

Electronic information management and intellectual property rights

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Abstract. The paper examines the idea of copyright and how it functions for both digital and non-digital publications. Various different interpretations of copyright and its application are discussed. Ideas such as databases, fair use and exceptions are explored in their relationship to technological measures used to control the use of copyright material. Examples from the CITED, COPYSMART, IMPRIMATUR, and COPICAT projects of the European Union are described briefly. The impact of the latest EU directive on copyright and the information society is explained and the need for co-operative planning and implementation of technical measures throughout the information industry is emphasised.

1. Introduction

Intellectual Property (IP) rights are often a difficult concept to grasp in a world which is intensely focused on the material world. Intellectual Property Rights (IPR) are not in themselves tangible objects and therefore are often overlooked, ignored or even dismissed by many working in areas where they are actually crucial to the exploitation of what is being made, invented or thought about.

2. The basics

Essentially Intellectual Property is a concept to protect the creativity of the human mind and in most jurisdictions is divided into a series of different types – patents, trade and service marks, design rights and copyright. This study focuses on copyright.

3. The owners' and authors' rights

When we create something two things happen: we put something of ourselves into it and we become vulnerable to the outside world. This is just as true of an internal memo in the company or a scientific paper in a journal.

It follows that what we create we should also control. It is important to realize that the copyright is quite separate from the carrier of the work in which it subsists. The fact that you buy a book does not give you any control over the copyright in it.

So the law in most countries gives authors and owners a set of rights which vary from one type of IP to another.

In addition to these essentially “economic” rights many countries give authors certain “moral” rights. These co-called moral rights are essentially related to the integrity of the person creating the work and therefore, by extension, to the work itself. Essentially they protect the paternity and integrity of the work so that it cannot be seriously changed without permission nor distributed without the author’s name on it. Neither can works be attributed to someone when they did not create them.

3.1. Copyright

Copyright gives the creator (author, painter, composer, singer, broadcaster, etc.) the right to protect what they create and be rewarded accordingly. It is therefore important as it ensures the continued growth of creativity. Copyright law aims to protect this growth but, at the same time, tries to ensure that some access to copyright works is allowed as well. Without this access creators would be starved of ideas and information to create more copyright material. Copyright is not something that can be registered, unlike other IPR: it subsists automatically when something is created. Neither does copyright often last indefinitely. As a general rule it expires 70 years from the end of the year in which the author dies although there are different rules in many countries for different types of work. From the point of view of electronic information copyright is by far the most important right.

3.2. Rights in an electronic world

It is important to realize that whatever is said about “electronic rights” is usually derived from fundamental principles discussed above and is often the result of a long and complex evolutionary process. Although supplementary laws have been passed in many countries to accommodate technological developments, these invariably build on existing principles.

3.3. Databases

Some materials are not considered by all legislations to be suitable for copyright protection. For example, directories, lists of organizations or people or simple bibliographies. Nevertheless such items are the result of considerable investment in terms of money, labour and technical skill. For this reason the European Union (EU) introduced a directive to regulate this situation [2]. As a consequence any thing qualifying as a database is now protected in the EU by a special Database right. This lasts for only 15 years instead of the usual 70 but is capable of being automatically renewed or extended each time the database has significant changes made to it. Thus a dynamic database will be continually updated and therefore the 15-year protection “clock” will continue to tick until the time when the database is shut down and no longer active. This right protects all kinds of valuable products which do not demonstrate any kind of creativity in terms of original thinking.

3.4. Ownership and protection

Although these rights are intangible in themselves, they nevertheless exist in law and usually have the same status as any other property right. Ownership is therefore a vital element and it would be reasonable to suppose the author was the first owner of such rights. But this may not be true of works created as part of the author’s employment. In this case the rights belong immediately to the employer and this is true in nearly all countries. However, most authors cannot exploit their works in any commercial sense without the assistance of some kind of publisher, whether it is a conventional commercial publishing

house, a government agency, a research institution or a website host. In return for making the work widely available the organization doing this will almost certainly want some rights over the work in return. As all IP is a tradable commodity this can be done in the form of outright selling, licensing for a specific time-span or purpose or format. Authors can set all kinds of conditions on the sale or lease of their IP rights and usually do so. However, this process immediately makes clear the distinction between the rights that *authors* enjoy and those that *owners* have and why different people may have different rights in the same work.

