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THE COMPETITION OF TECHNOLOGIES IN MARKETS FOR IDEAS: COPYRIGHT AND FAIR USE IN EVOLUTIONARY PERSPECTIVE

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'From its beginning', observed Justice Stevens for the majority in *Sony Corp* v. *Universal City Studios*,[1] 'the law of copyright has developed in response to significant changes in technology'. More than just a truism, this recognition of technological advance as the driving force in the historical evolution of new forms of property reflects a substantial virtue of the lawyer's approach to the law. Despite the tendency of much recent economic analysis of law to fix attention on the achievement of stable, Pareto efficient equilibrium in the allocation of resources, the central fact of legal life has always been disequilibrium. How the law adapts to the continuous change in the opportunities and constraints which confront each of us in daily life largely determines the shape and direction of social existence itself. Models of economic equilibrium, having little room for the processes by which new knowledge and thus new economic and social environments are created, must suppress precisely those human activities, purposeful experiment, innovation, and the search for novel solutions to familiar problems, which propel this change. But as all sides in *Sony* acknowledge, it is the very success of this constant search for technical knowledge, coupled with the individual pursuit of self-interest, which poses and reposes the question of infringement over time and, with each breakthrough, demands responsive adjustment in the formulation and enforcement of property rights.

We argue here that, despite the advantages of this historical and evolutionary orientation, the decisions of both the Supreme Court in *Sony* and of the Court of Claims in its closely related predecessor, *Williams & Wilkins Co.* v. *United States*,[2] betray a fundamental misunderstanding of the ways in which new technical knowledge is created and used and the significance to these processes of the various rights and remedies which have formed the basis of Anglo-American copyright law. This misunderstanding, moreover, is itself the product of a misleading economic

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analysis of markets for ideas which has in recent years come to play an increasingly explicit and influential role in copyright litigation through the doctrine of 'fair use'. The result has been a revolutionary and, in our view, unjustified expansion of fair use, a 'collectivization' of the right to intellectual property which threatens not only the private, decentralized production of intellectual goods but, in significant measure, the incentives and environmental conditions which have traditionally fostered technological innovation in this area itself.

We begin in Section I with a close look at the relationship between the definition and placement of property rights in general and the creation of incentives for the discovery and use of particular kinds of technical knowledge. Here we hope to illuminate a critical shortcoming of the economics upon which the 'new fair use' has been based and to propose a sounder theoretical basis for understanding the production and distribution of ideas. In Section II, we turn specifically to the problem of ideas as economic commodities, arguing that they differ in essential respects from both private and public goods as they are conventionally defined, and that the characteristics these intellectual goods display in commerce at any moment are determined primarily by the current state of relevant technology. After a brief sketch in Section III of the history of copyright and fair use from the perspective of what we call the 'competition of technologies', we look critically at the striking new law made in *Williams & Wilkins* and *Sony*, and conclude in Section IV with a discussion of the adverse consequences likely to flow from the radical extension of fair use and a proposal for recasting the law to avoid them.

I. THE COMPETITION OF TECHNOLOGIES

A. Competition, technology and property

A plausible account of external effects in market regimes and their relation to the ancient legal institutions of property and liability is the first task of any satisfactory economic analysis of law. But this central problem has stubbornly resisted solution within the conceptual vocabulary of neoclassical economics; it seems fair to say that, to those trained in law or sensitive to its nuances, the cumulative efforts of many able scholars to construct an empirically compelling theory of externality on the neoclassical cornerstones of optimization and equilibrium have, in the end, largely proven artificial and unpersuasive.

The reason for this is the deep commitment of neoclassical analysis to the ideal of Pareto efficiency and its consequent focus on those states of the economic environment within which stable, efficient equilibrium can or cannot be achieved through self-interested behavior in markets. As we elaborate below, this notion of economic environment refers simply to those situational factors which create or destroy incentives for mutually beneficial exchange and make it more or less difficult for people to engage in it. We emphasize it because it has become intimately and, in our view, inappositely linked in neoclassical theory to the concept of competition. Contrary to the everyday understanding of competition as an *activity*, a contest between rivals acting in the service of their own purposes, neoclassical economists portray competition as a *state of affairs*, a condition of the economic environment which is more or less likely to result in the achievement of Pareto efficiency. Indeed, as Ronald Coase[3] cogently demonstrated a quarter century ago, where competition in this sense is 'perfect', the prolonged existence of even the most complex, multilateral externality relationships is impossible. In the laboratory climate of perfect

competition, external effects are quickly dissolved by the completion of one or more 'efficient exchanges', instantaneous transactions which reallocate specific resources or legal entitlements to the self-perceived benefit of all parties involved. Seen in this way, economic activity moves inexorably toward both optimality and its own cessation; once Pareto efficiency is attained, there is no impetus for the further reallocation of resources because there are no more efficient exchanges to be made.

Where Pareto efficiency is the goal of public policy, then, environmental departures from the conditions of perfect competition become occasions for legal or regulatory intervention in the market designed to achieve it. If appropriate measures can be taken to create or restore a more competitive environment itself, so that decentralized market exchange can work its optimizing magic on the allocation of resources, these are likely to be prescribed first. But where they cannot, the object of policy in the name of efficiency generally shifts to the direct, centralized assignment by the state of those resources (and only those) which it knows about and is able to control. Judges and regulators are called upon to 'mimic' the market by guessing, in the absence of relevant market values to guide them, the precise terms of the efficient equilibrium which would have been achieved had these known resources been allocated by voluntary exchange, and then to direct physical commodities and assign legal entitlements accordingly by fiat.

In the context of copyright and fair use, this analytical and normative framework is well illustrated by a thoughtful and valuable recent essay by Wendy Gordon.[4] Recognizing the economic function of copyright itself as a means of encouraging the production and dissemination of ideas where markets alone would fail to do so, she extends this approach to markets in individual copyrights and their associated licenses.[5] Where free bargaining between copyright owners and potential users of copyrighted material is possible, consensual transfers in the market can be relied upon to achieve efficiency in the allocation of rights to intellectual property. But where market conditions make such transactions impossible or prohibitively costly, or where copyright owners are unable in practice to enforce their rights effectively against unauthorized users, Pareto efficiency demands recourse to centralized allocational devices, the most prominent of which is the judicial doctrine of fair use.

Gordon argues that, given failure in the market for individual copyrights, courts ought to employ fair use so as to transfer the copyright, without compensation, from its original owner to users who would otherwise be unlawful infringers where they determine that two essential criteria have been met. First, plaintiff's loss from the transfer of the copyright must be exceeded by the benefits, which may be widely dispersed, derived from defendant's use of it, so that it may be said that net social welfare has been increased by the court's reallocation of the right in question.[6] Second, the incentives of both the instant copyright owner and others similarly situated to produce the intellectual good itself in the future must not be substantially eroded by the uncompensated transfer of the copyright.[7] In such cases, she contends, 'Fair use implies the *consent* of the copyright owner by looking to whether the owner would have consented under ideal market conditions'.[8]

Gordon correctly observes that reasoning of this kind 'reveals itself in many of the decisions reached by the courts in the copyright area',[9] particularly those in *Williams & Wilkins* and *Sony*.[10] But though she plainly approves of this general approach to fair use, she does not hesitate to take strong issue with the estimations of specific social costs and benefits and of institutional possibilities which particular courts have made in their attempts to employ it.[11] This should hardly be surprising for, as Gordon concedes,[12] guessing at such values in the postulated absence of market prices is an

exceedingly difficult endeavor for even the most scrupulous of courts, whose judgments will inevitably reflect the particular subjective perceptions and social agendas of their members.

This, we must emphasize, is not to say that the economic information necessary to characterize Pareto efficiency does not exist; it most assuredly does, in fragmented, inchoate and often contradictory form, in the minds of thousands or millions of people dispersed throughout the economic system. The issues, rather, are how the information which already exists is to be extracted and put to use in determining how to allocate known resources efficiently,[13] and how *new* knowledge can be discovered and used to create new resources and additional human welfare.[14] Even static efficiency achieved by fiat requires the transmission to the central authority in useful form of specialized, personal knowledge about existing preferences, costs, constraints, and opportunities which exists but is scattered in millions of individuals who might or might not be inclined to cooperate in revealing it. But true efficiency surely entails effective response to new situations and opportunities as well, and this demands knowledge not of what *is* but of what *might be* if things were done differently at certain times and places. Successful allocators must somehow call this information to the center as well. As Gordon's detailed treatment of fair use makes clear, these tasks are still more daunting for courts, tightly constrained as they are in the nature and quality of the evidence they are permitted to consider.

But as economists of all stripes never tire of pointing out, where they are feasible, markets fully master this division of knowledge, and largely without the need for centralized administration at all. They do so by decentralizing allocational decisions and placing the countless individual possessors of relevant information in competition with one another for the means to realize their own plans and desires. It is the *activity* of competition which encourages self-interested individuals not only to reveal what they already know when and where it is needed to move resources from less to more valuable uses, but to create or discover new knowledge and, by putting it to the service of their own purposes, make its benefits available to others as well. It is competition in this second sense which is the key to understanding the operation and evolution of markets for ideas.

Consider the 'Coase Theorem', to which we have briefly referred. In perfectly competitive environments, where costs of contracting are low, and where the array of costs and benefits generated by the superposition of particular activities upon the underlying distribution of preferences, endowments and technologies[15] is given, the dissolution of externality relationships awaits only the definition and assignment of appropriate property rights or liability rules. Once the weight of law or custom is thrown behind one or another of the competing claims of cost imposer and cost bearer, any reallocation required to attain Pareto efficient equilibrium will follow from the recognition and exploitation of the opportunities for mutually beneficial exchange implicit in the initial misallocation. This means that the generation and persistence of external effects can be explained only by the failure of one or more of the conditions which define the environment of perfect competition. Where there is externality, costs of contracting must be high, or property rights insufficiently articulated, or the very costs and benefits upon which efficient exchange is predicated must themselves be made uncertain by fluid preferences or technologies.

The nature of this rich interrelationship between externality, costs of contracting, property and technology was illuminated in the provocative early work of Harold Demsetz.[16] Building upon Coase's insights, Demsetz argued that insofar as property rights can be understood as a means by which personal incentives can be directed

toward the resolution of externality relationships through market exchange, the creation of new forms of property can be associated with the emergence of new or different sources of externality in the marketplace. These novel external effects are themselves the result of changes in economic values caused by shifting preferences or the continuing development of new technologies to which existing property rights are poorly attuned. The concept of property thus acquires an explicit functional dimension; the existence of particular forms of property is rationalized by the role each plays in maintaining or extending the ability of the market order to direct resources toward their most valuable use. Demsetz makes clear that the process of continual adjustment implied by this analysis requires neither that those responsible for the articulation of new property rights be conscious of this larger economic rationale for them, nor that the particular forms of property evolved at any stage of the process be 'optimal' solutions to the problems which motivate their development. Rather, 'in a society that weights the achievement of efficiency heavily' the viability of these 'legal and moral experiments'[17] depends directly upon their ability to attenuate the external effects associated with important changes in technology and market values.

