intellectual life after World War II was “the problem of evil,” just as

“death” became the “fundamental problem” after World War I. Endorsing this view, he discusses the attack on the United States as a case of what Arendt called “radical evil.” Her statement, however, is incorrigibly abstract and false in its application to the circumstances. Death and evil have always been a problem for religion and philosophy, and their contemplation remains a profitless exercise unless we accept them as inevitable facts of human existence. After the first great war of 1914 – 1918, the fundamental problem for serious intellectual life was not death, but economic depression, communist rule in the USSR and its impact, and the rise of Italian Fascism and German National Socialism with their thrust toward aggression and war. After the war of 1939 – 1945, the problem was not radical evil, but the containment of Soviet communism, the avoidance of nuclear war, and the effort to achieve a historical understanding of how Germany, a modern civilized state, could have come under the rule of the criminal Nazi regime and been responsible for the genocidal destruction of the Jews and the mass murder of other peoples in violation of all the dictates of humanity and the rules of war.

Pursuing the theme of evil, Katznelson speaks of “some intellectual circles” whose denunciation of the terrorist acts as evil has been accompanied by “a far too simple justification of liberalism and the Enlightenment” and who see behavior as evil only when it attacks “the valued goods proffered by Western modernity.” He then mentions “other intellec-

tual circles” who focus on the evils of postcolonialism and global capitalism’s exploitation of the world and accordingly consider the events of September 11 “in a cooler, sometimes icy, register.” Why does he not tell us who these first intellectual circles are to which he so vaguely refers, where they are to be found, and what precisely are their one-sided opinions in justification of liberalism? And why does he not for once come down to Earth and say plainly that the second of these intellectual circles consists to a considerable extent of left-leaning academics in America and Europe who have demonstrated not their coolness and iciness but their moral and political stupidity and callousness by blaming the United States for deservedly bringing the attack of September 11 upon itself by its wicked policies over the years in the Middle East and other parts of the world?

It would be easy to pick apart other pretentious and empty formulations in Katznelson’s article that reveal his remoteness from the reality he professes to be discussing. He worries, for instance, that a “rote defense of liberalism” could authorize a new brand of colonialism that would again make many non-Western peoples “ineligible” for the “core values of rights, toleration, participation, and consent.” I can make nothing of this statement. What is this “rote defense of liberalism” and who are its promulgators? Katznelson addresses his readers in the name of liberalism, but one might suppose from some of his remarks that the world is in nearly as much danger from the sins of liberalism as it is from Islamic terrorism. It is surprising that he omits any mention of the remarkable military success of the United States and its allies in their few months’ campaign in Afghanistan against the Taliban and terrorist net-

work, a campaign undertaken despite the dire warnings from some “intellectual circles” in America and Europe that a direct military response to terrorism would lead to disaster and that we should deal with the root causes of terrorism through substantial foreign aid to poor countries and a sweeping change in our foreign policy. Nor has he anything to say of the future of the antiterrorist struggle and what the United States should do to ward off the very real danger of nuclear, chemical, and biological warfare waged against it by rogue states like Iraq or by terrorist groups that they sponsor.

Katznelson wonders whether “the Western liberal tradition can effectively contest radical evil without sacrificing its own best features.” He thinks it can, but only if it finds a way to engage with “nonliberal beliefs and cultures without dismissing them too hastily as irremediably antiliberal.” He also holds out the prospect of ultimately converting these cultures to the universal liberal values that, while Western in origin, have now become global. With his usual lack of concreteness, however, he neglects to point out that the most important present challenge to this country comes from the danger of terrorism itself and the priorities it imposes on us. In the conclusion of his article he suggests that it won’t be the war on terrorism that defines the early twenty-first century, but rather the series of battles for the soul of liberalism. This is certainly a partial and self-centered way of analyzing our situation in the new century. Liberalism is a hardy growth that has strong roots in contemporary Western civilization. Its soul is not in question. What is in question at the present juncture is its intelligence and whether those who claim, like Katznelson, to speak on behalf of liberalism will possess the political clarity and

resolution to give consistent support to the struggle against terrorism as the greatest danger that now faces us and to the effort necessary to destroy its organization, leadership, and sponsors.

