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COPYRIGHT IN THE DIGITAL ENVIRONMENT: FROM INTELLECTUAL PROPERTY TO VIRTUAL PROPERTY

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Abstract: In recent years, copyright law has been subject to a series of legislative reforms aimed at preserving the self-regulating feature of the copyright regime in the digital environment. However, as the law does no longer reflect their expectations, a growing number of right holders are relying on private ordering in order to adjust the default provisions of the copyright regime with a variety of contractual means. Within the digital environment, the establishment of an alternative regime of property rights could however facilitate the exploitation and the dissemination of digital works, allowing for the copyright owners to maintain a certain level of control over the exploitation of their works while simultaneously decreasing the level of discrepancies that may occur between copyright law and property law. The regime would distinguish between the copyright protection granted to the work as an intellectual creation and the specific terms and conditions governing the exploitation of any given instance of the work, into which the copyright owner could introduce a series of restrictions and/or obligations enforceable *erga omnes*. Digital works would therefore become more akin to virtual goods which could be alienated independently of any contractual relationship, given that the rights and obligations regulating the consumption of a work would now be vesting into the actual instance of the work. By getting rid of the contractual relationship that is today required for the consumption of digital works, the ownership thereof could be transferred to any third party and the doctrine of exhaustion be reintroduced, thereby allowing for the market for information goods to develop with fewer constraints.

Keywords: Copyright law, digital works, property law, erga omnes rights, numerous clausus.

1. Introduction

Internet and digital technologies have seriously jeopardized the efficacy of copyright law, which has now been reformed to face the challenges of the digital environment. The legislative reform has however been strongly criticized for introducing a new technological and legislative framework, potentially incompatible with the traditional ratio of the copyright regime. Even assuming the traditional *ratio* of copyright had survived, the question remains: Should the rules governing the physical world be replicated in the digital environment or would it be more sensible to adopt a different approach that would account for the distinctive advantages of digital technologies?

In addressing the question, the paper performs a preliminary analysis of the economic justifications of copyright law and subsequently explores the different attempts that have been made in order to restore the self-regulating features of the copyright regime into the digital environment. In particular, the employment of DRM systems to broaden the scope of copyright protection and the use of Open Content licenses to reduce the default level of protection might suggest that the copyright regime has become inappropriate in the digital environment, as a large number of right holders must incur additional transaction costs to modify the scope and the extent of copyright protection they have been granted with.

The paper proposes an alternative approach, combining the advantages of both mechanisms while also taking advantage of the opportunities of the digital environment. It advocates for the establishment of an alternative regime of property rights allowing for the owner of the copyright in a work to incorporate a series of rules into the digital manifestation of the work by the means of specific rights and obligations intrinsically connected to the digital products and enforceable *erga omnes*.¹ Under this scheme, digital works would therefore acquire the characteristics of virtual goods, allowing for the further development of the market for information goods, in particular, through the reintroduction of the doctrine of exhaustion into the digital environment.

¹ In legal terms, the expression “*erga omnes*” is used to denote the fact that a particular norm, right or obligation can be enforced against the world at large, as opposed to it being “*inter partes*” and therefore only enforceable against a definite set of parties.

2. Economic analysis of copyright law

Creative works, like any other information goods, share the two basic characteristics of a public good: they are both non-excludable and non-rival in consumption.² In order to achieve an optimal allocation of resources, the production and the exploitation of creative works must therefore be regulated in such a way as to strike a balance between incentives to produce and access to information.³

On the one hand, in view of the non-excludable nature of information goods, there is the risk that, without an established system of rewards, authors will create only a suboptimal quantity of works.⁴ This might impose a welfare loss on society to the extent that certain works may not be produced although it would be socially valuable to do so.⁵ The main goal of copyright law is thus to provide incentives for authors to create a socially optimal quantity of works, an objective which is achieved through the granting of a bundle of exclusive rights enabling authors to exercise a certain amount of control over the commercial exploitation of their works so as to eventually secure economic rewards for their creative endeavors.

On the other hand, however, the copyright regime creates a situation of artificial scarcity, which might prevent the maximization of social welfare⁶ in so

² For more details on the characteristics of information as a public good, see [1] Varian, H.R., *Markets for Information Goods*. 1998, University of California, Berkeley, CA.