An essential element of this work is its focus upon underlying and largely implicit processes of development rather than the deterministic prediction of the precise, qualitative forms of property which might evolve in the future within a given system of market institutions. But a critical shortcoming is its failure to specify an explicit evolutionary dynamic, a mechanism grounded in the purposive behavior of individuals which is sensitive to the environment within which exchange must take place and stimulates the development of adaptive technologies or forms of property in response to shifts in environmental conditions which threaten the ability of the market to organize efficient transactions. Without such specification, analysis is limited simply to identifying the 'problem-solving' character of particular forms at a given moment in time and invites the collapse of cause and effect into sterile tautology. The observation that market or organizational failure would result from the non-performance of a particular function within a social system, without more, necessarily becomes the basis for the *explanation* of whatever structure is seen to perform that function. The methodological trap thus set is precisely that which ensnared much of early functional analysis in anthropology and sociology, either the unspoken postulation of some *causa finalis* which demands the system's continuity or, as in Demsetz' analysis, the equally untenable imputation of purposeful or goal-directed behavior to social systems as such rather than to the individuals who comprise them.[18]

The activity of competition supplies this essential evolutionary dynamic. Consider two closely related technological problems which, to varying degrees, confront the sellers of all commodities in markets. Sellers must, of course, devise ways to identify and exchange information with prospective buyers, negotiate mutually acceptable terms of trade, and arrange for the actual transfer of resources once an agreement has been reached. But they must also protect this channel of exchange with buyers against the constant threat of those who would, where possible, breach the channel so as to extract the value of the commodity being traded without purchasing it from the seller. The seller's attempt to discriminate between buyers and 'free riders' in this way provides the setting for an unceasing 'competition of technologies' between sellers and free riders. Just as sellers must call upon various physical and organizational technologies both to ease the free flow of information and goods between themselves and willing buyers and to maintain effective exclusionary barriers to free riding,

potential free riders are themselves induced to search out the technical means by which the exclusive relationship between buyer and seller can be penetrated for their own benefit.

The tentative outcome of this competition at any moment depends both upon the intrinsic characteristics of the commodity at issue and the state of the technological art. Where the seller retains the upper hand, external effects are attenuated and the commodity can be traded in markets as a private good. Conversely, success for the free rider threatens the very existence of markets and, absent the emergence of a countervailing exclusionary technology, generally demands the development of supplementary or alternative institutional structures if production and distribution of the good are to be organized at all. There are, moreover, important situations in which the same technological means serve both these competing ends, so that increasing the access of willing buyers to the commodity simultaneously enhances the ability of free riders to enjoy it as well. As we argue more fully below, sellers faced with this particular dilemma may have no recourse but to attempt to invoke the coercive power of the state to prevent free riders from availing themselves of the double-edged technology; in this sense, the property rights or liability rules which result are legal instruments which augment the effectiveness of the physical and organizational technologies already at the seller's disposal in protecting his channel to willing buyers. In this way, the self-interested behavior of specific actors in the marketplace drives an evolutionary dialogue in which the concepts of technology, externality and property are intimately bound up in a continuous chain of causation and consequence.

B. Technologies of discriminating supply

The broad range of phenomena which inhibit free exchange in markets is commonly subsumed under the general heading of 'transaction costs'. These are the neoclassical *bête noire*, the agents which pollute competitive environments and lead to market failure. They are often analogized to frictions which, like a sandbar on a riverbed, impede the flow of information and resources between willing transactors and must therefore be reduced or overcome wherever possible so that efficient exchange can be satisfactorily organized. But the same sand that makes sandbars also makes riverbanks; one need only imagine trying to climb stairs or stop at a streetcorner in a world without friction to appreciate the vital contribution it makes to life of all kinds. So it is with transaction cost and the organization of markets.

Every entrepreneur contemplating production for exchange in markets must either rely upon existing technologies or devise new ones to address the problems of discriminating supply. Technically feasible and economic ways must be found both to consummate efficient exchanges by directing the commodity to those willing to pay for it and to exclude all others from enjoying the good without benefit of purchase. The costs of exchange associated with the first of these problems are generated by any obstacle to the instantaneous transfer and consumption of the good once the buyer has resolved to seek its purchase. Some of these costs, particularly those related to identifying and contacting potential trading partners, establishing the terms of exchange, and physically transporting the commodity from seller to buyer, arise in a broad spectrum of trading environments. Others, such as the costs borne by the buyer in extracting the full subjective value for which the purchase was undertaken from the tangible object which actually passes to him or her in commerce, occur in more specialized contexts and are not as well understood; we examine one important manifestation of these costs in Section II.

Whatever their source, the sum of these exchange costs must be driven below the net welfare or profit which the exchange itself returns to their bearers, or the first requisite of market organization, the opening of a channel of exchange between seller and buyer, cannot be realized. This can, of course, sometimes be achieved simply by favorable shifts in individual preferences; where the gains in personal welfare at stake in the transaction become so great as to overcome the frictions which inhibit it, the channel can be opened, as it were, by brute force. In such cases, however, the market is made to work almost in spite of itself, for the causes of failure remain unaddressed and will return to frustrate exchange each time the benefits of transacting fall below its cost. Only where the costs of exchange are reduced directly by improvements in physical or organizational technology (or by law) can the reliability of the channel be guaranteed even in the face of less intense preferences and the market failure in question be said to be 'corrected'.

But even where preferences and technique combine to open the channel, the problem of exclusion still remains. Technologies which cultivate the very frictions impeding the flow of information and value between seller and buyer must be adopted by the entrepreneur to close this channel to free riders. As we shall see, this may involve more than simply denying physical possession of the tangible object being exchanged to the free rider; what is at issue is his or her ability to penetrate the channel so as to apprehend some or all of the value which possession of the object enables buyers to enjoy. The costs to the interloper of achieving this penetration must thus be raised beyond the subjective returns to doing so if free riding is to be deterred and the incentives of willing buyers preserved.

Where this has been accomplished, the initiative passes to the free rider, who must somehow breach the barrier thus created or resort to purchasing the seller's product in order to extract its value. Here, too, the alternatives of technique and brute force are presented. Newly developed or improved technologies may enable most or all free riders to attack and dissolve the barrier directly, but without them, the channel will be pierced only by those rare individuals for whom the costs of surmounting the barriers are smaller than both the value of consumption and the purchase price of the commodity.[19] Hence the competition of technologies, in which entrepreneurs attempt simultaneously to overcome the obstacles separating them from willing buyers and to place corresponding impediments in the path of free riders, who are constantly in search of ways to dissipate them. The entrepreneur must succeed both in opening a sufficiently costless channel to buyers *and* maintaining effective exclusionary barriers to free riding before he or she can produce profitably and become a seller of goods.

To illustrate, consider a university which wishes to offer its faculty members a club in which they can relax and dine in the company of their colleagues. The atmosphere of the club is important to the faculty; they want neither the intrusion of outsiders nor the commercial air of an ordinary restaurant in which money changes hands each time food or drink is consumed. To meet these requirements, the university proposes to place an unguarded buffet in a suitable room and to charge members a fixed fee each month which eliminates the need for payment at the time of service. The strict privacy demanded by the faculty is to be preserved, and free riding at the buffet deterred, by the installation of a sophisticated lock at the door and the distribution of keys to members only.

This arrangement will suffice to protect the university's channel to its buyers only so long as the costs of free riding remain greater than its benefits. Shifts in the value of free riding might alter this relation were, for example, extreme poverty to threaten

the residents of the university town with starvation and induce some to expend the considerable energies required to break into the club and reach the buffet. More likely, perhaps, is a technological breakthrough which enabled outsiders to open the lock easily and cheaply without a key; the resultant intrusions would destroy the university's ability to meet its buyers' demand for privacy even if the intruders took nothing at all from the buffet, while the posting of a guard at the door would ruin the informal atmosphere the professors cherish. Without some countervailing response to this new breaching technology, market exchange is made impossible, not by high exchange costs between otherwise willing sellers and buyers, but rather by the dissolution of essential barriers between sellers and free riders.

These various technologies and counter-technologies arise from many sources. To clear a channel to willing buyers, for example, sellers themselves (or those in business to serve their needs) may experiment with advertising technologies designed to reach and inform large numbers of prospective buyers or with transport and packaging technologies directed toward expanding the geographical scope of market exchange. Individual sellers and buyers may collaborate in the creation of new forms of business organization and contracting which preserve valuable trading relationships against the exchange costs associated with bounded rationality and imperfect vision of the future.[20] More inclusive and largely implicit collaboration is possible as well; specific instances of what Kenneth Arrow[21] calls the 'invisible institutions' of ethics and morality may take root and thrive because their observance generally serves the individual interest of all traders in preserving markets threatened by irreducible uncertainty regarding the quality of proffered commodities or the reliability of personal commitments or representations.

Where these less formal mechanisms of trust and fair dealing fail, explicit legal regulation will often be substituted for them in pursuit of the same result. But other legal instruments directed toward the reduction of exchange costs are manifested in more subtle forms which, like moral or ethical norms, are the results of continuous evolutionary processes rather than the products of conscious human design. In this way, the venerable legal institutions of liability in tort and crime have slowly adapted over centuries to address the costs of exchange in changing environments hostile to market organization, extracting and propagating essential price information and bringing the buyers and sellers of particular kinds of entitlements together for purposes of efficient exchange.[22]

Similar dynamics are at work at the interface between seller and free rider. While physical and organizational means of exclusion are frequently created by or at the behest of the seller, free riders generally find the costs of developing breaching technologies on their own far greater than those of simply purchasing the good itself. They must rely instead upon technologies created by others, some developed by entrepreneurs openly seeking to profit from enabling the seller's channel to be penetrated, others whose applicability for this purpose is unintended and largely fortuitous. Still others may be devised by sellers themselves to open the channel to buyers but be of use to free riders as well, a recurrent and important phenomenon in markets for ideas. The free rider's successful deployment of any such technology demands some response in kind from the seller. Should none be at hand, markets which serve the individual interests of large numbers of people may be imperiled and collective action required to preserve them.

Here, too, such action need not have the force of law if ethical norms regarding theft are sufficiently respected to check the self-interest of free riders. But where such codes alone cannot induce forebearance, or where the morality of free riding in

particular circumstances is undefined or ambiguous, markets can be protected only by the articulation of property rights and associated sanctions which augment the exclusionary technologies at the seller's disposal and effectively deter free riding (and, in some cases, the transfer of technology which abets it). These rights, in turn, will suffice only until yet another technological innovation provides free riders with the means to pierce the seller's channel in ways not anticipated or explicitly foreclosed by existing law. It is the permanence of these competing incentives of seller and free rider to discover new technical knowledge and use it for their own ends, set against a backdrop of constantly changing preferences and technologies elsewhere in the marketplace, which drives the continuous evolution of new forms of property and corresponding rules of liability.