Perez Zagorin
Charlottesville, VA

Perez Zagorin is Joseph C. Wilson Professor of History, Emeritus, at the University of Rochester and a Fellow of the Shannon Center for Advanced Studies at the University of Virginia. He has been a Fellow of the American Academy since 1976.

March 12, 2002

Ira Katznelson replies:

As it turns out, I was reading Hannah Arendt's 1953 reply to Eric Voegelin's sharp objections to *The Origins of Totalitarianism* when Perez Zagorin's tough faultfinding came to my attention. Tempted as I am to respond in kind – I take no pleasure in being upbraided by a distinguished intellectual historian of early modern Europe for flabby and misty abstractness, empty and pretentious formulations, even a lack of empathy for “suffering, damage, and loss of life” – I will try to follow the example set by Arendt by addressing the substance, not the shrill and hectoring tone, of Zagorin's critique.

I also will leave aside Professor Zagorin's observations concerning current events about which neither he nor I has any special expertise or original contribution to offer. I comment, instead, on the partially overlapping principal subjects in his critique: the salience and significance of Arendt's considerations on radical evil, the state of debate in American intellectual life, and the qualities of modern political liberalism.

Professor Zagorin badly misreads (or has not read) *The Origins of Totalitarianism*. He writes as if the attempt in that book to turn a traditionally theological concept into a tool for the systematic analysis of twentieth-century desolation were intended by its author to be an alternative to historical accounts of the terrible regimes and barbaric practices in the West in the twentieth century. Nothing could be further from an accurate characterization. After all, Arendt placed radical evil, the practices and ideas that made human beings superfluous by erasing their moral and juridical status, at the core of her assessment of the camps and the terror in Hitler's Reich and Stalin's Soviet Union. For Arendt, the developments enumerated by Professor Zagorin constituted a rupture in human affairs so profound that “all traditional elements of our political and spiritual world were dissolved.” For just this reason, she rejected Voegelin's trans-historical assessment of the dark side of human nature, just the sort Professor Zagorin advances when he writes about death and evil as “inevitable facts of human existence.” At this level of abstraction, who could differ? But how death and evil are caused – by whom, for what purposes, and by what means – were Arendt's issues. As she predicted, they sadly remain ours.

Regarding the current scholarly climate, Professor Zagorin would like me to side with him. I cannot, for I resist the simple terms he submits. I reject, as does he, appraisals of modernity that discard liberalism and the tradition of the Enlightenment and discredit the values of toleration, reason, freedom, rights, and consent as hallmarks of hypocrisy and masks for domination. I nevertheless refuse to join him in his surprisingly ahistorical justification for liberalism and the Enlightenment as innocent, un-

tainted enemies of darkness, an excessively self-satisfied stance that Professor Zagorin's letter exemplifies. These, I insist, are not, and must not be, the only two positions on offer.

Let there be no mistake. I am a liberal. Nowhere do I imply, as he suggests, that "the world is in nearly as much danger from the sins of liberalism as . . . from Islamic terrorism." But I understand the liberal tradition not to be a closed or fixed location, but a bounded site for contests about its content and capacities. Such controversies include debates about its range of membership and its scope for pluralism. In stating my outlook, I identified these, among others, as basic puzzles Western – indeed, global – liberalism still must address. I stand by these views, which were reinforced when I read Professor Zagorin's prose about "the Islamic world and the forces within it that harbor and cultivate a deadly envy, hatred, and enmity of free and open pluralistic societies," as if these traits were especially or necessarily more robust within these countries than in, say, Cambodia, China, Germany, Russia, or South Africa in his and my lifetimes.

When Professor Zagorin does not, or cannot, disagree, he changes the subject. Rather than deal with the pressing present conundrum of how liberals might best engage with nonliberal cultures and beliefs, he reminds us that terrorists are a real threat we must defeat. Surely this is so. Yet wars on terrorism – hot or cold, overt or covert, narrowly targeted or broadly circumscribed – cannot define the kind of liberalism we should wish to have. Professor Zagorin tells us not to worry, that "liberalism is a hardy growth that has strong roots in contemporary Western civilization." But exactly which liberalism does he have in mind? Where would he situate its boundaries of exclu-

sion? How would he seek to array its institutions? Which liberties might he sacrifice to battle terror? Why, finally, does the history of the last brutal century make him so complacent about liberalism's invincibility?