3.5. *What needs managing?*

Given that copyright is both an economic and personal (moral) right, why is there a need to manage it in any particular way? Essentially this is because the very nature of the property protected by copyright (and other IPRs) is intrinsically different from that protected by the usual laws governing theft, trespass and even fraud. Authors and owners have two sets of rights to consider and protect which is rarely the case in the purely material world. The mechanics behind making available physical goods and IPRs are fundamentally different. Selling, renting or lending a physical object deprives the owner of the use of that object either permanently or on a time-limited basis under agreed terms. In the case of many IPRs, especially copyright, the mathematics are quite different. The more a work is distributed the more people have access to it or have gained knowledge from it.

3.6. *Moral rights*

Authors enjoy the moral rights mentioned earlier – basically integrity of the work and acknowledgment as the author. These rights in the past have been managed in a very elementary way. Authors enjoyed them as an absolute right in countries such as France and Germany but did not enjoy them at all in the UK and Ireland until well into the 1980s and then only on a very restricted basis. In the UK, for example, such rights have to be asserted in writing to the publisher and apply only to monographs and films. Neither do they apply to works created as part of employment. If such rights were infringed then the author has the absolute right to take the publisher to court to put the matter right and obtain damages.

3.7. *Economic rights*

More far-reaching and of much greater significance to the commercial world are the economic rights that owners enjoy. Owners are more likely to be companies, publishing houses, film companies or sound recording firms than individuals. Owners of copyright enjoy a series of rights which vary somewhat from one country to another but can be summarized as follows:

- Copy the work;
- Make the work publicly available;
- Perform, show, play or broadcast;
- Adapt or translate;
- Lend or rent the work.

These rights were traditionally managed through the courts because it was comparatively easy to spot when we had copied a work, whether it was a scientific paper, musical disc, photograph or film. However, much copying was, and is, done by individuals for personal use so owners rarely take action unless the

copying is symptomatic of much more extensive copying. This led some countries to develop a concept of “fair use” or “fair dealing”.

The only real course of action for owners is to threaten some kind of legal action once the infringement has been discovered. A warning letter will be sufficient for small offences but it may be necessary to take the offending person to court which is expensive for both owner and infringer and the outcome is never totally certain.

3.8. *Owners' needs*

It is clear that all these remedies are retrospective. If an infringement is detected then action is taken against the offending person or institution and recompense is sought and steps taken to prevent the infringement continuing (if appropriate). Such action is often taken, not only because of the economic damage of the actions actually committed but as a warning to others that the owner will not tolerate infringement of rights. Whilst remedies are appropriate, most owners would prefer to take proactive action to prevent infringement and ensure a proper respect for their property and economic returns on it when possible.

3.9. *Managing in the electronic context*

But owners have other interests besides enforcing the legal rights they enjoy in each country. In the current technological climate both creators and users of intellectual property have certain basic needs which must be satisfied if they are to be assured their material can be safely released in electronic form. Although it would be easy to categorize the needs of owners as *protection* and those of users as *access*, this is a very simplistic approach and many more requirements need to be examined before any comprehensive system of electronic control can be put into place.

3.10. *Owners' needs*

In the case of rights owners the need for protection should not be seen so much as *preventing* use of their material as *controlling* that use. Basically a rights owner needs to be able to control: any form of copying, distributing, transformation or generally making available to the public which would harm their interests. This might be by competing sales or by avoiding the necessary licences required for public use.

The rights owner may also wish to implement differential pricing depending on the use to which their material is to be put or the type of user. Students may pay less than commercial companies; single copies might cost less per rata than multiple ones for teaching.

These are entirely new concepts in publishing which could not be achieved in a paper world. The best that could be achieved was differential pricing of a total product such as a journal title. Different subscription rates for institutions, libraries and individuals are common. An example of this is Haworth Press in the USA which has had three levels of pricing for its products for many years.

