An Overview of Copyright and Intellectual Property

by

Marta Ceballos

1. Introduction

Copyright forms a part of a larger body of law known as "intellectual property". Intellectual property can be thought of as creations of the human mind and intellect, and intellectual property law in general recognizes, and attempts to protect, the property rights of creators in their creations. It also serves, indirectly, as a means under which human creativity may be stimulated, and under which the fruits of such creation can be made available to the public in general, via transactions involving intellectual property. It is widely recognized that without some sort of recognition and protection of intellectual property rights, economic systems (including international trade) would be significantly adversely affected, with the corresponding negative effects on economic growth in general.

While Latin-based languages have always used the term "intellectual property" to refer only to the property of creators of works with some cultural value, internationally the same term is generally taken to refer to both cultural and industrial property. Initially, industrial property was protected by the Paris Union (created by the Paris Convention for the Protection of Industrial Property of 1883), while the Berne Union (established under the Berne Convention for the Protection of Literary and Artistic Works of 1886) dealt with issues regarding copyright. The secretariats of the two unions were combined in 1893, forming what is now known as the World Intellectual Property Organization (WIPO).

While the document that was written to establish WIPO does not define "intellectual property" directly, it does clearly state the subject matter that is protected by intellectual property rights, including (among others) literary, artistic and scientific works, inventions in all fields of human endeavor, and industrial designs and trademarks. Intellectual property law, thus, can be divided into two branches, patent law (which refers principally to inventions and other industrial property) and copyright law (which refers principally to literary and artistic creations, which we shall associate with goods with cultural value).

Inventions can be thought of as new solutions to technical problems, but they need not be represented in a physical embodiment to be protected under patent law, that is, it is sufficient that the inventor fully describes the nature and working of the invention in a written document. However the patent protects the invention itself, and not the form of expression that may have been used to describe it. On the other hand, creations with cultural value (for example, books, musical compositions, paintings and other works of art, as well as technology based works such as computer programs and electronic data bases) are protected by copyright law, which only provides protection for the form of expression and not the ideas expressed. In what follows, we shall be concerned entirely with copyright law.

2. Copyright and cultural markets

All economies, both developed and developing, have an important dependence on culture and cultural activity in general. We can think of cultural activity as being that part of the culture and leisure industry in general which is comprised of all activities that produce and distribute goods and services with cultural content, that are products of creative work, and that are destined for consumption via reproductive mechanisms. The intellectual property in such cultural goods is both recognized by, and protected by, copyright law. For the purposes of copyright, we should include every work of original authorship, irrespective of its literary or artistic merit, that is, the recognition of a property right via copyright should always be independent of the true cultural value of the work in question.

For our purposes, a "cultural creation" has been made when new information with any degree of cultural content is discovered. As soon as the exact identity of the owner of this creation is determined, we can say that intellectual property exists. It is usual that the initial owner is simply the creator himself, although there may be exceptions to this rule, for example in cases of patronage, or other cases when a creator cedes his rights before the act of creation takes place (for example, the author of a report for a company that employs him usually has agreed that any intellectual property created belongs to the employer). Copyright law recognizes and protects the property right in the cultural creation.

The rights granted under copyright law to the owner of the copyright in a protected work are the exclusive rights to use, in any way or form, the work, subject to the legally recognized rights and interests of others. Basically, these rights can be divided into "economic rights" (the right to derive financial reward from the use of the work) and "moral rights" (the right to preserve the authorship of the work). In this document, we shall be primarily concerned with economic rights.

Under copyright law, the owner of the copyright has the legally recognized right to prevent certain uses of the protected work, and also, the right to authorize use. Naturally, authorized use normally occurs in exchange for a monetary recompense, which is known as a copyright "royalty". The types of use that are usually of concern are the right to reproduce on a physical support (for example, photocopies of written works, or electronic copies of musical compositions), the right of public performance (broadcasting and public communication), and the right of translation and adaptation. However, under the right to reproduce we should also point out several related issues, some of which are designed to ensure the right of reproduction, and others to ensure the best interests of other members of society. Within the first type, we have the right to authorize distribution of copies (including the right to import and export), and the right to authorize rental of copies. The second type of right (that of other members of society) is generally known as "fair use", and sets a limitation on the rights of the copyright holder. Under fair use, a small part of most protected works can be reproduced without prior authorization when it is generally accepted that such reproduction is in the public interest, or that it is simply economically inefficient to request formal authorization for the reproduction. An excellent example of fair use is when a particular amount of an academic journal may be reproduced at no cost for research or teaching purposes.