Regarding the word "race"

March 1, 2002

To the Editor:

In their essays in the Winter 2002 issue of *Dædalus*, both James F. Crow and Ernst Mayr dwell on the concept of race. Both recognize that it is a geographic concept, a concept that embraces "interbreeding." That Eskimos and Australian aborigines, for example, may resemble one another in some manner does not place them in the same race: they do not normally interbreed; they are geographically isolated. Geneticists have another term that covers such similarities: phenotype.

Mayr, more than Crow, stresses the term "geographic race," ostensibly an unambiguous concept. Indeed, Mayr, as does Joseph L. Graves, Jr., in his book, *The Emperor's New Clothes* (2001), equates "geographical race" with "subspecies." Thus, Mayr seems to accept that the human species at one time consisted of subspecies, whereas Graves argues that time has been too brief for human subspeciation to occur. Crow recognizes that the major geographic races – African, European, and Asiatic – are now "mixed," but, in his opinion, this does not negate the usefulness of the word "race"; as he says: "I believe that the word 'race' can be meaningfully applied to groups that are partially mixed."

I also believe that the word "race" can be useful; if it did not exist, another word would soon be invented in its

place. Unlike Crow and Mayr, however, I regard “race” as a term of convenience – and one too often used to disenfranchise pseudoscientifically defined groups of human beings.

My reference to race as a legitimate “term of convenience” can be illustrated by a hypothetical example. When traveling south to Winston-Salem, North Carolina, I travel on Interstate I-77. As I approach the North Carolina-Virginia state line, I encounter a splendid view of the North Carolina Piedmont lying hundreds of feet below the mountainside on which I am traveling. As a student of *Drosophila*, I might have noticed that the flies living in the Piedmont area are lighter in color than those that are found at the higher elevation. In discussing this fact with colleagues, I would refer to the Piedmont and the montane races.

A second *Drosophilist* might study biochemical variation in the same species of flies. For unknown reasons – perhaps because of differences in the soil or in the flora of this region – flies inhabiting areas to the east of I-77 may be largely characterized by possessing one form of a particular enzyme, while those found beyond I-77 to the west have a different molecular form of the same enzyme. In describing his (or her) observations, that colleague might refer to the east and west races of that species; again, that terminology would be a matter of convenience. In both instances – north/south with respect to color; east/west with respect to biochemical differences – a word is needed for the sake of discourse; thus, “race.”

In the past, I have heard Will Provine, Cornell University’s historian of science, discuss the changing views of biologists regarding race that occurred during and following World War II. Before the war, racial differences were said to be important; after the war, racial differences

were said to be inconsequential. Here, in Provine’s opinion, was an abrupt change in the attitude of scientists that was not based on new scientific evidence. Pre–World War II, races are important; post–World War II (presumably in revulsion to Nazi doctrines), races are unimportant.

Overlooked by Provine, in my opinion, was the changed definition of “race.” Before World War II, species were identified by visible, morphological characteristics. Pinned specimens in museum cabinets were the taxonomist’s arbiters for classification. When experimental biologists discovered that various morphologically similar (even identical) geographic strains were reproductively isolated from one another (hybrids being inviable or sterile), these strains were referred to as “races.”

Largely through the efforts of Mayr and others, such as Theodosius Dobzhansky and G. Ledyard Stebbins, the taxonomic species concept of race was replaced by a “biological” concept. Former “races” such as race A and race B of *Drosophila pseudobscura* were reclassified as species. Consequently, the pre–World War II races that included distinct species (thus justifying the notion that “racial” differences are important) gave way to post–World War II races that, to a large extent, are merely convenient labels, as illustrated above.

In this regard, Graves’s contention that the human species does not include well-defined subspecies is correct. At the same time, the human species *does* include races (where “race” is a descriptive term of convenience).