Given the intrinsic unpredictability of technological advance and the creation of new knowledge, such discovery must in its nature be a 'satisficing' rather than an 'optimizing' process, and this, combined with the qualitative, cumulative character of the legal forms which develop alongside it, severely constrains our ability to predict with confidence or precision.[23] But at certain critical points in this institutional history, rapid change in breaching technology demands of sellers an immediate technical or organizational response drawn from a limited range of alternatives. At such moments, our analysis may offer not only a deeper understanding of the evolutionary past, but tentative and imprecise glimpses into the future as well. We stand now at just such a watershed in the evolution of markets for ideas, so let us turn to the special problems posed by the production and dissemination of knowledge itself.

II. IDEAS AS ECONOMIC COMMODITIES

The importance of new or creative ideas needs no elaboration here. Our purpose in this section is to show that what we call 'intellectual goods', ideas which have been encoded in some tangible or symbolic medium of communication, are best understood as autonomous economic commodities, unlike either private or public goods, and that the particular characteristics displayed by intellectual goods in exchange are primarily determined by the current state of technology. Where the technologies of information and communication are relatively primitive, the intellectual good generally exists in an 'impure' form, reflecting the essential properties of private goods, but as these technologies become more advanced, the intellectual good may become 'purer', taking on some of the attributes of public goods. We shall argue that intellectual goods can be traded in markets as private goods only so long as the governing technology renders them impure and that technological change which purifies the intellectual good will require some kind of collective action to ensure that the incentives to produce and purchase the good in markets are maintained.

A. Intellectual goods and the role of the host

Ideas are, in their nature, incorporeal. Before they can be communicated to and used by others, their originator must first transform them into intellectual goods by encoding them in a symbolic form which can be recognized and decoded by potential users, and then embed them within some physical carrier or 'host'[24] which will allow them to be effectively transmitted from one person to another. In some cases, the same tangible object serves both to encode the idea and store it for transportation between individuals. This is often true, for example, of inventions, where the idea is

expressed in a new or unique combination of existing material objects which can themselves be protected and placed directly into the stream of commerce as private property. In literature and the arts, by contrast, the intellectual good and its host are generally quite distinct; once the creative idea has been encoded in a particular arrangement of words, sounds or visual images which can usefully be deciphered by others, the resultant intellectual good must itself be 'packaged' within a host of some kind before consumers can use and enjoy it. But despite our inability to separate them completely in practice, it is essential to recognize that the intellectual good is simply the coded idea itself, not the particular device or agency which enables it to be communicated from one person to another, for the distinctive properties of these goods can be appreciated only by considering them in the abstract, divorced from their hosts.

Imagine a world in which people are blessed with both perfect, permanent memory and the ability to read one another's minds at will. Here intellectual goods take on their purest form, subject to external effects so severe that the enforcement of any mechanism of discriminating supply is precluded. In two important respects, these pure intellectual goods share the properties of ordinary public goods.[25] First, the originator of the idea has no way to limit its distribution once it has been encoded, for consumers, having telepathic powers, may simply reproduce the intellectual good without cost and decode it for their own use whenever they wish. Supply thus becomes perfectly elastic at zero price, and consumption of the intellectual good by one individual does not diminish the supply available to others. Moreover, the ability of consumers to acquire the good on demand makes the exclusion of non-buyers impossible, and the resultant prospect of unlimited free riding denies the creator of the intellectual good the opportunity to recapture the costs of its production.

But pure intellectual goods possess two other essential characteristics which significantly distinguish them from public goods. In general, consumers can obtain the value of an ordinary public good only from the original producer, and can neither receive it from nor pass it on to other consumers. The lighthouse which shines for one ship shines for all, but ships can receive the light only from the lighthouse. Unable to reproduce the light themselves, all ships would be thrown into darkness were the beacon to stop shining. Once an intellectual good has been produced, however, consumers may become 'secondary producers', able to transmit the good to one another independently of its creator if they so desire. Were the lighthouse to behave in this way, not only could the ships costlessly transmit the light to one another once it had been produced, they could continue to do so even if the lighthouse itself were shut down.

Given this property of secondary production, doesn't it follow that consumers may increase their welfare without cost merely by acquiring additional 'units' of the same intellectual good? The answer is no, for the value of any pure intellectual good lies precisely in its novelty or originality. The assumption of perfect memory implies that once a consumer receives the first unit of the intellectual good, subsequent units provide no additional benefit because the novelty of the idea has been lost. When an individual consumes the intellectual good '$2+2=4$' for the first time, something new has been learned and personal welfare enhanced. When the consumer receives the same message a second time, however, its value is reduced to zero.[26] A similar point can be made about the intellectual good as a factor of production. Suppose an entrepreneur wishes to offer a new kind of machine. In order to produce the first machine he or she must acquire, say, three separate inputs, labor, materials and the design of the machine itself. But once the prototype has been built, subsequent

production of identical machines requires only the purchase of labor and materials; further inputs of the intellectual good encoded in the design become redundant. Like a public good, then, once a pure intellectual good has been produced, the marginal cost of supplying it to additional consumers is zero, but unlike a public good, the marginal benefit to a single consumer of all units of the intellectual good beyond the first is also zero.

The purity of these intellectual goods is soon compromised, and the problems surrounding their distribution and consumption significantly altered, when we leave the hypothetical world of telepathic powers and perfect memory. Our inability to read one another's thoughts requires that the intellectual good be embedded in some carrier or host before it can be transmitted through space from its point of origin to the minds of those who would use it. The host can assume many forms. It may be both tangible and durable, like the paint and canvas which express the artist's vision or the physical constructions which embody their builder's invention, but it need be neither; while the printed page as host allows those intellectual goods manifested in symbols or images to be reliably transmitted across great distances, ideas encoded in meaningful sounds may travel short distances through the air alone, and the simultaneous propagation of sound and image over wide areas requires a still more ephemeral host, the electromagnetic wave. The further limitations of imperfect human memory point to a second characteristic function of the host, preservation of the intellectual good over time. Here, too, the properties of different hosts may vary substantially; the creative ideas of sculptors and architects may be preserved for hundreds of years in bronze or stone, while those of speakers or musicians may vanish with the memories of their listeners.

Much of the history of human communication can thus be understood in terms of successive technological advances which increased the ability of various hosts to perform these two essential functions. The evolved capacities of early man to conceive and store ideas gave him the potential to be both a source and a consumer of intellectual goods, lacking only the means to encode his ideas and bridge the communicative gap between creator and user. Hand signals offered a simple solution, but the idiosyncratic nature of such gestures and the visual contact they demanded of user and originator sharply limited their utility. More effective communication was achieved with the development of spoken language, systems of standardized oral symbols which gave creator and consumer of the idea a reliable means of encoding and decoding it and, in the air, employed a host which was readily available to all. But this solution also had its limits, for the propagation of the original message through space was circumscribed by the range of the speaker's voice, and the message could be preserved (and thus transmitted faithfully by secondary producers) only as long as it could be remembered.

The eventual response to these problems stands as a technological milestone in human history, the invention of writing and written language. The immediate effect of this innovation was the ability to use a variety of material hosts to store messages beyond the boundaries of active memory, but the subsequent invention of paper provided a durable and easily transported host which vastly expanded the geographical scope of human communication as well. The revolutionary introduction of moveable type in the 15th century made every man and woman a potential consumer of new ideas with or without the blessing of church or state, a step of profound social and political importance. In our own time, too, accelerating improvements in host technology have transformed the world in which we live. Electronic media, beginning with the telegraph and culminating in microwave

transmission and satellite relay, have made instantaneous communication across continents routine, and the development of aural and visual recording devices, from cameras and phonograph records to microfilm and holography, has provided millions of people with the means to store and retrieve ideas of all kinds almost indefinitely.

B. The organization of exchange in intellectual goods

The economic dimensions of these tasks of communication and storage are of great importance. There is, first, the close relationship between the fidelity with which a given host represents and preserves the intellectual good it carries, the degree of difficulty encountered by users in extracting the intellectual good from it, and the resultant value of the combination of intellectual good and host in the market. Sellers of all commodities are plainly interested in minimizing the various costs of exchange, particularly those associated with informing potential purchasers about the special characteristics of the goods being offered and physically transporting those products in commerce once the terms of trade have been agreed upon. But sellers of intellectual goods often find that measures taken to clear the channel of exchange between themselves and willing buyers either reduce the value of their product to those buyers or erode the exclusionary barriers which protect it from free riders.

Two such dilemmas will illustrate. Buyers of *War and Peace* pay not only for Tolstoy's ideas, but for the pages upon which they are printed as well. Publishers can thus expect to increase sales, *ceteris paribus*, by embedding the work in inexpensive paperback editions which are light and easy to transport. But the present and future costs incurred by consumers in extracting the intellectual good from its host (here, reading the book) impose rather strict constraints on their ability to reduce the costliness of the host in this way. If the novel is cast in 50 pages of illegibly small type, or if the pages quickly decay and disintegrate, the intellectual good becomes inaccessible to the reader and its host is rendered worthless. The publisher must therefore produce a host sufficiently large and sturdy that it can be read both now and as far into the future as consumers are likely to demand. This in turn generally requires a book which is heavier and more costly to transport, and the resultant increase in the marginal cost of producing the host and making it available to readers will inevitably discourage some from purchasing the book altogether.

A second example suggests a broader and less tractable problem, one to which we have already alluded. Insofar as the value of any intellectual good resides principally in its novelty, it is all the more important for sellers to offer buyers specific information about the nature and quality of the proffered good before a decision to purchase can be made. In practice, this transfer of information frequently takes the form of allowing the potential buyer to inspect the intellectual good in its host for a brief period before a purchase is completed. In bookstores, for instance, patrons are invited to browse through the seller's offerings before deciding whether and what to buy. Yet there is an obvious drawback to this scheme. Non-buyers may breach the seller's channel by consuming all or part of the intellectual good on the spot, driving the value of the book to them below the purchase price and thus denying the seller compensation for the portion of the intellectual good they have enjoyed. Now if buyers can be distinguished from free riders by the length of time each needs to inspect the book, sellers may seek to resolve this dilemma by clever design of the bookstore itself. If there are no places to sit and the staff is instructed to badger those who attempt to read for extended periods, the cost of free riding may be raised

sufficiently to induce all who value the intellectual goods being traded to purchase their hosts from the seller.

But exclusionary technologies of this kind are unavailable to many sellers of intellectual goods, particularly where the goods are embedded in novel but uncomplicated arrangements of otherwise commonplace objects. The inventor who builds a better mousetrap from everyday parts may find that it cannot be sold unless it is first shown to interested customers, but once an even moderately skilled person sees the device or tinkers with it for a moment, he or she can easily decode the idea and learn the mousetrap's secret. Where such 'reverse engineering' is both technically and economically feasible, it enables those who have inspected the mousetrap or purchased just a single prototype to extract the intellectual good from its host and use it to construct similar mousetraps for their own use or for sale to others.