³ The copyright regime must establish a trade-off between maximizing the incentive to create (dynamic efficiency) and maximizing the benefits resulting from the creation of additional works (static efficiency). See [2] Lévêque, F. and Y. Ménière, *The Economics of Patents and Copyright*. 2004, Paris: The Berkeley Electronic Press.

⁴ See [3] Oakland, W.H., *Public Goods, Perfect Competition, and Underproduction*. The Journal of Political Economy, 1974. **82**(5).

⁵ The consumption of information goods can be regarded as a prisoner's dilemma, where every player is likely to free-ride on the contribution of others without themselves providing any sort of contribution. For more details, see [4] Gordon, W.J., *Asymmetric Market Failure and Prisoner's Dilemma in Intellectual Property*. University of Dayton Law Review, 1992. **17**.

⁶ In a situation of perfect competition, the price of a good equals its marginal costs and the good is produced up to the point where the demand meets the function of marginal costs (the socially efficient quantity). In a situation of monopoly, instead, given a specific demand function, the monopolist will produce only to the point where marginal revenues equal marginal costs (the first order condition for profit maximization). For a more detailed analysis of the deadweight loss resulting from the introduction of a temporary monopoly within the copyright regime, see [5]

far as certain users will be excluded from enjoying a work even where the exploitation thereof would not impose any additional costs on society. Copyright law must therefore introduce a number of limitations on the exclusive rights granted to every copyright owner,⁷ in order to ensure the maximum availability of works to every member of society.

As it creates a trade-off between static and dynamic efficiency, the copyright regime is however an imperfect mechanism for the regulation of creative works, since it is unable to simultaneously maximize both the production and the accessibility of works.⁸ Alternative mechanisms could be developed under the form of governmental taxes or subsidies, in order to provide adequate incentives for authors to create without unduly restraining the possibilities for users to access and to exploit their works.⁹ While this might eliminate the deadweight loss on society, the introduction of a system of taxation is however likely to distort the economy in so far as it would unconditionally decrease the level of resources that could otherwise be employed in other fields of activity.¹⁰ Besides, markets rewards are believed to be more efficient than taxes or subsidies, because, in the absence of market

Landes, W.M. and R.A. Posner, *An Economic Analysis of Copyright Law*. The Journal of Legal Studies, 1989. **18**(2).

⁷ As creative works constitute both the input and the output of creative endeavor, the term of copyright protection should be limited to the point in time where the marginal benefits resulting from the increase in copyright protection are equal to the marginal cost to be incurred for the production of new works (see e.g. [6] Varian, H.R., *Copying and Copyright*. Journal of Economic Perspectives, 2005. **19**(2).) and the scope of protection should be restrained so as to ensure that certain exploitations of a work will not be undermined by any imperfection of the market. In particular, whenever a socially valuable exploitation is likely to be prevented as a result of market failure (e.g. excessive transaction costs), the unauthorized exploitation of the work should nevertheless be allowed. See e.g. [7] Gordon, W.J., *Fair Use as Market Failure: A Structural and Economic Analysis of the "Betamax" Case and its Predecessors*. Columbia Law Review, 1982. **82**(8).

⁸ For a more detailed analysis of the access/incentives trade-off of copyright law, see: [8] Landes, W.M. and R.A. Posner, *The Economic Structure of Intellectual Property Law*. 2003, Cambridge, Massachusetts: The Belknap Press of Harvard University Press.

⁹ See e.g. [9] Fisher, W., *An Alternative Compensation System*, in *Promises to Keep: Technology, Law and the Future of Entertainment*. 2004, Stanford University Press.

¹⁰ For a detailed analysis of the pro and the cons of remunerating authors by way of governmental subsidies, see e.g. [10] Liebowitz, S. *Alternative Copyright Systems: The Problem with a Compulsory License*. in *SERCIAC*. 2003.

failures, the law of the supply and demand enables the market to appreciate every work for the real value it conveys to society.¹¹

Another important goal of the copyright regime is therefore that of promoting the trade of creative works by allowing for the development of a market for information goods. An indispensable precondition for a market for information goods to emerge is however the creation of a precisely defined set of property rights, since there can be no market as long as there are no objects of trade. The exclusive rights of the copyright regime constitute thus a means by which authors are endowed with a set of proprietary rights over their artistic creations. Although they relate to the intangible expression of a work, the exclusive rights granted to the owners of the copyright in a work allow them to dispose of their works as if they were tangible assets which can therefore be exploited like any other type of property.¹²