Still, Crow’s contention that, even though they are partially mixed, the term “race” is useful requires further comment. In 1953, H. Bentley Glass and C. C. Li published an account of the intermixture of Europeans (white) and

Africans (black) in the United States. They calculated that 30 percent or more of the genes found among blacks had their origin in the white population.

Why didn't Glass and Li also calculate the proportion of genes that were carried by whites but have their origins in Africa? In part, because blacks represent a relatively small percentage of the U.S. population. Suppose, for example, that two tablespoons of water are exchanged between a cup of boiling water and a gallon of cold water. The amount exchanged can be estimated more accurately from the change of temperature in the cup than that in the much larger container of cold water.

Aside from the technical point raised in the previous paragraph, there is another reason for studying the flow of genes from whites to blacks: by the definition generally accepted by Americans, black genes cannot enter the white population! Anyone with a black ancestor is regarded as black. The possession of any gene that is characteristic of Africans makes its carrier Afro-American *by definition*. That definition is foolish, of course. Its underlying logic led one of Haiti's presidents to assert that some 95 percent of all Haitians are white! That is the conclusion that logically follows from the inverse of the American definition: any person who has a white ancestor is white, by definition.

These foolish, inconsistent definitions of race are the ones that must be exposed and discarded. Afro-Americans recently held a congress in Philadelphia. The range of phenotypes both among panelists and among members of the audience was huge. The only commonality was that these persons considered themselves to be Afro-Americans, probably because of the treatment they generally receive from the "white" population.

What of Crow's view "that 'race' can

be meaningfully applied to groups that are partially mixed"? In effect, the meaningfulness depends on the social value we attach to racial profiling. Glass and Li, in their study of two generations ago, calculated that nearly one-third of the genes carried by Afro-Americans were of Caucasian origin; that proportion today probably exceeds 40 percent. In a subsequent study, T. E. Reed (1969) showed that the Glass-Li estimate was an average; the degree of mixing depends largely on locality within the United States: 8–10 percent per generation in California, Michigan, and New York; 1–3 percent in Georgia and South Carolina. In Northern metropolitan areas and in California, the proportion of "white" genes in "black" populations today more than likely exceeds 50 percent.

My conclusion? "Race" in the American context is largely a term of discrimination, of disenfranchisement, and of bigotry; it serves no useful purpose – not even with respect to screening for otherwise commendable medical purposes.

Bruce Wallace
Blacksburg, VA

Bruce Wallace, a Fellow of the American Academy since 1971, is University Distinguished Professor Emeritus at Virginia Polytechnic Institute and State University.

The virtues of inequality

February 25, 2002

To the Editor:

I have read the Winter 2002 issue of *Dædalus* on inequality and find myself both disappointed and puzzled by it. With the exception of Christopher

Jencks, no one attempted to address the effects or consequences of inequality. There is no discussion of the optimal amount of inequality, which would seem reasonable to have included. But my major complaint is that the scope of inequality that was discussed was very limited: namely, to inequality of income. So far as I could tell, no one systematically discussed the inequality of consumption, which at least in the United States is far more equally distributed than is income. Has inequality increased between countries in such important measures of well-being as life expectancy and infant mortality? If there has been an increase in inequality, is this necessarily bad?

Let us look at life expectancy by country. Between 1960 and 1996 life expectancy in 33 low-income countries increased from 44 to 64 years. And inequality among the nations of the world fell for this important indicator of well-being, with inequality measured by the ratio of the standard deviation of the country data divided by the mean – this ratio was smaller in 1996 than in 1960. But on a related measure, inequality increased. In 30 low-income countries infant mortality declined from 157 per thousand births in 1960 to 62 in 1996, a decline of 62 percent in 36 years. But inequality, as measured by the coefficient of variation, increased, because the percentage of decline in high-income countries was even greater. However, the increase in inequality was accompanied by a major

decline in infant mortality among the poorest of nations.