The rights owner also needs a system which will protect their interests and give them some reward for the use of their works.

3.11. *The intermediary's needs*

In the past owners (and authors) rarely distributed their material directly. Most, although not all, publishers use distribution mechanisms to make their products available. Distributors are best described as

“information intermediaries”. They do not create intellectual property themselves nor do they directly publish the expression of it. Their role is to act as an intermediary between the producer (publisher) and the users of the published information. Information intermediaries may act directly between these two elements of the information chain or may themselves deliver to other information intermediaries for onward delivery to end-users. Most intermediaries can be considered as distribution and fall into a series of categories, most of which are non-exclusive.

Information intermediaries need to be able to:

- (a) Gain access to a work;
- (b) Store a work;
- (c) Retransmit a work repeatedly in different formats depending on the needs of customer;
- (d) Exploit additional markets to which rights owners may have no access;
- (e) Provide additional services which publishers are unable or unwilling to develop;
- (f) Protect any privileges they enjoy under national legislation to allow them to provide services to their clients. This is especially true of non-commercial libraries.

Clearly some of these conflict with the interests of the copyright owner unless they are carried out in a spirit of cooperation as discussed later. Of the items on this list (a) and (b) only are really relevant to the paper context where they are the normal part of library and information provision. Other items would need permission from the owner.

3.12. The user's needs

The users of information, have requirements for which copyright management must also cater. As already stated many legislations cater for the needs of users in a limited way by recognizing that payment or permission cannot be sought in every case. Therefore something has to be done to regularize this situation. End-users are the primary reason that any document is published. And clearly need or want published material for a range of purposes including leisure, general information for daily life, education at all levels, intellectual research and industrial or commercial exploitation.

End-users' needs can be identified as:

- (a) Consult the work;
- (b) Store the work;
- (c) Be confident of the confidentiality of use activities;
- (d) Be assured of the origin, originality and integrity of the document supplied;
- (e) Ensure any privileges they enjoy under national legislation are protected.

Unlike other players in the information chain, all the needs of users can be met in the paper world and, in theory at least, all of them could be under threat in the electronic world. Therefore they all need careful attention in any management exercise for electronic information.

3.13. Users' privileges

As explained earlier market failure leads to a situation where many countries grant users of copyright material certain privileges to use the works in certain limited way without reference to the copyright owner who has no real right to object to these exceptions to their rights. These exceptions vary from one country to another and may provide special regulations for institutions such as libraries or schools may also be allowed to use material in limited ways for the benefit of their readers or pupils. Similarly

the organs of government such as Parliament or departments may be allowed certain exceptions and it is usual that copyright cannot inhibit either justice, democracy or national security.

3.14. Are there solutions?

The question is whether such a system is even remotely possible or whether such a system is more like a dream than reality. However it has been said that “when one man dreams, it is a dream; when several men dream the same thing it is the beginning of reality”.

3.15. Some solutions

Fortunately several men and women had the same dream and joined together to form a consortium which they called CITED (Copyright in Transmitted Electronic Documents). The group formed a consortium which applied to the European Commission under the 6th call for their ESPRIT II Programme under a Workpackage entitled “Electronic Copyright” which was accepted. The partners included electronic publishers, a computer manufacturer, a library, a lawyer, security and software specialists and experts in databases and networking [1,4].

The CITED project was never implemented in its entirety. The original concept of designing both software and hardware that would achieve all its goals proved impossible. However, it set out the requirements of any system for managing electronic information and identified the discrete elements which any copyright owner or user could then consider independently for implementation.

3.16. Copying from paper to paper

Both the use of chemical impregnation of paper and changes to typefaces, impossible to see with the naked eye but which could be captured by a scanner, have been advocated to stop copying from paper but without any real success. Neither of these solutions has found favour, however. They are expensive to operate and the cost far outweighs the value of the material protected.

3.17. Copying from paper into electronic formats

There is a rapidly increasing requirement for libraries, archives and private individuals to be able to digitize existing paper text which can then be stored and, on occasions, transmitted as required to users of the service or to other researchers and colleagues. However, it is just as difficult to prevent as copying from paper to paper and is a fact of life with which copyright owners are learning to live, just as they did with photocopying. However, the advent of licensing for copying has changed owners’ attitudes significantly and they are much more relaxed about this type of copying because it brings some remuneration without posing a serious challenge to their economic welfare.