Aside from fair use, a further limitation occurs in that copyright has, in all countries, a limited duration after which the copyright expires and the entire set of rights is effectively shifted into the public domain. In most countries, copyright is established upon the creation of the work, and lasts until at least 50 years after the death of the author in order that the author's successors may benefit from the exploitation of the work.

In spite of limitations, the exploitation of copyrights forms a very large part of most developed economies. Recent studies suggest that as much as 7 percent of GDP can be attributed to the culture and leisure industry, and that this figure is increasing over time. Between 65 percent (in the case of books) and 85 percent (in the case of recorded music) of the general public are users of cultural intellectual property protected under copyright. Also, as a very rough estimate, each individual member of society (assuming a developed economy) contributes close to $10 annually to total copyright royalty income (about $6 for music related royalties and about $4 for written creations). Finally, total copyright royalty revenue is growing at between about 10 and 40 percent percent per annum (depending on source of the income and the particular country of reference). Clearly, if copyright can be properly managed and protected, the recent advances in digital technologies that permit greater distribution opportunities for cultural products points towards even more impressive figures into the future.

3. Transactions involving copyright, the role of copyright collectives and the theoretical fundamentals of copyright

Although a copyright is the property right in a creation of a cultural nature, it is an asset in itself since it has value and can be transacted. Indeed, one of the principal reasons why copyright exists is to allow the general public to gain access to the fruits of creative endeavor, that is, to allow certain rights to be transacted in market settings.

It is important to note that in transactions involving cultural intellectual property the seller grants the buyer the right to use, or to have access to, and intellectual property of a cultural nature. That is, the intellectual property itself is not transacted, only the right to have access to it. Clearly, there is a wide range of options, depending on the degree of access that is granted under the transaction contract. In this sense, we can think of the entire copyright as being a complete set of all possible rights, that can be subdivided into different independent subsets. Then the copyright holder can decide on different degrees of access according to both exactly which sub-rights are included in the access list, and the time period during which access is granted. Note that one particular right that should be included in the total set of rights is the exclusive right to grant access at a price. Even if this is the only right that is retained by the copyright holder, we should say that only an incomplete access has been granted. A short list of options is:

1. Complete access that is unlimited in time (this amounts to the outright sale of the copyright).
2. Complete access that is limited in time (this is an exclusive rental contract with a limit, or end, date).
3. Incomplete access that is unlimited in time (this can be seen to be the outright sale of a properly defined subset of rights within the entire copyright).
4. Incomplete access that is limited in time (a restricted rental contract).

An important aspect of copyright transactions is the fact that intellectual property is a public good. This means that there can be, simultaneously, many users and no particular user's access is negatively affected in any way by the existence of the others. Therefore, so long as the right to grant access has not been ceded, the initial copyright holder can grant access to many users. Even if the right to grant access has been sold, then the new holder of this particular right can grant different degrees of access to many users simultaneously.

As is natural, once cultural intellectual property has been exposed via the granting of some type of authorization to access, it becomes necessary to protect it from unauthorized use or access. Therefore, in order for it to be effective copyright protection requires monitoring of use. Clearly this is prohibitively expensive for individual copyright holders, since the transactions costs involved in monitoring the use of all possible consumers is enormous. For this reason, almost all copyrights are administered by copyright collectives, which are simply associations to whom authors transfer copyrights for purposes of exploitation. In this way, a copyright collective can be thought of as a large group of copyright holders acting together. In short, the relationship between creators and copyright collectives is founded on the theory of comparative advantage and specialisation, and is made possible by the existence of high transaction costs in the management of intellectual property rights.

Since the activity of dealing with copyrights presents many aspects of a natural monopoly, in most countries there is only one copyright collective for each general type of creation (musical compositions, written works, etc.) with the notable exception being the USA, where two principal collectives exist that both administer copyrights in musical compositions (ASCAP and BMI). Copyright collectives grant licenses to access the works in their repertory, they negotiate and collect royalties, which are then distributed, to the members, and they take legal actions against copyright infringements. Typically, copyright collectives sell what is known as a "blanket license", that is, the right to limited access of all of the individual copyrights contained in its repertory, rather than the right to use each copyright individually.