According to the Coase theorem,¹³ in a situation without transaction costs, the divisibility and free alienability of property rights is likely to promote the most efficient allocation of resources, because every asset will be acquired and/or exploited by the party for which it is the most valuable. If transaction costs are to be taken into account, the initial entitlement of rights becomes however relevant, since excessive transaction costs could preclude certain transactions from occurring. An optimal allocation of resources may consequently only be achieved if the copyright is constructed in such a way as to reduce transaction costs to the minimum.¹⁴

¹¹ According to neoclassical economics, in a situation of perfect competition, the market price of a product constitutes the best indication of the value assigned to the product by society as a whole. See [11] Brown, T.C., *The Concept of Value in Resource Allocation*. Land Economics, 1984. 60(3).

¹² For an analysis of the extent to which the transfer of intellectual property rights is subject to the same rules governing the transfer of property rights in tangible goods, see [12] Schramm, F.B., *Licenses, Contracts and Assignments of Intellectual Property*. Cleveland-Marshall Law Review, 1960. 9(65).

¹³ See [13] Coase, R.H., *The Problem of Social Cost*. Journal of Law and Economics, 1960. 3.

¹⁴ By giving authors the initial entitlement to exclude others from exploiting their works, the copyright regime ensures that transaction costs are minimized, since, if the author had to enter into an agreement with every user who may subsequently come into possession of the work, transactions costs may become so high that the work may never be created in the first place. See

3. The self-regulating feature of copyright law

3.1 The object of the copyright

A proper definition of the scope of copyright protection requires an accurate identification of the subject matter involved. However, while the law provides a series of indications with regard to what constitutes a work of authorship for the purpose of the copyright regime,¹⁵ the identification of the various components of a work remains ultimately ambiguous. Accordingly, before addressing the specific characteristics of the copyright regime, four core entities (work, expression, manifestation, and item)¹⁶ are to be properly identified, and the relationships that exist amongst them be precisely established.

In particular, a work of authorship can only be defined as a general concept or idea. The work as such has no physical subsistence and it is therefore imperative that the work be distinguished from the physical item into which it is

[14] Gordon, W.J. and R.G. Bone, *Copyright*, in *Encyclopedia of Law and Economics*, B. Bouckaert and G.D. Geest, Editors. 2000, Edward Elgar: Cheltenham. The optimal allocation of rights, however, does not only refer to the initial entitlement of rights, but also to the proper definition thereof. In fact, if the scope of the exclusive rights granted to the copyright owner is too broad, certain users may be precluded from enjoying a work because of the excessive transaction costs that would otherwise be involved.

¹⁵ The subject matter which may qualify for copyright protection varies from one jurisdiction to another, although a number of international instruments have been developed in order to harmonize the national copyright regimes, such as, in particular, the Berne Convention of 1886 for the Protection of Literary and Artistic Works, which requires that copyright protection be granted to any artistic, literary, musical and dramatic work (Article 2) and the Rome Convention of 1961, which extend copyright protection to performers, producers of phonograms and broadcasting organizations. In addition, computer software has universally become eligible for protection as a literary work (see article 10(1) of the TRIPs Agreement), semiconductors and integrated circuits may qualify for protection under the copyright regime of certain jurisdictions (see e.g. the European Directive 87/54/EEC on the Legal Protection of Semiconductor and the Semiconductor Chip Protection Act of 1984 in the USA) and, in Europe, sui-generis rights have been introduced for the protection of certain databases (see the European Directive 96/9/EC on the legal protection of databases).

¹⁶ These four entities (world, expression, manifestation, and item) constitute the basic entities of the Functional Requirement for Bibliographic Records (FRBR) model, endorsed by the International Federation of Library Associations and Institutions (IFLA) to provide a clear, precisely stated and commonly shared understanding of the nature and purpose of bibliographic records, for the future development of a common framework for bibliographic metadata.

being conveyed, which is a mere representation of the work.¹⁷ However, the concept of a work as an intellectual entity is also to be distinguished from the expression it has been articulated into, which represents the actual content of the work. Indeed, a work can be articulated into an unlimited number of different expressions, which, in spite of their differences, all constitute an expressive representation of the very same work.¹⁸

The expression of a work fundamentally consists of a particular set of signs ensuing from the concretization of the conceptual idea of the work into a particular entity with an objectively recognizable structure.¹⁹ Although inherently immaterial, the expression of a work cannot therefore come into existence without any underlying physical carrier, as the expression of an abstract idea inevitably requires a medium on which it can be formulated (taking into account that the human brain may qualify as a carrier of information for human memory). As such, however, the expression of a work is completely independent from the specific physical carrier it has been expressed into, and a single expression may therefore subsist on more than one carrier simultaneously, to the extent that they all constitute a similar medium of expression.