3.18. Copying from electronic formats onto paper

Copying from electronic format onto paper can be controlled through software already but this procedure needs to be capable of control, charging and monitoring depending on the requirements of the copyright owner and the end-user’s status. This is a primary example of how electronically-protected text can achieve these goals. Management mechanisms enable individual users or institutions such as libraries to copy onto paper in return for appropriate royalties.

3.19. Downloading from one electronic format to another

As more and more documents are available in electronic form, or only in electronic form, copyright owners and document suppliers will be able to deliver to end-users only by using the electronic forms available. Although copying from electronic formats onto paper is already controlled and well used, the real issue is downloading into the user's own system.

Documents protected using Electronic Rights Management Systems (ERMS) have the facility to download or not built into their protection mechanism to permit copying in the same way as copying onto paper (already described). The CITED model did not follow up these needs but they were developed further in projects such as COPICAT and the highly sophisticated model described in Project IMPRIMATUR.

3.20. Meeting the needs of the information supply industry

The information supply industry is one which is growing in both size and complexity. The roles of different players are becoming less and less clear. Nevertheless the basic requirements described earlier remain the same. The CITED model offered the possibility of easy access, flexibility, comprehensive data and recompense for the owners of the many different rights involved in its operation. Although collection of royalties and data can be achieved through this system, it is desirable that such collection should not be done by each rights owner separately but could be achieved through a central agency similar to a Reproduction Rights Organization (RRO). It is still hoped that there may be ways to establish a Trusted Third Party (TTP) which would oversee and manage such elements of the system as lend themselves to centralization. There are still many areas of this model and its application to develop and the management of the concept is itself one of these.

3.21. Taking the concepts of ERMS forward

3.21.1. The virtual workspace concept

This issue was explored by the COPICAT project which addressed the area of electronic copyright protection by aiming to provide a basis for confidence in electronic copyright protection and open up a "blocked" market in multi-media electronic publishing.

COPICAT developed a system whereby a work could be accessed and downloaded by any authorized person. They could then use the work for educational or research purposes so that it could be changed, or have information added or deleted. These actions are central to the "moral" rights referred to earlier.

There was no question of economic benefit either to the owner or the user but only the facility to use the work as a basis for further development, study or experimentation. These actions were carried out in a virtual workspace which meant that. However, when the user tried to save the work this could not be done and the file simply disappeared. This model thus protected the integrity of the work and also prevented it from being manipulated and changed and then subsequently re-issued as a different work by we else. For a major electronic project to recognize the importance of moral rights and develop a system to protect them was a major breakthrough.

3.22. Trusted Third Parties (TTPs)

One of the great challenges for any electronic copyright management system is the collection of royalties. Fairly sophisticated technology now exists to control access, downloading, printing, changing text

and obtaining data on how a product is used. The real issue for owners and users alike is how to pay for the use to which a work is put. There are a series of issues which need to be addressed in dealing with this complex and sensitive issue. Where a system is dealing with only one owner, then the issue is simply how to charge if charges are to be made. What most researchers want, and this is just as true of the advanced scientist as it is of the local historian working in the public library, is access to a wide range of materials with the minimum of protocols to observe. This has proved hard to achieve and the electronic world has not been able to mirror the licensing arrangements of the paper world which give users just that sort of freedom and flexibility.

However, the struggle to find a solution to the Trusted Third Party problem has continued and attention has focused instead on the Smartcard.

It was realized that the Smartcard, which can be used for so many applications today from personal data to paying for bus fares and gaining access to the local swimming pool, was likely to be a vehicle by which some of these problems could be solved. Building on the CITED experience, a team of researchers began to develop the idea of a smartcard to give access to electronic information and at the same time monitoring use and providing a mechanism for recording payments due. This led to project COPYSMART. The COPYSMART project aimed to develop an industrial low-cost solution for implementing Intellectual Property Rights (IPR) management based on the CITED model.