The economic theory literature concerning optimal regulation of natural monopolies is very clear. The socially optimal way to regulate a natural monopoly is to set its price equal to marginal cost, and then to subsidize the fixed costs so that the business may continue. The collective administration of copyright is an excellent example of a natural monopoly, since adding new, independent, copyrights to an existing repertory will not, in general increase total costs, hence average costs are decreasing in repertory size. This is due to the fact that collective administration is the only way that the high transactions costs of copyright administration (in particular, the costs of monitoring use, and of charging the access price) can be overcome. However, since the marginal cost of adding a user to a blanket license is basically 0, one can formulate a good argument for setting the price of access to a copyright at precisely 0, which is formally equivalent to not recognising this particular degree of access in the initial set of rights covered by the copyright, since it means that any user can freely access the intellectual property in this degree.

If we assume, as is natural, that the demand for access to intellectual property is negatively sloped (that is, intellectual property is an ordinary good), then a price of 0 will maximize the demand, and consequentially the distribution of the intellectual property, assuming this property exists. However, a price of 0 will minimize the revenue of the copyright holder, and if the copyright holder is the initial creator, then a price of 0 must eliminate the economic incentive to create in the first place (although naturally, there may exist other, non-economic, incentives that creators take into account). Hence, if the creator foresees a price of 0, then it is possible that he will not have sufficient incentive to dedicate his time to the creative process, and the entire market will collapse since no intellectual property will exist. On the other hand, a strictly positive price will imply less demand (and so less distribution), but will generally imply that there exists an economic incentive for the creator, thereby providing a greater guarantee that creators will dedicate their time to the creative process. However, we must also be aware that, in most cases, there will exist a price that

is so high that demand is reduced to 0, which once again eliminates the economic incentive for creators.

It is practically indisputable that it is important and valuable that cultural intellectual property exists, and that it is shared among members of society. The second of these objectives can be attained using a low price of access. However, for intellectual property to be distributed, there must exist a stock of intellectual property in the first place (and it may well be the case that it is interesting for this stock to be expanding over time), which requires a price that is sufficiently positive to guarantee the economic incentive in creators. Copyright law is designed to balance these two opposing effects. In general, it can be concluded that in almost all cases, the socially optimal price will be relatively low but strictly positive (see Landes and Postner (1989), and Besen and Raskind (1991) for more complete discussions of the economic theory of copyright law).

4. Current concerns surrounding copyright

While copyright transactions are flourishing world wide, there are several aspects of copyright markets that are causing a certain degree of worry for copyright holders. Here we shall discuss only two, firstly the establishment of the correct price of access, and secondly the effect of piracy (unauthorized access).

4.1 Pricing a copyright transaction

Strictly speaking, there is no such thing as a correct price, but rather economists are interested in "equilibrium prices", which are the prices such that no demander at that price is left unsupplied, and no supplier is left without a demander. Thus, the equilibrium price of access will occur at the intersection of the particular supply and demand curves for the degree of access under consideration. However, we can now ask, what factors determine the shapes and positions of these curves? Here, we will discuss only one aspect that has typically been dealt with in an adhoc manner - the dependence of the final price on the final market value of the copyright being accessed.

In order to take this aspect of copyright transactions into account, we must consider the environment of uncertainty in which such transactions are typically carried out. Between the creation phase and the final consumption of intellectual property, there will exist several contracts under which access to the intellectual property is distributed. In the first place, as has already been noted, the initial copyright holder (the creator) will usually cede his commercial rights to a distributor (which will normally be a copyright collection society). Secondly, the distributor will then grant access to final users, generally via a second, more specialized, level of distribution. At each transaction level, there will exist a total surplus that must be distributed between the two parties to the contract, and over the entire range of contracts, the final value of the access being contracted (the total value of this degree of access to final users) must be allocated among all participants in the creation-distribution-consumption chain.

The problem is the following, the final value of the access under consideration is effectively a random variable (it may take on any one of many values, depending upon a great many influencing factors), and yet the contracts that specify how this value must be shared must be written and agreed upon before this uncertainty is resolved, since it is precisely via these contracts that the uncertainty can be resolved. The question is, how should the price of access in each moment of the distribution chain depend upon each possible contingency of the final value?

In practice, this aspect of access contracts is solved in the simplest possible way – there is a constant proportional price, that is, the final value of the copyright being

accessed is divided among the participants to the contract according to proportional splits that do not depend on the value being shared (for example, author royalties are often set at 10 percent of final sales revenue, independently of how much that sales revenue turns out to be). However, while this rule is simple and thereby certainly saves on other transactions costs, it can be shown that it is in general an inefficient manner in which the inherent risk should be shared among the parties to the contracts. Pricing access efficiently, at all levels of the distribution chain, is certainly one of the most important questions facing copyright collectives today.