The more general point here is that the particular way in which the host achieves the transmission of the intellectual good from one person to another largely determines the ability of sellers to render these goods in a permanently impure form and thus to organize effective markets in them. Perhaps the least appreciated consequence of the development of written language was the power it gave sellers to embed verbal ideas in tangible hosts which could be widely distributed as *private goods* to buyers who, as secondary producers, lacked the technological means to offer both transmission and preservation of the intellectual good to others without surrendering the original host to them as well. The seller's ability to 'lock' the intellectual good in his own host in this sense means that as long as the host itself can be protected and traded as private property, exclusive channels of exchange to purchasers can be maintained against free riders without any special collective action to protect the intellectual good as such. Thus, if tape recorders can be barred from concert halls, or cameras from art museums, sellers of these creative ideas for profit retain a kind of 'natural copyright', much like the 'natural patent' enjoyed by, say, sellers of chemical compounds or foodstuffs whose recipes are so deeply embedded in their marketable hosts that available techniques of reverse engineering cannot discover them by analyzing the product.

It is where the reigning host technology is such that the intellectual good can be inexpensively 'unlocked' from the seller's host that the singular technical characteristics of pure intellectual goods come to the fore and frustrate the organization of markets. This, as we have suggested, might occur in two ways. First, free riders may be able to breach the exclusionary barrier by intercepting and extracting the intellectual good from the seller's host as it passes in the channel from seller to buyer. Alternatively, by purchasing a single unit of the host directly from the seller or securing it from another buyer once it has left the seller's hands, free riders may themselves become secondary producers of the good by embedding it in hosts of their own which permit the good to be stored for their own use or transmitted to others. This second form of free riding is peculiar to intellectual goods and especially problematic for sellers, for once even a single unit of the host has left their control, there is no way for them to prevent this mode of access to the good it bears.

Indeed, libraries represent a class of host purchasers whose very purpose is the energetic dissemination of intellectual goods independently of the seller, and while they themselves are an important market for hosts which would not exist save for these practices, some consumers at the margin will clearly choose to borrow a book rather than buy it from the seller. The critical question is how deeply this secondary production and distribution undermines the original seller's ability to recoup the costs of producing the intellectual good and its host. Where, as is most frequently the

case in research, it is *retention* of the intellectual good rather than just momentary access to it which is important to users, the frailties of human memory are a powerful ally to sellers. Though libraries offer users free access to the intellectual good itself, they retain ownership of the host and generally place strict limitations on the spatial and temporal control which borrowers may exercise over it. To the extent that users require some means of storing and retrieving the intellectual good, this denial of the host makes simple access to the good of limited value to them and severely constrains their own ability to become secondary producers. Thus, unless consumers purchase the seller's host directly, they can solve this problem only by duplicating that host or devising their own and transferring the intellectual good to it while the seller's host is in their possession.

It is here that the competition of technologies is waged in markets for ideas. Where the governing technology renders the seller's host less costly to consumers than either of these alternatives, a state of affairs which may persist for long periods of time, the seller can effectively lock the intellectual good into his own host and trade it as a private good without special protection for the intellectual good *per se*. Fixed supply of the host results in fixed supply of the intellectual good. But at critical moments, non-buyers may create or discover a new technology which turns this balance in their favor, making unauthorized duplication of the seller's host or construction of their own substitute a cheaper means of permanent access to the good than dealing directly with the seller. If this crucial shift enables large numbers of consumers to unlock the intellectual good and become secondary producers of it, the specter of unlimited free riding threatens the sellers of the good with economic extinction. Unless new exclusionary counter-technologies, physical or organizational, are developed and implemented rapidly, stable private markets in these intellectual goods cannot be restored and their production and distribution will have to be reorganized or abandoned altogether.

As we have argued earlier, the creation of new property rights favoring the seller may be the only way to ensure the continued production of intellectual goods in such a technological environment, and we consider the evolution of one such legal instrument in some detail in Section III. But these solutions are often cumbersome and imperfect, and less formal codes of ethical behavior, based upon strong loyalties to groups or institutions, may sometimes emerge in their stead to discourage the free appropriation of intellectual goods. One such code has bound the fraternity of magicians for generations. So long as 'the hand is quicker than the eye,' magicians can successfully embed their intellectual good within an illusion. To reveal the trick is thus to enable consumers to produce their own illusions, reducing the 'magic' to mere physical dexterity, and so magicians have long refused to share their secrets freely with one another or with their audiences. Yet here, too, the relentless advance of technology takes its toll; the rapid spread of high resolution video recorders with slow motion capability threatens to drive magicians from television screens, depriving them of an important source of revenue and denying vast audiences the enjoyment of their talents.

III. TECHNOLOGICAL CHANGE AND THE EVOLUTION OF COPYRIGHT

The traditional 'gradualist' view of biological history has been challenged of late by an emerging model of 'punctuated equilibrium,' in which relatively long periods of evolutionary stability are interrupted by brief episodes of radical environmental change accompanied by rapid extinction or adaptive response in the species

confronted by it.[27] Figure 1, devised by Laurence Heilprin,[28] dramatically portrays the setting for an analogous process of historical development in markets for intellectual goods. In the entire five millenia between the invention of writing and the revolution of modern printing, successive advances in host technology reduced the cost of embedding a given intellectual good in the equivalent of a 250-page book by roughly a factor of ten. But the introduction of moveable type in the 15th century cut this cost a hundredfold overnight, enabling large numbers of independent printers to become secondary producers and distributors of intellectual goods without the participation of their creators. The exclusionary barriers destroyed by this technological breakthrough were eventually rebuilt of copyright statutes founded upon the newly developed institution of intellectual property, and market stability was restored for some 200 years thereafter.

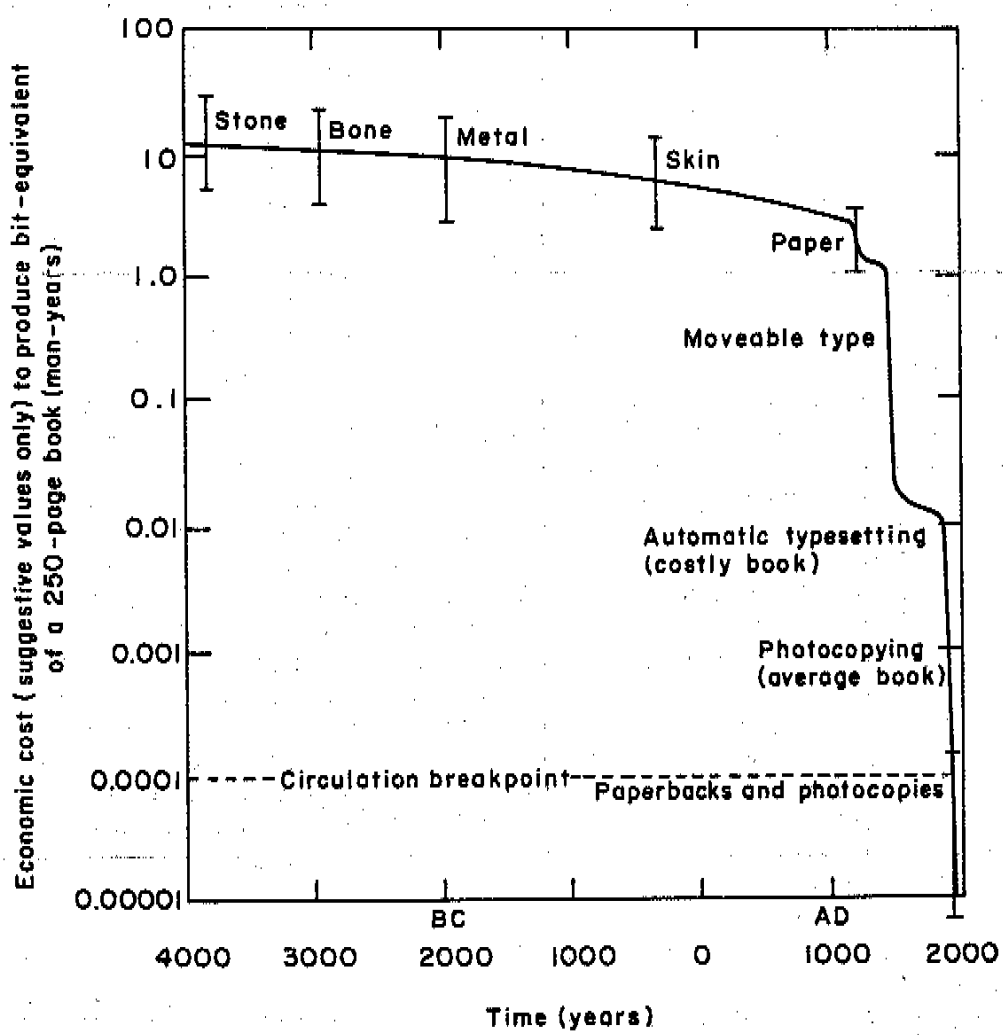

FIG. 1

In our own time, a second revolution in host technology, heralded by the camera and the xerographic copier, has rendered hosts a hundred times cheaper still, impelling adaptive change in existing structures of copyright which is not yet fully responsive or complete. But technological advance will no longer wait for stable adaptation. Home videotaping equipment has enabled ordinary television viewers to duplicate and store visual images unlocked from their electromagnetic hosts, and the silicon chip and the powerful computer it has placed within common reach threaten to render the printed word obsolete and, perhaps, effectively purify our culture's most important class of intellectual goods. In these concluding sections we sketch the impact of these historical developments in host technology on markets for intellectual goods and suggest the alternative forms of organization which may be necessitated by the emerging technologies of information processing and transfer.

A. Printing and the origins of copyright[29]

Prior to the 15th century, neither the creator nor the publisher of an intellectual good was in great need of protection against free riders, and no formal property rights to such goods were vested in either. One reason for this was that demand for Scripture and classical texts in Greek or Latin, works plainly in the public domain, far exceeded that for the works of living authors, who generally wrote not for remuneration but for God or, less often, the Muse. At the same time, because manuscripts could only be reproduced by hand, the free appropriation of intellectual goods was largely restrained by the potential free rider's inability to embed the good in his own host without enormous expenditures of time and effort. The modern distinctions between creator, secondary producer, and consumer of the intellectual good were thus not yet sharply drawn, and the few manuscripts in existence could circulate freely without significant diminution of either the author's incentive to create or the consumer's need to deal directly with him or his publisher in order to enjoy the good.

But when Caxton set up his printing press at Westminster in 1476, the eventual obsolescence of this informal system of institutions was ensured. At first, the handful of printers sought to monopolize the new technology by keeping it secret, but they could prevent neither the rapid spread of presses throughout England nor the growing demand for books, both new and old, which came in its wake. The newly galvanized book trade quickly gave rise to a new kind of buyer, the 'book pirate', whose sole purpose in purchasing the original printer's host was to implant its intellectual good in his own printed edition for sale to others. This bifurcation of purchasers into ordinary readers and secondary producers posed a severe dilemma for the original printer, for while his technological advantage over the general reader remained secure, the pirate could now sell the intellectual good without bearing the costs of production or, perhaps most importantly, assuming the risk of publishing in the face of uncertain demand. Were the printer able to distinguish these two classes of buyers at the moment the host was transferred, or prevent ordinary readers from selling *their* hosts to pirates, he could solve this problem simply by refusing to sell to secondary producers. But lacking the practical means to enforce this discrimination, once his host was placed in the stream of commerce he had no way to prevent the pirate from unlocking the intellectual good it carried. Without some technological or institutional reponse to this substantial purification of intellectual goods, markets in them could no longer be sustained.