The expression of a work is thus to be discerned from the manifestation of the work, which basically amounts to the recording of an expression into a particular format that can be subsequently published into a particular medium.

¹⁷ See [15] Lubetzky, S., *The Function of the Main Entry in Alphabetical Catalogue - One Approach*, in *Seymour Lubetzky: Writings on the Classical Art of Cataloguing*, E. Svenonius and D. McGarry, Editors. 1961, Libraries Unlimited: Englewood, CO. [16] Lubetzky, S., *Principles of Cataloging. Final Report. Phase I: Descriptive Cataloging*, in *Seymour Lubetzky: Writings on the Classical Art of Cataloging*, E. Svenonius and D. McGarry, Editors. 1969, Libraries Unlimited: Englewood, CO.

¹⁸ According to Elaine Svenonius, a major contributor to the field of information organization and cataloging, a work can be defined as "the set of all documents that are copies of (equivalent to) a particular document (an individual document chosen as emblematic of the work, normally its first instance) or related to this individual by revision, update, abridgment, enlargement, or translation." [17] Svenonius, E., *The Intellectual Foundations of Information Organization*. 2000, Cambridge, MA: MIT Press.

¹⁹ For instance, if a work has been expressed into a text, the expression will refer to the specific words, sentences, and paragraphs that constitute that text, whereas, if a work has been expressed into music, the expression will refer to the particular notes that constitute the melody. For more details on the distinction between a work and the expression of a work, see [18] IFLA, *Functional Requirements for Bibliographic Records*, K.G. Saur, Editor. 1998, IFLA Study Group on the Functional Requirements for Bibliographic Records.

Different recordings of an identical expression (e.g. different typographical arrangements, alternative page layouts, etc) would therefore automatically give rise to different manifestations. Although it refers to a tangible embodiment of the work, the manifestation does not however amount to the item as such. Devoid of any physical subsistence, the manifestation of a work is a general concept which comprises all the representations of a work with identical characteristics and physical appearance,²⁰ whereas, the item, as a tangible carrier of information, essentially results from the fixation of a particular manifestation into a tangible medium, which constitutes therefore a singular instance of the work.

As a result, while the work, the expression and the manifestation thereof may only be regarded as public goods (as they are intrinsically non-rival in consumption and the benefits resulting from the exploitation thereof can theoretically be enjoyed by anyone), the item into which they are being incorporated may be regarded as either a private good or a public good, according to whether it amounts to a material item or to a digital item. In particular, while an item can be easily identified in the physical world, the concept may turn out to be slightly controversial in the digital environment. Strictly speaking, in fact, the transfer of a digital item would inevitably give rise to a new entity (which necessarily resides on a different location in the physical memory of a computer or other electronic device), although the two may nevertheless be regarded as being identical for the purposes of copyright law. In the digital environment, the concept of an item can therefore be properly determined only when also taking into account the context into which the item has to be identified.²¹ Accordingly, for the purpose of this paper, an item will be defined as any tangible entity which represents a unique exemplary of one particular manifestation of a work, taking into account that it is not necessary for the tangible entity to remain physically the same, as long as it can be logically identified as being the same.

²⁰ The manifestation of a work may refer to large variety of different materials, such as manuscripts, books, magazines, photographs, paintings, drawings, sound recordings, video recordings, CD-roms, DVD-roms, or any other physical embodiment. More precisely, according to the FRBR's definition, the manifestation "as an entity [...] represents all the physical objects that bear the same characteristics, in respect to both intellectual content and physical form." See [18] Ibid.

²¹ See [19] Paskin, N., *On Making and Identifying a Copy*. D-Lib Magazine, 2003. 9(1).

3.2 Self-regulating mechanisms of copyright law

The role of the copyright regime is basically to realign the public nature of the work with the private nature of the item into which it is being conveyed.²² By granting copyright owners with a series of exclusive rights which enable them to exclude others from exploiting the work, the expression, and, to some extent, the manifestation of the work, copyright law has in fact turned every element of the work into a private good, so that both the work as an intellectual creation and the tangible medium into which it is being conveyed can now be disposed of as a single entity with a consistent set of properties.