4.2 Copyright piracy

The second important concern for copyright collectives is the presence of piracy of intellectual property, that is, unauthorized use of copyrights. When a legal copyright exists, it is necessary to pay the copyright holder the access price in order to gain access to the intellectual property in question. If a user takes access without paying the price, then we say that an act of piracy has occurred. Piracy of intellectual property is equivalent to the outright theft of any other type of good.

Copyright holder lobby groups often present arguments to the effect that piracy is so rampant that it is threatening the very existence of legal transactions involving intellectual property. Indeed, in some countries, it is argued that the proportion of consumers using pirate copies of certain items of physical supports of intellectual property is almost as great as those using legitimate copies. Statistics are also given to the effect that piracy is costing immense amounts of money in lost legitimate trade. However such statistics must be treated with a certain degree of doubt, since they are typically based upon the assumption that each pirate copy that is transacted represents the loss of a legitimate sale. This is an obviously incorrect foundation upon which to base an estimate of the loss of legitimate trade, simply because pirate copies are always transacted at a lower price than legitimate copies, and so eliminating the pirate copy does not imply that the user would then purchase a legitimate copy. Furthermore, eliminating the option of pirate copies would certainly affect the price at which legitimate copies are sold, presumably increasing it further since legitimate trade would be facing less competition. Hence we may have reason to believe that eliminating the option of piracy may even reduce the number of legitimate copies sold due to price increases. Indeed, recent studies based on more correct economic theory suggest that only about 10 percent of pirate copy transactions represent lost sales of originals (compared to the figures, often between 40 and 60 percent, that multinational record companies discuss). Finally on this point, we should also note that the economic harm that piracy inflicts upon copyright holders should not be measured in terms of lost income, but rather lost profit. Given that profit margins may be as low as 5 percent of sales, the true economic harm is far less than what is often cited.

Even though piracy occurs for all types of intellectual property, the most worrying area today is certainly piracy of musical compositions. Software piracy is also a worry, but can be more easily controlled using programming possibilities that limit the number of copies that can be produced from an original. However, on this point it should also be noted that the technology race that ensues as software producers attempt to outwit pirates, and pirates attempt to outwit producers, amounts to a costly waste of resources with no final productivity. Piracy of literary works also exists (photocopying of books) but given the generally low price of original formats, the high cost of copying (photocopying an entire book is a time consuming activity) and the fact that the pirated version is often a poor substitute for an original, it is generally considered to be less rampant than piracy of musical compositions. Indeed, given new technologies (for

example, CD burners and digital data transfer mechanisms over Internet), a pirate copy of a CD containing music is very close to being a perfect substitute for an original, and yet can be obtained for a fraction of the price.

One method of ensuring that copyright royalties are paid in spite of the problems of piracy is charging a tax on blank supports and copy technology, from which lost copyright royalty income is financed. This is done in many countries, for example, on photocopy machines, where a small fraction of the price of the machine is passed on to copyright collectives that deal with authors' rights to cover for any royalties that are lost due to illegal photocopying of books. Along the same lines, in some countries a tax is set on blank tapes (both video and audio) that is also passed on to copyright holders (in USA, this is regulated by the Audio Home Recording Act of 1992), and very recently in Spain, a court decided that the producer of blank CD ROM's should pay the local music related copyright collective a tax on each unit produced since 1997 to cover for lost royalty income on copies of pre-recorded music using this media. However, this type of solution is really no more than a shift of the economic costs of piracy from copyright holders to consumers who use blank supports (and copy technologies) for purposes other than reproducing protected works. Indeed, in some countries (for example, Australia), this type of tax based solution has been declared anti-constitutional. In any case, under current legislation, the taxes that can be levied are only to cover for royalties due on copies designated for private use, and not for covering rights of reproduction and public communication. Furthermore, if the tax is levied with the purchase price of the blank support, then other anti-piracy strategies (such as encrypting codes and other programming methods on the original product) designed to increase the costs of copying become a violation of the individual rights of consumers who have purchased a blank support.