Within 20 years of Caxton's death, English printers and booksellers, following the example of their Venetian counterparts, turned to their sovereign for help. The initial response of Henry VIII and his successors was to grant 'letter patents' to individual

printers, monopoly privileges to print particular works which represent the first soundings of what we now call intellectual property, rights to intellectual goods as such, distinct from the ordinary property rights which attach to the tangible host itself. By 1556, the Stationers' Company, a guild of London printers, had received a charter from the Crown. To the Company were given powers hitherto reserved to the sovereign alone, a monopoly on all printing throughout England and, more striking to modern eyes, police powers to suppress printers who violated it. Because the Crown's principal motive was not so much to protect the economic interests of the Stationers as 'to order and regulate printing in the interests of Church and State',[30] the Company was charged with enforcing not only its own monopoly but the Crown's censorship as well. It sought to do so by simply banning all secondary production and, for a time, this arrangement served both sides well. So long as pirates and their illegal presses remained clustered around the Company's base in London, its wardens were better suited to search for secret presses or unlawfully printed material than the bishops or justices of the peace who had performed these tasks previously.[31]

But these initial 'legal experiments'[32] in centralized policing of vaguely defined rights to intellectual goods soon proved unsatisfactory. Authors, now increasingly drawn to their labors by pecuniary incentives created by the growing commercial demand for books, suffered greatly from the Stationers' monopoly on publication and, despite its police powers and the Crown's continuing issuance of letter patents, the Company found its monopoly ever more difficult to enforce. By the end of the 17th century surreptitious presses had spread as far as Scotland and illegal secondary producers prospered, undeterred by increasingly severe penalties the Company could not reliably impose. The Stationers repeatedly petitioned Parliament for relief, and in 1710 their efforts were rewarded by the Statute of 8 Anne, legislation which has since become the model for copyright law throughout the world.

As interpreted by the House of Lords in *Donaldson* v. *Beckett*,[33] the statute crystallized and reshaped the developing notion of intellectual property in such a way that markets in printed intellectual goods could thrive for 200 years. The explicit copyright it created, articulated in the American statute of 1909 as the right 'to print, reprint, publish, copy, and vend the copyrighted work',[34] was vested exclusively in the author until the moment of publication, after which continued protection would be extended to him or his publisher for only a specified period of years. The law thus sharpened and clarified the critical distinction between ownership of the host and ownership of the intellectual good it bore. Prior to the granting of letter patents and the Stationers' monopoly, a property right to the host included the right to reproduce and sell the intellectual good within it. Now, this formally recognized bundle of rights to the intellectual good *per se* was to remain with the author or his assigns for some length of time even though the original host had left his possession or control.

The Company, believing that the statute meant to restore the monopoly it had enjoyed prior to its passage after the statutory term had expired, found this clarification quite agreeable. But the Lords held in *Donaldson* that once the original copyright had lapsed, the right to print the protected work would pass not to the Stationers but to the public at large, including those printers who were not members of the Company. This destruction of the Stationers' monopoly was not, to be sure, the Company's aim in seeking the assistance of Parliament, and their surprise and disappointment at the *Donaldson* decision were understandably acute.[35] The Lords, however, had now created a legal instrument which obviated the problem of discrimination and enabled competing publishers holding individual property rights

to overcome the secondary production which beset the Company's diminishingly effective wardens. The liberation of printing from the grip of the Stationers (and the censors) permitted the radical decentralization of this function and meant that the state's authority could now be *effectively* invoked against secondary production for profit. With many publishers, each holding a temporary monopoly in relatively few specific works, competing legally with one another in markets, the responsibility for detecting illegal editions and bringing suit against their producers could henceforth be spread over many individuals who had not only the incentive to carry it out but far greater access than the wardens to the information necessary to do so.

B. Photocopying, xerography and fair use

So structured, markets in printed ideas, and thus those very ideas themselves, could flourish. The available duplicating technology offered sellers a 'natural copyright' against ordinary readers, who still lacked the means to unlock the intellectual good from its host for their own use at a cost smaller than the price of the book itself, while pirates who had this technological key could now generally be discouraged by the threat of legal action from turning it. From the outset, however, the 'privatization' of intellectual goods achieved by this combination of property rights and physical technology in the USA has been less than absolute. American courts, seeking in individual cases to balance the necessary protection of incentives to produce and publish intellectual goods against a more general public interest in relatively free access to them, have over time elaborated an 'equitable rule of reason'[36] to permit some uncompensated uses of the good which would otherwise be barred by statute.

As early as 1841, Justice Joseph Story, sitting as a circuit judge, held in *Folsom* v. *Marsh*[37] that there were 'justifiable use[s]'[38] of copyrighted material which did not infringe the owner's rights. But though federal courts have through the years enunciated various lists of the 'factors to be considered in determining whether a particular use is fair, no fixed criteria have emerged by which that determination can be made'.[39] Nor, indeed, did Congress establish the terms of 'fair use' more firmly when, in 1976, it codified the doctrine for the first time in statutory form. Consistent with its intention 'to restate the present judicial doctrine of fair use, not to change, narrow, or enlarge it in any way',[40] Congress contented itself with simply reformulating the judicial guidelines for fair use[41] and directing, in the most general terms, that they be applied to individual cases as new technologies are developed.[42]

When the development of economically feasible photocopying early in this century once more promised free riders the upper hand in the competition of technologies, this flexible doctrine of fair use, 'the most troublesome in the whole law of copyright',[43] became the vehicle for adaptive response in markets for printed ideas. Now it was the seller's natural copyright which was imperiled; by 1934 Robert Binkley, Chairman of a Joint Committee on Materials for Research organized by the American Council of Learned Societies and the Social Science Research Council, could 'anticipate within the next year film copies of books [which] will be very much cheaper than the normal prices of the books themselves'.[44] Fearing that scholarly customs of excerpting and transcription by hand long sanctioned as fair use might become casualties of lawsuits engendered by the new technology, Binkley sought on behalf of researchers and librarians to negotiate an informal understanding with W. W. Norton, President of the National Association of Book Publishers. The publishers were soon persuaded that, given the state of duplicating technology at the time, photocopying for scholarly purposes was merely a substitute for the hand copying which had traditionally been fair use, and in 1935 Binkley and Norton signed

a 'Gentlemen's Agreement' to resolve the issue without litigation. Duplication for profit or as a substitute for purchase of a protected work was forbidden, but single photocopies 'in lieu of loan . . . or in place of manual transcription and solely for the purpose of research'[45] were now explicitly, if informally, recognized as fair use.

The publishers' ready acceptance of this type of infringement illuminates the fundamentally economic nature of fair use itself. Whatever its purpose, hand transcription clearly is the extraction of an intellectual good from its seller's host and the subsequent implantation of the good in the copier's host. Bookstores do not tolerate this form of free riding, and one would scarcely expect to find writing desks (or photocopiers) placed in them for the customer's convenience, even if doing so would substantially ease the burdens of research and scholarship. Yet hand copying in libraries has long been fair use, not because the economic injury done there to publishers is smaller than that which would be done by copying in bookstores, but rather because the costs of enforcing a copyright in the two situations differ so greatly. Even where the injury involved is quite small, the design and deployment of staff within single bookstores makes the effective deterrence of hand copying a comparatively costless matter. Librarians, on the other hand, generally do not see themselves as agents of booksellers, and the detection and prevention of hand copying in libraries would thus require nothing less than the policing of every library in the land. In this important sense, fair use simply makes a virtue of a necessity, conceding the imposition of relatively small external effects in particular circumstances where to do otherwise would be prohibitively costly.[46]

The separation of this notion of concession or *acquiescence* from the rather different idea of *consent* is essential to a proper understanding of fair use. To the extent, however small, that hand transcription or excerpting in a library setting serves as a substitute for the purchase of a protected work, some real economic injury is in fact done to the owner of the copyright.[47] Were perfectly competitive conditions to prevail in the market for such copyrights, even these minimal effects would soon be 'internalized' by the transcriber's payment of an appropriate sum to the owner. But in practice, of course, the tedium of hand copying itself ensures that the damage it does remains substantially smaller than the costs the owner would have to bear either to collect a royalty payment in the market or, alternatively, to vindicate the copyright in court. Owners thus simply acquiesce in the imposition of these damages, attempting neither to develop collection mechanisms for *de minimus* use nor to litigate the infringement.

The traditional application of fair use has been to situations of just this kind, and its uncompensated transfer of the copyright by law to the user, though effectively precluding the experimental development of less costly mechanisms of compensation, does no harm to owners so long as this balance of damages and enforcement costs obtains. But once fair use has been granted in this way, advances in breaching technology which greatly expand the opportunities for infringement can radically alter both the owner's plight and the rationale for fair use itself.

The awkwardness of fair use in such cases is best illustrated by considering how analogous principles might apply in other areas of property law. Suppose the owner of a circus finds one or two small boys peeking under the tent to watch the show. Because the damage done is so much smaller than either the costs of hiring extra guards to police the grounds or of bringing suit against the children for trespass, the owner is likely just to look the other way. His acquiescence to such free riding does not suggest *consent*, as it might were he to perceive some benefit to *him* in permitting the trespass; rather, it merely represents a rational economic response to the

situation at hand. If, however, a hundred children were to appear the next night to peek under the tent, the collective impact of these individual trespasses would be greatly magnified and the owner's inclination to concede them correspondingly reduced. Now, it might well be worthwhile for him to hire more guards to prevent the trespassing of those children who would otherwise pay for a ticket. But were this to be unsuccessful, the doctrine of fair use would defeat his suit against the 100 trespassers because of his earlier 'consent' to the actions of one or two. In this sense, linking fair use to the copyright owner's consent, implied or otherwise, to the infringement is a serious and unwarranted departure from well-settled notions of private property.[48]

The analogy of photocopying to hand transcription embodied in the Gentlemen's Agreement thus testifies more to the state of photocopying technology than to the guarantees of the librarians to supervise its use. In 1935, with photoduplicating still in its infancy and the equipment itself extremely costly to purchase and operate, single copies were sufficiently expensive and of such variable quality that users found little to choose between facsimiles and hand copies. But just as W. W. Norton had feared,[49] further advances in duplicating technology have radically altered this relationship and enormously magnified the economic effects of machine copying. The invention of the Xerox process in 1950 introduced a second generation of technology which permitted copying on a scale undreamed of by the framers of the Gentlemen's Agreement and reduced the cost per page by a hundredfold, transforming what had once been acquiescence into determined resistance.

The competition of technologies was joined once more, and technical limitations of the Xerox copiers seemed at first to offer publishers the possibility of a technological response in kind. Because the early Xerox machines were unable to copy certain colors faithfully, for example, it was thought that printing copyrighted material with special dyes might result in illegible copies.[50] But denying access to the intellectual good to free riders in this way would effectively deny the good to buyers as well, for the costs involved in printing with these dyes were so great that the price of books themselves would be pushed beyond the means of those most likely to purchase them. Advances in xerographic technology, moreover, came so quickly that such tactics could offer at best a temporary solution to the publisher's plight.