Developments in the decline in infant mortality that have occurred in the world suggest that in discussions of inequality we should at least stop to ask if the most disadvantaged have gained or lost absolutely when inequality increases. The decline in infant mortality in low-income countries has occurred at a much lower level of income than similar declines were achieved in the industrial countries and came at roughly the same annual rate. Thus, something has happened in the world – globalization – that has benefited the people of low-income countries.

Not so very long ago there was relatively little inequality in the world. The World Bank estimates that in 1820, 75 percent of the world's population lived on less than \$1 per day (1993 prices). How many of us would want to return to that world?

D. Gale Johnson
Chicago, IL

P.S. The World Bank does not create the *Human Development Report* (p. 12); it is a product of the United Nations Development Programme. The World Bank produces the *World Development Report*.

D. Gale Johnson, a Fellow of the American Academy since 1976, is a professor of economics at the University of Chicago.

AMERICAN ACADEMY
OF ARTS & SCIENCES

President

Patricia Meyer Spacks

Executive Officer

Leslie Cohen Berlowitz

Vice President

Louis W. Cabot

Secretary

Emilio Bizzi

Treasurer

Peter S. Lynch

Editor

Steven Marcus

Vice President, Midwest Center

Martin Dworkin

Vice President, Western Center

John R. Hogness

Daedalus Board of Editors Committee

Steven Marcus, *Chair, ex officio*, Joyce Appleby,
Russell Banks, Stanley Hoffmann, Donald
Kennedy, Martha C. Nussbaum, Neil J. Smelser,
Rosanna Warren, Steven Weinberg; *ex officio*:
Patricia Meyer Spacks, Leslie C. Berlowitz

Committee on Publications & Public Relations

Guy W. Nichols, *Chair*, Emilio Bizzi, Joan Bok,
Jesse H. Choper, Denis Donoghue, Jerome Kagan,
Jerrold Meinwald; *ex officio*: Patricia Meyer
Spacks, Steven Marcus, Leslie C. Berlowitz

Inside back cover: A web advertisement for the world's first patented animal, produced and distributed by Taconic Farms, Inc. of Germantown, New York. Taconic's distribution of the v-ha-Ras(TG.AC) OncoMouse™ Transgenic Model, whose germ-line contains an activated oncogene, is covered by an exclusive worldwide license from DuPont pertaining to rights under U.S. Patent 4,736,866 and other related and corresponding patents. See Daniel J. Kevles, *Of mice & money*, pages 78 – 88.



coming up in Dædalus:

- on education
after the
culture wars Diane Ravitch, Howard Gardner, TheodoreSizer, E. D. Hirsch, Jr.,
Deborah Meier, Patricia Graham, Thomas Bender, Joyce Appleby,
Robert Boyers, Catharine Stimpson, Andrew Delbanco, Jeffrey
Mirel, plus a classic text by Antonio Gramsci, Joel Cohen &
David Bloom on universal education as a global project, a story by
Madison Smartt Bell, a poem by Larissa Szporluk, and notes by
Donald Kennedy, Arthur Kantrowitz, Richard Sennett, and
Richard Shweder
- on beauty Susan Sontag, Arthur C. Danto, Denis Donoghue, Dave Hickey,
Alexander Nehamas, Robert Campbell, David Carrier, Margo
Jefferson, Kathy L. Peiss, and Nancy Etcoff
- on international
justice Stanley Hoffmann, Martha C. Nussbaum, Jean Bethke Elshtain,
Stephen Krasner & Jack Goldsmith, Gary Bass, David Rieff,
Anne-Marie Slaughter, Charles R. Beitz, Jonathan Schell, Carl
Kaysen & George Rathjens, and Anthony Lewis
- on time Thomas Gold, Michael Rosbash, Danielle Allen, Mary Douglas,
Anthony Grafton, J. Hillis Miller, David S. Landes, Michael
Gazzaniga, D. Graham Burnett, and Richard K. Fenn
- on the meaning
of science Alan Lightman, Evelyn Fox Keller, Peter Wolynes, Susan Haack,
David Pingree, Peter Pesic, Margaret C. Jacob, and others
- on secularization
& fundamentalism a symposium featuring Martin E. Marty, Nikki Keddie, Henry
Munson, and others

U.S. \$9.95/Canada \$12.95