While piracy can take many forms, depending on the type of access (and, perhaps, the type of intellectual property), in principle it is relatively easy to do (that is, it can be done at a relatively low cost) and difficult (that is, costly) to avoid via a legal system. It is quite easy to see that the higher is the price at which legal access is granted, the greater is the incentive for users to resort to piracy as a substitute for legal access. The natural implication is that there exists more than one way to attack the problem of piracy, one based upon the introduction of legal regulations, and the other based upon the incentives provided by price systems. The first is the domain of the legal profession, while the second is the domain of economists. Both imply the need for a consistent definition and recognition of copyright, but while legal solutions can be seen to be an exogenous barrier to behavior, incentive based solutions are totally endogenous manners in which behavior can be curbed. It is not clear which of the two is likely to be more adequate, but what is certainly obvious is that the introduction of artificial rules will always require maintenance costs (behavior will need to be monitored and verified for the rules to have any real effect, since otherwise parallel markets in which the rules are not observed will always be established, in the same way that smuggling and other illegal activities are the logical response to laws that eliminate legitimate trade in certain goods), incentive based mechanisms can never be avoided.

Naturally, the legal system will generally provide a disincentive for piracy, for example by stipulating fines and other penalties for pirates once discovered. However, whenever the probability of piracy being detected is quite low, as is the case in practice, then the legal system can turn out to be rather ineffective as a mechanism against piracy. In general, we can state that, the greater is the equilibrium price of access, and the less effective is the legal system in monitoring use, the greater will be the threat of piracy. In this case, if the copyright holder considers that the existence of piracy is damaging to

him (see Liebowitz (1985), Takeyama (1994) and Takeyama (1997) for explainations as to why piracy may not be damaging to the interests of creators), then he may well find it beneficial to reduce the price at which legal access is granted, since this should provide a direct, and significant, disincentive to piracy activity.

However, copyright holders are typically unwilling to admit that a solution, even though partial, to the problem of piracy lies in their own pricing policies. The reasons for this are often cited to be that price reductions are impossible, since legitimate production requires not only the marginal cost of producing physical support units, but also the fixed costs of producing the original unit (the master tape) including the costs of promotion. On top of this, legitimate units are obviously subject to the copyright royalty that units produced by pirates save. Consequently, pirate copies are a means of supply of a perfect substitute item at a lower fixed and marginal cost, leading to the obvious conclusion that they can be sold profitably at a lower price. While theoretical solutions, based on the economic theory of incentives, do exist, they typically involve business strategies that imply moving in completely new directions, with the corresponding uncertainty as to the final outcome. It is much less risky, and overall less costly, for copyright holders to attempt to invoke stronger legal protection, effectively passing the economic costs of controlling piracy onto the legal system, and hence onto the society in general. Much theoretical work remains to be done in this area in order that real working solutions, that are socially efficient, can be established.

5. Conclusions

In this paper we have introduced and discussed the concept of copyright. Legal recognition of copyright is undoubtedly a necessary ingredient for any transactions involving cultural intellectual property to take place - transactions that have an obvious importance within developed economic systems.

As we move into the 21st century, there is a need for copyright to evolve as well, accepting new technological developments and searching for the relevant methods by which it can be properly administered, rewarded and protected. The underlying concept of copyright has been traditionally dealt with using legal mechanisms, although recently a good deal of effort has been devoted to searching for less costly, and more efficient, alternatives. However, as yet, such alternatives have not been convincing for copyright holders, and so the emphasis on the legal system has remained.

Only time will tell whether or not a purely legally based copyright system can be upheld in the age of the Internet, and continually improving technological methods of reproduction. Some experts are of the opinion that the future of music will involve a return to the original values in which music held a purely cultural role in society, and musicians that are not motivated by the motive of financial gain. Others have a bleaker outlook, and foresee the end of the pre-recorded music industry as we know it, as musicians that cannot protect their property rights effectively become insufficiently motivated to dedicate their time to creative activities. However, many musicians themselves have other opinions, and are more willing to look into more innovative solutions, viewing the options that distribution via the Internet can offer as more constructive than destructive.

References

Besen, Stanley and L. Raskind. “An Introduction to the Law and Economics of Intellectual Property” in *Journal of Economic Perspectives*, 5 (1991): 3-27.

Landes, William and R. Postner. “An Economic Analysis of Copyright Law” in *Journal of Legal Studies*, XVIII (1989): 325-363.
Liebowitz, Stanley. “Copying and Indirect Appropriability” in *Journal of Political Economy*, 93 (1985): 945-957.
Takeyama, Lisa. “The Welfare Implications of Unauthorised Reproduction of Intellectual Property in the Presence of Demand Network Externalities” in *Journal of Industrial Economics*, 17 (1994): 155-166.
Takeyama, Lisa. “The Intertemporal Consequences of Unauthorised Reproduction of Intellectual Property” in *Journal of Law and Economics*, 40 (1997): 511-522.
Watt, Richard. Copyright and Economic Theory: Friends or Foes? Cheltenham: Edward Elgar, 2000.