C. The 'new fair use': Williams & Wilkins and Sony

Like the presses which had preceded them in England, Xerox machines soon were everywhere. By 1970, thousands of American libraries offered xerographic services, largely devoted to the production of single copies of journal articles for the personal use of their local patrons.[51] But many large research libraries, particularly those operated by the federal government, offered this service on a far grander scale; the technical library of the National Institutes of Health, for example, spent $85 000 in 1970 for subscriptions to some 3000 scholarly journals, while $86 000 was allocated to the production of free Xerox copies of roughly 93 000 articles from these journals to affiliated researchers throughout the country.[52] Xerographic technology has thus for the first time enabled libraries to become themselves genuine secondary producers of intellectual goods. No longer must libraries retain ownership of the publisher's host and exercise close control over the length of time a user may borrow it in order to ensure the widest possible propagation of knowledge and ideas. Now, for less than it would cost users to acquire the seller's host directly, libraries are able to *republish* the intellectual good by extracting it in its entirety from its original host, embedding it in a host of their own, and surrendering permanent possession of the new host and the intellectual good it bears to the user. Citing the undeniable benefits

to scholarship which flow from this practice, however, these libraries have strongly resisted attempts by publishers to establish easily monitored royalty plans which, like similar schemes in the case of recorded music,[53] would charge the libraries for these copies on a per-page basis as they are made.

This reluctance prompted one endangered[54] publisher of specialized medical journals, the Williams & Wilkins Company, to sue the NIH and the National Library of Medicine, claiming that their mass reproduction and distribution of the firm's journals was an infringement of copyright. But a sharply divided Court of Claims,[55] in which the dissenters denied each of the majority's premises and the conclusions drawn from them, disagreed. Characterizing Williams & Wilkins' allegation of economic injury as 'an untested hypothesis, reminiscent of the abstract theorems beloved of the "pure" classical economics of 70 or 80 years ago',[56] it held that the strong public interest in facilitating medical and scientific research rendered the libraries' practices a fair use of the publisher's journals.

The extraordinary impact of xerography in markets for printed works is suggested by the court's treatment of what is, in our view, the central issue of the case. As Judge Cowen noted in dissent, 'the photocopies in issue here were exact duplicates of the original articles; they were intended to be substitutes for and they served the same purpose as the original articles. They were copies of complete copyrighted works . . .'.[57] Prior to the invention of xerography, the costs to the free rider of creating even a single such copy had effectively mooted the question of whether duplication of this kind could ever be fair use. But now the issue had to be squarely faced, not with regard to a small number of copies laboriously produced by hand or expensively placed on film, but in circumstances very much like those created by the book pirates of Elizabethan times.

The dissent's position was clear and, if accepted, dispositive: 'This is the very essence of wholesale copying and, without more, defeats the defense of fair use'.[58] But the majority's analysis took a different, more historical approach. It looked first to the policy of the Library of Congress under Herbert Putnam between 1906 and 1939, when the photographing of copyrighted works (as well as the building itself and its mural decorations) for personal use was 'freely permitted',[59] and then to the Gentlemen's Agreement of 1935, which it argued 'was regularly construed as allowing copying of articles'.[60] From the failure of publishers like Williams & Wilkins to contest these practices or seek to enjoin them, the majority seemed to infer their general *consent* to this uncompensated use of their protected material:

> The fact that photocopying by libraries of entire articles was done with hardly any (and at most very minor) complaint, until about 10 or 15 years ago, goes a long way to show both that photoduplication cannot be designated as infringement *per se*, and that there was at least a time when photocopying, as then carried on, was 'fair use' . . . [T]he libraries can properly stand on the proposition that they photocopied articles for many years, without significant protest, and that such copying was generally accepted until the proliferation of inexpensive and improved copying machines, less than two decades ago, led to the surge in such duplication. The question then becomes whether this marked increase in volume changes a use which was generally accepted as 'fair use' into one which has now become 'unfair'.[61]

Now, that is, that hundreds or thousands of boys were peeking under the publishers' tent, what significance would their earlier acquiescence to the trespasses of one or two assume? For the majority, the question of infringement posed by the new technology

was one of degree, not one of kind. But, as we have suggested, property law generally makes no such allowance for degree: infringement is infringement, irrespective of its scope, and the law should recognize it as such. The degree of infringement *is* relevant, but not to the court. It is, rather, the copyright *owner* who must decide in each case whether to seek enforcement of the copyright or to acquiesce in its uncompensated use.

In this sense, the court's holding that the public interest required that the libraries' secondary production of Williams & Wilkins' intellectual goods be deemed fair use is a truly revolutionary collectivization of private property, one which 'risks eroding the very basis of copyright law, by depriving authors of control over their works and consequently of their incentive to create'.[62] The majority reaches this striking result, moreover, by a deceptively simple 'cost-benefit analysis' of precisely the kind prescribed by the neoclassical analysis of market failure,[63] conducted within the framework of the four judicial criteria for fair use. Would net social welfare be increased by the reallocation of Williams & Wilkins' copyrights to the public at large through the agency of the libraries? Almost certainly, argues the majority, because the benefits which would accrue to all citizens from the widest possible dissemination of scientific knowledge so clearly outweigh the abstract and speculative costs the publisher claims will result from the libraries' secondary production.[64] Now one may, from wherever one sits, agree or disagree with this guess; no central allocating authority could possibly collect enough information to know with certainty. The key point is that there is no need to guess at all; the very fact that Williams & Wilkins *found a defendant they could sue* strongly suggests the feasibility of resolving the issue with a working market in the copyrights at issue were fair use to be denied.[65]

The real targets of Williams & Wilkins' suit, of course, are the end users of the photocopies produced by the libraries; it is these individuals who enjoy the direct benefits of the intellectual goods contained in the publisher's host without paying for them. But without the intermediation of the libraries, these free riders lie beyond Williams & Wilkins' reach because the damage each one does is so much smaller than the costs to Williams & Wilkins of vindicating the copyright through individual litigation. With the introduction of xerography and large-scale secondary production by the libraries, however, two essential changes are wrought in this situation, one which works against Williams & Wilkins' interests and one which favors them. The former, clearly, is the transformation of 'one boy' into 'hundreds'. Just as before, the costs imposed by each free rider are very small, and each is still safe from an infringement suit because of the costs involved. Yet now the *collective* impact of these individual infringements is very large, and the publisher's incentive to litigate rises accordingly. But who is to be sued?

The answer, interestingly enough, is provided by the same technology which created the problem in the first place. Precisely because the libraries have now become secondary producers on so grand a scale, a judgment against them for infringement offers the possibility of organizing a remedy around them as well, much as was the case after *Donaldson* v. *Beckett*. Models for such a remedy abound;[66] the libraries might, for instance, simply charge a small fee for each copy distributed and pass the revenues along to the publishers in the form of lump-sum royalty payments. Indeed, the spontaneous generation of just this kind of complex, highly inclusive, 'relational' contract, mediating the interests of very large numbers of people widely separated in space and time, is perhaps the most significant development in contract law in the last 50 years.[67] But the peculiar reluctance of the *Williams & Wilkins* majority to believe that people will voluntarily forge contracts of this sort when it is in

their interest to do so[68] has led them to destroy the very environment within such organizational experiments might be carried out, leaving publishers unable to secure any compensation at all for valuable uses of the intellectual good once the original host has left their control. Forced now to attempt the capture of all this value at the only moment they still can, publishers have little choice but a self-defeating increase in the initial price of their host to libraries, to individual subscribers, or both.[69]

'In the age of Xerox', Marshall McLuhan noted almost 20 years ago, 'the reader becomes a publisher'.[70] This, as we have seen, was still something of an exaggeration at the time of *Williams & Wilkins*. Xerography, not yet 'personal', required a huge and expensive apparatus far beyond the means of the ordinary reader, and thus large-scale free riding itself demanded the intermediary services of a centralized secondary producer large enough to bear the considerable expense of acquiring and maintaining the necessary technology. Within a decade, however, the union of secondary producer and end user was achieved by breaching technology of a rather different sort, the home videotape recorder (VTR). Like the Xerox machine, it made possible the inexpensive reproduction and storage of an entire copyrighted work for the purpose intended by its original publisher, but unlike its older cousin, it could be purchased and operated by the end user directly, obviating the need for independent secondary production altogether.

This merger posed a serious dilemma for the original publisher, in this case Universal City Studios and Walt Disney Productions, producers of a variety of protected materials intended for home viewing on commercial television. Where Williams & Wilkins had enjoyed the advantage of an obvious and serviceable defendant, a large, institutional secondary producer around whom a remedy for the end users' infringement might feasibly be organized, the Studios' options were considerably less satisfactory. They could, perhaps, sue the end user for direct infringement of their copyrights, but these defendants, as always, could rely on the favorable array of individually small damages and correspondingly large litigation costs to discourage such a strategy. Alternatively, the Studios could pursue the manufacturer of the breaching technology itself, the Sony Corporation, the sale of whose product to end users offered the opportunity for a 'tax' or royalty scheme through which the Studios might be compensated for the use of their protected works.[71] But this approach would require a finding of *contributory* rather than direct infringement, a species of liability courts have quite properly been reluctant to impose. Machines, after all, don't infringe copyrights; people do.

In the event, the Studios proceeded along both paths. They asked an individual VTR owner (a client of their own law firm) to serve as an exemplary defendant for purposes of winning a judgment that unauthorized taping for home use was indeed infringement, though they sought no relief against this end user. Instead, they hoped through him to reach Sony, their real target, and to win both compensatory damages and an injunction against the manufacture and sale of Sony's Betamax VTR. The trial court found against the Studios on both issues,[72] but the Ninth Circuit reversed, holding that home taping of plaintiff's programs was not fair use, that Sony was liable for contributory infringement, and that appropriate remedies against Sony might include both the damages and the injunction sought by the Studios.[73] The Supreme Court, split as deeply as the court in *Williams & Wilkins* had been, though not along the ideological fault line to which observers had become accustomed, reversed again,[74] preserving both the method and the error of the 'new fair use'.

Justice Stevens' opinion for the majority is a curious one. The central issue in the case is surely the direct infringement of the Studios' copyrights by the end user, for if

unauthorized home taping for private use is held to be fair use, there is no need to reach the further question of Sony's vicarious liability. The dissent, indeed, is structured in just this straightforward way; only after concluding that home taping of copyrighted works in their entirety is *not* fair use does Justice Blackmun address the problem of contributory infringement by the manufacturer.[75] The majority, however, gives pride of place to this latter question. It holds first that contributory infringement will not be found where the technology at issue is 'capable of substantial noninfringing uses',[76] and then that unauthorized 'time-shifting', the common practice of recording a program off the air for the purpose of viewing it just once at a later time and then erasing it, does no cognizable injury to the Studios and is thus a fair use of the protected material, sufficiently substantial to bar a finding of contributory infringement.[77] This enables the majority to avoid the more vexing problem of 'librarying', recording programs and storing them for repeated viewing in the future, which the dissent correctly argues is the practice most likely to diminish the potential markets for plaintiff's programs.[78]

The majority's treatment of the contributory infringement question is sound enough. Relying on *Kalem Co.* v. *Harper Brothers*,[79] in which the producer of an unauthorized film version of *Ben Hur* was held contributorily liable for his promotion and distribution of the film, the Studio had argued that merely supplying the technological means to infringe another's copyright and encouraging that infringement through advertisement were a sufficient basis for Sony's liability.[80] But as the majority points out, unlike the present situation, *Kalem* involved a clear case of secondary production: 'The producer had personally appropriated the copyright owner's protected work and as the owner of the tangible medium of expression upon which the protected work was recorded, authorized that use by his sale of the film to jobbers'.[81] Sony, of course, like the Xerox Corporation in the *Williams & Wilkins* setting, does no such thing, and the Court was on solid ground in refusing to extend *Kalem* to impose vicarious liability on the purveyors of breaching technology.