3.23. *No "all-in-one" solution*

It is clear that no one model solves all the issues facing the problems of making information available in electronic form. There are a variety of issues, some of which have been solved but others are still providing both technical and economic challenges.

Integrity is a crucial issue and often cited by users as one of the most important in an electronic context. It can now be protected and users can be guaranteed that what they get is what they expect.

Payment for use was tackled by COPYSMART with some success using Smartcard technology. This has subsequently found a real development programme with Project SEDODEL. But neither COPYSMART nor COPICAT could handle *both* issues and there would need to be a conflation of the two projects and their hardware/software to achieve a solution which covered more than one issue.

3.24. *Copying, re-use and re-transmission*

None of these projects in themselves even attempted to solve the crucial issue of preventing downloading, re-transmission and subsequent use by unauthorized users. Many systems have been tried but none has so far proved totally effective. It is interesting to see how the music industry has responded to this situation. Rather than fight the users on the issue of copying, technology has been developed to allow what would otherwise be an illegal use by providing a licensing environment so that the right to copy and even retransmit can now be bought with the original recording over the Internet.

3.25. *Exceptions for users*

Although this may seem a minor issue, the ability of individuals to access information without being inhibited either by technology or economics is an essential element in the information flow which is vital to human development, education, economic growth, scientific research and democracy and justice. The crucial question is how to manage these exceptions electronically. Once material is digital then the copyright owner can easily put in place mechanisms which can prevent totally any access unless the

pre-conditions set down by that owner are met in full. The technology therefore is in danger of working against the needs of the individual and benefiting only the owners of copyright material. The unsolved challenge is how to design a protection mechanism that will nevertheless allow certain amounts of use which are considered reasonable within the law without either reference to the owners or the need for payment. This conflict has been recognized by the EU when trying to harmonize copyright law [3] but no solution was forthcoming. The UK legislation, for example, provides that where an individual wants to exercise their privileges to copy (for personal use, educational use or because of visual impairment, for example) they have to complain to a senior government minister who may institute an inquiry about the problem and subsequently give directions as to how it should be resolved.

4. Developing a consensus

As has already been demonstrated, the whole area of electronic rights management is one of considerable potential conflict between creators, distributors (whether publishers, database hosts, website providers) library and information professionals and end-users.

Being aware of these potential conflicts the European Commission funded a major project – IMPRIMATUR (Intellectual Multimedia Property Rights Model And Terminology For Universal reference) – to try to build this consensus amongst the major players in the EU, Japan, Australia and North America. Project IMPRIMATUR worked in the context of electronic commerce and not just another forum for agreeing how to manage copyright. The project included participants from the academic, library, entertainment, news, software, hardware and scientific spheres. The idea was to build a consensus on what should be managed and how without stipulating the technical mechanisms which would be seen as antitrust (in the US) and anticompetitive.

By developing a prototype technology the Project tried to move forward the debate by offering practical solutions to real copyright management problems.

One example of working together rather than in a vacuum is the question of identifiers. Although electronic technology can do many things, it requires the facility to identify the things to be managed. One initiative, the Digital Object Identifier (DOI) stemmed from this idea. This dealt with ownership but this is only one half of the problem. What the user needs to know is what they can do with it and under what circumstances. To cope with these complex issues the International Confederation of Authors and Composers Societies (CISAC) developed an identification system which includes a wide range of works which can be tagged to give all creators and parties with an interest in the work as well as licensing conditions. Once matched with DOI this could provide a world-wide access and rights management database.

5. Conclusion

Clearly there is much still to be done. No system has found the complete answer to the problems of promoting, yet protecting information in electronic form. Economics, politics, legal issues and consumer resistance may in the end determine how these issues are resolved. Access, integrity, paternity, printing, downloading and royalty payments can all be managed. Distribution of royalties is causing difficulties still and nobody has yet produced a solution for managing the exceptions to copyright in favour of users. The future is certainly challenging as both law and technology develop. Similarly, as users become more aware of the possibilities of information delivery their expectations will change and fundamentally alter attitudes to intellectual property in a world where every user may well become an owner.

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