Denying Sony's liability, however, does not require that the use of the VTR itself to record programs for private consumption be considered fair use, and in its analysis of this issue, the Court repeats and thus extends the error of *Williams & Wilkins*. Here, too, the attempt is made to rationalize the uncompensated collectivization of property rights by fiat by an explicit cost-benefit analysis which, in its nature, can scarcely be seen as anything but the arbitrary substitution of the Justices' own preferences for those which would be manifested in a working market for the copyrights involved. Much was made in *Williams & Wilkins* of the 'public interest'; the holding in that case was specifically limited to situations in which the use of protected material could be said to serve some larger end than the simple entertainment of the immediate user.[82] From the unexceptionable observation that the welfare derived from the use of Williams & Wilkins' copyrights by medical researchers are dispersed across a large number of individual beneficiaries, the Court of Claims seems rather arbitrarily to have drawn the further conclusion that the *sum* of these benefits must therefore be very large, at least large enough to exceed the costs their creation in this way would impose upon the publishers of journals. But neither markets themselves nor the ideal of Pareto efficiency respect such a distinction between private and public purposes. They are concerned instead with the maximal satisfaction of human wants, whatever their source, and there is ample room in either context for the conclusion that the benefits associated with particular activities, however widespread or 'public' they may be, are in fact smaller than the closely concentrated, 'private' costs they may impose. Utility derived from the successful

treatment of disease is in this sense no different from utility derived from watching a soap opera, and public policy intended to increase social welfare might equally well address either source without prejudging the outcome.

For the *Sony* majority, the 'commerciality' of one's uncompensated use of another's intellectual good, an equally specious distinction, is the critical issue. If Hamilton records Jefferson's copyrighted program off the air and keeps the tape for his private use, the majority concludes that the welfare produced by this increased access to programming outweighs what it sees as the minimal costs such access imposes on Jefferson. But if Hamilton were instead to *sell* the tape to Madison for *his* private use, this balance is presumptively reversed.[83] This, of course, defies all economic logic: while the costs imposed upon Jefferson are the same in either case, the benefits enjoyed by Hamilton in the first instance have simply been transferred to Madison in the second, and if Hamilton has in fact acceded to the transfer upon receipt of some price paid to him by Madison, it can be argued that the welfare Madison derives from the videotape and its intellectual good is *greater* than that Hamilton would have realized had he not sold the tape. But this is not the point. It is, rather, that by reallocating the Studio's copyrights from the center on so arbitrary a basis as this, the Court has, like its predecessor in *Williams & Wilkins*, precluded the evolution of decentralized remedial arrangements which would permit the consensual transfer of these rights in markets and thus reveal the true extent of the costs and benefits involved. And, again like its predecessor, the Court has forced the producers of these intellectual goods to seek the capture of all the value their products create at the moment the host leaves their control for the first time. In the case of printed works, this has meant substantial increases in the prices charged by publishers for books and journals. In the case of television broadcasts, it may mean the hastening of the day when the cable devours all the 'free' programming upon which the industry has traditionally been based.

IV. THE SHAPE OF THINGS TO COME

We have thus far focused our attention on two principal adverse effects of the 'new fair use' developed in *Williams & Wilkins* and *Sony*. First, to the extent that publishers are unable to account for the value of their intellectual goods produce by raising the initial price of their own host, the incentives to produce these goods themselves will certainly be diminished. Moreover, the experiments in remedial organization which would have accompanied a denial of fair use in these cases are now precluded, and the knowledge and experience they would have created have been lost as well. But there is yet a third and potentially far more damaging possibility to be reckoned with, the destruction of the very environment within which technological innovation in this area itself has traditionally proceeded.

A central theme of our analysis has been the crucial role played by the activity of competition in the creation of new and valuable technology, both by sellers and by those who would produce the means to breach their channels to willing buyers. By maintaining the conditions under which the competition of technologies can flourish, the law of copyright has historically encouraged the continuous production of new technical knowledge and the discovery of new ways to apply the knowledge which already exists. Placing the copyright in the hands of individual creators and publishers of intellectual goods, which makes the use of breaching technologies seem at first glance to be more expensive because of the need to purchase licenses or pay royalties, in fact does little to inhibit the rapid dissemination of intellectual goods;

indeed, the increased demand for books of all kinds which came on the heels of the printing press after 1476 suggests precisely the opposite. The invention of cheap, widely available breaching technology has historically created vast new markets for intellectual goods, and the profits to be made in them are strong inducements to copyright owners to sell or license their works freely. It is precisely this anticipation of new markets which motivates entrepreneurs like Sony to invest in the breaching technology itself; they are hardly likely to be deterred by the need to negotiate with owners of copyrights. But if the new fair use diminishes incentives to produce intellectual goods for profit, and through the collectivization of rights to consume intellectual goods encourages the collectivization of their production as well, what will replace the incentive for innovation which the competition of technologies has always provided to both its contestants?

Courts and commentators often speak of the tension between the dual objectives of copyright, ensuring the widest dissemination of intellectual goods possible while preserving incentives for their continued production. Our analysis has shown that, far from being unique to the case of intellectual goods, this tension is created by the production and distribution of *any* good in private markets. There is thus no reason to invoke this tension to distort the traditional principles of property law as they apply to the specific case of markets for intellectual goods.

We urge, then, that Congress accept the invitations of both the Court of Claims in *Williams & Wilkins*[84] and the Supreme Court in *Sony*[85] to reconsider the entire doctrine of fair use, and to use this occasion to limit its application to a single situation, that in which a copyright owner brings an infringement action for the purpose of suppressing or censoring criticism of the protected work. In such cases, a competing and essential first amendment value is at stake, and the copyright law ought not to be used to subvert the free exchange of ideas and opinions.

This radical reduction in the scope of fair use should be accompanied by the elimination of statutory damages. Currently, the law permits a copyright owner to recover statutory damages of up to $10 000 for an infringement.[86] Such awards for minor infringements are clearly more of a penal sanction than a mechanism of compensation, and therefore the disseminative purposes of the fair use doctrine should be invoked to limit the owner's recovery to actual damages. To do otherwise would create an artificial incentive for copyright owners to sue for statutory damages where only negligible harm is taking place. The 'chilling' effect this narrowing of fair use might have on what would now be infringing scholarly or scientific uses should thus be minimized, for limiting recovery to the actual damages caused by such uses would virtually eliminate the likelihood of litigation over them.

But even this may be unresponsive to the unprecedented progress of breaching technology in our own time. Consider the views of Barbara Ringer,[87] former Register of Copyrights for the USA:

> [W]ithin the forseeable future, we will have computer systems in which thousands or even millions of authors' works—books, articles, pictorial works, maps, music, plays, recordings, motion pictures, and other forms of artistic expression—are permanently stored in a single copy. These computer systems will be linked, by wire or laser beams or communications satellites or some other method, with other computers throughout the world, and these in turn will be linked with viewing screens in public institutions and in private homes and businesses. Any work from this great body of authorship could instantly be inspected by anyone within reach of a viewing screen and that person could also obtain a copy of any or all the

work merely by pressing buttons. In many cases the demand and need for printed copies will completely disappear.

The promise of the computer is nothing less than the effective purification of a wide range of intellectual goods, a gift to consumers of the 'telepathy' necessary to secure the intellectual good almost without cost. Should physical technologies or legal institutions fail to restore the essential exclusionary barriers eroded by this technology, we can expect the production of intellectual goods to move inexorably from the private sector to the public, with profound implications for our political and cultural lives.

In some respects, this transformation has already begun. Throughout the industrialized world, the state has assumed an increasingly important role in subsidizing the production and dissemination of scholarly and scientific knowledge. Removed from the market, the choice as to which intellectual goods are to be produced, and by whom, are made in response to whatever 'national needs' are perceived by those charged with administering grants and subsidies for sponsored research. There is, to be sure, some potential for error or abuse in even the most principled and well-intentioned public agencies of this kind. But this danger pales in significance beside the threat posed by centralized production of those intellectual goods now embedded in the thousands of trade books and periodicals which are truly our *vox populi*, the lifeblood of our political culture. Technology may yet succeed where the Crown and Stationers' Company could not; the publisher and the censor may yet become one. What shall become of our liberty then?

REFERENCES AND NOTES

1. 104 S. Ct. 774, 782 (1984).
2. 487 F.2d 1345 (Ct. Cl. 1973), affirmed by an equally divided court, 420 U.S. 376 (1975) (*per curiam*).
3. Coase, 'The Problem of Social Cost', (1960) 3 J. Law and Econ. 1.
4. Gordon, 'Fair Use as Market Failure: A Structural and Economic Analysis of the *Betamax* Case and its Predecessors', (1982) 82 Col. L.R. 1600.
5. *Ibid.*, pp. 1610–1614.
6. *Ibid.*, pp. 1614–1618.
7. *Ibid.*, pp. 1618–1622.
8. *Ibid.*, p. 1616 (emphasis added).
9. *Ibid.*, p. 1627. *See* generally the discussion at pp. 1627–1646.
10. *Ibid.*, pp. 1646–1657. Gordon's essay predates the Supreme Court's decision in *Sony*, but her discussion of the lower court opinions in that case strongly suggests that she would endorse at least the framework for analysis adopted by the Supreme Court. We discuss these cases in Section III, *infra*.
11. *See* her discussion of *Williams & Wilkins*, *ibid.*, pp. 1647–1652.
12. *See*, for example, *ibid.*, pp. 1615–1616.
13. Hayek, 'The Use of Knowledge in Society', (1945), 35 Am. Econ. Rev. 519.
14. Hayek, 'Competition as a Discovery Procedure', in *New Studies in Philosophy, Politics, Economics and the History of Ideas* (1978), pp. 179–190.
15. By this we mean both the technology of *production*, the technical means and organizational forms which combine to transform primary resources into finished products which can be reliably directed to purchasers, and the less often discussed technology of *consumption*, those means by which consumers extract personal satisfaction or welfare from the various material objects which purchase or opportunity place in their possession in the stream of commerce. Both these technologies figure prominently in the analysis which follows.

16. Demsetz, 'Toward a Theory of Property Rights', (1967) 57 Am. Econ. Rev. (Papers and Proceedings) 347.
17. *Ibid.*, p. 350.
18. These issues are treated in greater detail in Adelstein, 'Institutional Function and Evolution in the Criminal Process', (1981) 76 Northwestern U.L.R. 1, 71–96.
19. Engineering students, for example, occasionally test their skills by constructing devices from readily available components which allow free long-distance calls to be made from pay telephones, a practice which telephone companies understandably seek to stop.
20. *See*, for example, Macneil, 'Contracts: Adjustment of Long-Term Economic Relations Under Classical, Neoclassical, and Relational Contract Law', (1978) 72 Northwestern U.L.R. 854; Williamson, 'Transaction Cost Economics: The Governance of Contractual Relations', (1979) 22 J. Law and Econ. 233.
21. K. Arrow, *The Limits of Organization* (1974), p. 26.
22. *See*, generally, Adelstein, *supra*, note 18; Adelstein, 'Informational Paradox and the Pricing of Crime: Capital Sentencing Standards in Economic Perspective', (1979) 70 J. Crim. L. & Crimin. 281.
23. *See* Adelstein, *supra*, note 18, pp. 80–99.
24. We borrow this term from the communications theorist Masanao Toda. Toda, 'About the Notions of Communication and Structure: A Perspective', in L. Thayer (ed.), *Communication: Concepts and Perspectives*, (1967), pp. 25–52. Compare the discussion in the House and Senate Reports of the 'reproduction right' established by §106(1) of the Copyright Revision Act of 1976, §101 *et seq.* (1982 ed.):

    > [T]he right 'to reproduce the copyrighted work in copies or phonorecords' means the right to produce a material object in which the work is duplicated, transcribed, imitated, or simulated in a fixed form from which it can be 'perceived, reproduced, or otherwise communicated, either directly or with the aid of machine or device.'

    H.R. Rep. No. 94–1476, at 61 (1976); S. Rep. No. 94–473, at 58 (1975).
25. *Cf.* Gordon, *supra*, note 4, pp. 1610–1612.
26. *Compare* K. Arrow, *supra*, note 21, p. 40: '[T]here tends to be a cycle in which an innovation in artistic vision first occurs and is diffused; then, as it becomes more familiar, the value of repetition of similar signals decreases...'.
27. *See*, for example, Eldredge & Gould, 'Punctuated Equilibria: An Alternative to Phyletic Gradualism', in T.J.M. Schopf (ed.), *Models in Paleobiology* (1972), pp. 82–115; S. Stanley, *The New Evolutionary Timetable: Fossils, Genes, and the Origin of Species* (1981).
28. Heilprin, 'Alternative Solutions', in G. Bush and L. Hattery (eds.), *Reprography and Copyright Law* (1964), pp. 131–138, 135.
29. A complete discussion of the history of copyright is, of course, beyond the scope of this essay. In addition to those works cited in the text, an excellent survey of this historical development is L. Patterson, *Copyright in Historical Perspective* (1968).
30. Pforzheimer, 'Historical Perspective on Copyright Law and Fair Use', in G. Bush (ed.), *Technology and Copyright: Annotated Bibliography and Source Materials* (1972), pp. 269–286, 271.
31. C. Judge, *Elizabethan Book Pirates* (1934), p. 19.
32. *Cf.* Demsetz, *supra*, note 16, p. 350.
33. [1774] 4 Burrow's Reports 2408. An analogous result was reached sixty years later by the United States Supreme Court in *Wheaton* v. *Peters*, 33 U.S. (8 Pet.) 591 (1834).
34. 35 Stat. 1075, § 1.
35. Shortly after the Lords' decision in *Donaldson*, the Company again sought relief from the House of Commons, claiming that large sums had been invested in reliance upon their own construction of the statute. This time, however, their pleas were denied, prompting one scholar to remark of the entire episode that 'The Statute of Anne suggests that it was not the Australians who discovered the boomerang'. Pforzheimer, *supra*, note 30, p. 272.
36. *Cf. Sony Corp* v. *Universal City Studios*, 104 S.Ct. 774, 792 (1984).

37. 9 Fed. Cas. 342 (C.C.D. Mass. 1841).
38. *Ibid.*, p. 348. The decision to grant fair use, wrote Justice Story, should consider 'the nature and objects of the selections made, the quantity and value of the materials used, and the degree in which the use may prejudice the sale, or diminish the profits, or supersede the objects of the original work'. *Ibid.*, p. 348.
39. *Sony Corp.* v. *Universal City Studios*, 104 S.Ct. 774,806 (1984) (opinion of Blackmun, J., dissenting).
40. H. R. Rep. No. 94–1476, at 66 (1976). *See also* S. Rep. No. 94–473, p. 62 (1975).
41. Copyright Revision Act of 1976, 17 U.S.C. §107 (1982 ed.): 'In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for and value of the copyrighted work'.
42. 17 U.S.C. §108 (1982 ed.).
43. *Dellar* v. *Samuel Goldwin, Inc.*, 104 F.2nd 661, 662 (2nd Cir. 1939).
44. Saunders, 'Origin of the "Gentlemen's Agreement" of 1935', in G. Bush (ed.), *Technology and Copyright: Annotated Bibliography and Source Materials* (1972), pp. 301–318, 306.
45. *Ibid.*, p. 317.
46. Compare Demsetz, *supra*, note 16, pp. 348–350; 'What converts a harmful or beneficial effect into an externality is that the cost of bringing the effect to bear on the decisions of one or more of the interacting persons is too high to make it worthwhile. . . . . [P]roperty rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization'.
47. *Cf.* Nimmer, 'Copyright Liability for Audio Home Recording: Dispelling the *Betamax* Myth', (1982) 68 Virg. L.R. 1505, 1524.
48. Compare our earlier quotation of Gordon on this point, *supra*, note 8.
49. Saunders, *supra*, note 44, p. 317.
50. UCLA Project, 'New Technology and the Law of Copyright: Reprography and Computers', (1968) 15 U.C.L.A. L. Rev. 939, 959.
51. National Commission on Libraries and Information Science, 'Library Photocopying in the United States: With Implications for the Development of a Copyright Royalty Payment Mechanism' (1977) p. 3. As one commentator has noted, this is 'a far cry indeed from the day when only a fairly large library with adequate funds could consider the purchase, installation, and operation of a several thousand dollar photostat camera'. Hawken, 'Reprographic Technology: Present and Future', in G. Bush and L. Hattery (eds.), *Reprography and Copyright Law*, (1964), p. 45.
52. *Williams & Wilkins Co.* v. *United States*, 487 F.2d 1345, 1347–8 (Ct.Cl. 1973).
53. On these royalty plans generally, *see* S. Shemel and M. Krasilovsky, *This Business of Music*, (4th ed.—1979), pp. 157–172.
54. So limited were the potential markets for their journals, and so razor thin the profit margins, that in 1965 one Williams & Wilkins journal saw its profits cut in half when just thirty-seven subscriptions were cancelled. *See* UCLA Project, *supra*, note 50, at 944.
55. *Williams & Wilkins Co.* v. *United States*, 487 F.2d 1345 (Ct.Cl. 1973), affirmed by an equally divided court. 420 U.S. 376 (1975) (*per curiam*).
56. 487 F.2d, p. 1358.
57. 487 F.2d, p. 1366 (Cowen, C.J., dissenting).
58. *Ibid.*, p. 1366. *See also* M. Nimmer, *Nimmer on Copyright* (1973—ed.). §145, p. 650.
59. 487 F.2d, p. 1351.
60. *Ibid.*, p. 1356.
61. *Ibid.*, p. 1356.
62. *Sony Corp.* v. *Universal City Studios*, 104 S.Ct. 774, 809 (1984) (Blackmun, J., dissenting).
63. *See* text accompanying notes 3–15, *supra*.

64. 487 F.2d, pp. 1354–1360.
65. *Cf.* Gordon, *supra*, note 4, pp. 1648–1650.
66. *See*, for example, the discussions in Nimmer, *supra*, note 47, pp. 1525–1534; S. Shemel and M. Krasilovsky, *supra*, note 53, pp. 157–172; E. Ploman and L. Hamilton, *Copyright: Intellectual Property in the Information Age*, (1980), pp. 40–44 and 90–107; L. Seltzer, *Exemptions and Fair Use in Copyright* (1978), pp. 109–112; J. Marke, *Copyright and Intellectual Property* (1967), pp. 79–82.
67. *See* Macneil, *supra*, note 20, pp. 886–901; I. Macneil, *The New Social Contract: An Inquiry Into Modern Contractual Relations* (1980).
68. 487 F.2d, p. 1360.
69. This dilemma was well put by Arthur Rosenthal, counsel for Williams & Wilkins, before a Senate Committee:

> And here is the rub, as far as publishers of specialized journals are concerned. For as the cost of printing and publishing inexorably rises, and the charges for photo reproduction increasingly become cheaper, the journal publisher finds himself unable to pass on the higher costs to the consumer who at some point on the scale will prefer photocopying to subscribing. The final result, if carried to its logical conclusion, of course is self-defeating; the erosion of the journal's subscription list will sooner or later compel the publisher to cease publication of the journal altogether—and then the scholar will have nothing to copy. The publisher, the scholar, the rest of us will be poorer as a result.

Hearings before the Subcommittee on Patents, Trademarks, and Copyright of the Senate Committee on the Judiciary, 93rd Congress, 1st Session, at 3 (31 July and 1 August 1973).

70. Quoted in J. Marke, *supra*, note 66, p. 72.
71. Remedies of this kind are discussed in Nimmer, *supra*, note 47, pp. 1525–1533; Note, '*Universal City Studios, Inc.* v. *Sony Corp*: "Fair Use" Looks Different on Videotape', (1980) 66 Virg. L. R. 1005, 1025; Note, 'The *Betamax* Case: Accommodating Public Access and Economic Incentive in Copyright Law', (1979) 31 Stan. L. R. 243.
72. *Universal City Studios* v. *Sony Corp. of America*, 480 F.Supp. 429 (C.D. Cal. 1979).
73. *Universal City Studios* v. *Sony Corp. of America*, 659 F.2d 963 (9th Cir. 1982).
74. *Sony Corp. of America* v. *Universal City Studios*, 104 S.Ct. 774 (1984). The majority consisted of Justices Stevens, Brennan, White, O'Connor, and Chief Justice Burger, while Justices Marshall, Powell, and Rehnquist joined Justice Blackmun's dissent.
75. 104 S.Ct., pp. 806–815 (Blackmun, J., dissenting).
76. 104 S.Ct., pp. 785–789, 789.
77. *Ibid.*, pp. 791–796.
78. 104 S.Ct., p. 810, 810 n.35 (Blackmun, J., dissenting).
79. 222 U.S. 55 (1911).
80. 104 S.Ct., p. 786.
81. *Ibid.*, p. 786.
82. 487 F.2d, p. 1362.
83. 104 S.Ct., pp. 792–795.
84. 487 F.2d, p. 1362.
85. 104 S.Ct., p. 796.
86. 17 U.S.C. § 504(c) (1982 ed.).
87. Ringer, 'The Use of Copyrighted Works in Information Storage and Retrieval Systems', in G. Bush (ed.), *Technology and Copyright: Annotated Bibliography and Source Materials*, (1972), pp. 296–300, 297.