Until the advent of digital technologies, this mechanism has been relatively successful. In fact, by linking the expression of a work to the physical manifestation thereof, copyright law created a self-regulating environment which was capable of dissuading the majority of end-users from illegitimately reproducing a work in so far as the medium it had been embodied into could not itself be easily reproduced.²³

The process of digitization has however turned the medium itself into an intangible entity, which does no longer possess any of the physical mechanisms of excludability characteristics of tangible goods and may thus no longer be regarded as a scarce resource.²⁴ The digital instance of a work can thus be regarded as a public good, since it has become virtually non-excludable (given that, as every user becomes a potential supplier of the work, the possibility for the copyright owner to exclude users from enjoying a work decreases with the number of users who have already come into possession of the work) and non-rival in consumption (since, if a digital work can be reproduced immediately

²² For more details on the role of copyright law in reconciling the properties of the work as an intangible entity with the properties of the tangible manifestation thereof, see [20] Bentley, N. *Trading Rights to Digital Content*. in *International Workshop for Technical, Economic and Legal Aspects of Business Models for Virtual Goods*. 2007. Koblenz, Germany.

²³ The properties of the physical world constitute a natural barrier to copyright infringement, which is more likely to be confined to a small number of commercial infringers. See, e.g. [21] Davis, R., *The Digital Dilemma: Intellectual Property in the Information Age*, ed. C.o.I.P.R.a.t.E.I. Infrastructure. 2000, Washington: National Academy Press.

²⁴ For more details on the impact of the digital technologies on the enforceability of copyright law, see e.g. [22] Halpern, S.W., *The Digital Threat to the Normative Role of Copyright Law*. Ohio State Law Journal, 2001. 62(2).

and at virtually no costs, two or more individuals can consume the same work without affecting each other's consumption).²⁵

While this may bring a number of advantages to certain right holders and end-users,²⁶ digitization is however likely to eliminate the self-regulatory features of the copyright regime by destroying the link that had been established between the work (which has been turned into a private good by copyright law) and the corresponding instances of the work (which have been turned into a public good by the means of digital technologies). Consequently, the properties of the work are once again misaligned with the properties of the medium into which it is being conveyed to the public.

3.3 Private mechanisms of self-help

Since copyright law may no longer be able to achieve its primary objective in the digital environment, additional contractual and/or technological instruments have been developed as an attempt to re-establish the self-regulating features of the copyright regime by way of private ordering.²⁷

In line with the principles of freedom of contract, according to which anyone may enter into an agreement on private terms in order to pursue individual interests, the default level of protection provided by the copyright regime can theoretically be complemented or eventually superseded by contractual means,²⁸ whose provisions may sometimes be enforced by

²⁵ For more details on the public good nature of digital goods, see [23] Rayna, T., *Digital goods as public durable goods*, in *Department of Economics*. 2007, Université Aix-Marseille III.

²⁶ The changes introduced by Internet and digital technologies have promoted the development of new business models which can take advantage of the new digital framework. See, e.g. [24] Tapscott, D., D. Ticoll, and A. Lowy, *Digital Capital: Harnessing the Power of Business Webs*. 2000: Harvard Business School Press. For more information on the specific features of direct and indirect e-commerce, see, *inter alia*: [25] Rayport, J.F. and B. Jaworski, *Introduction to e-Commerce*. 2002: McGraw-Hill. [26] Bakos, Y., *The Emerging Landscape for Retail E-Commerce*. *The Journal of Economic Perspectives*, 2001. **15**(1). [27] Choi, S.Y. and A.B. Whinston, *The future of e-commerce: integrate and customize*. *IEEE Computer*, 1999. **31**(1).

²⁷ See [28] Cohen, J.E., *Copyright and the Jurisprudence of Self-Help*. *Berkeley Technology Law Journal*, 1998. **13**.

²⁸ Not only can the owners of the copyright in a work specify the exact subject matter of the transaction, but they may also introduce additional rights and obligations which have not been provided for by the relevant intellectual property laws. Enforcing the terms and conditions under which a creative work has been licensed may thus eventually be more a matter of contract law

technological measures.²⁹ In particular, Digital Rights Management (DRM) systems and Open Content licenses are two mechanisms which are being increasingly employed for the release of copyright works into the digital environment. Both are basically aimed at refining the default rule of the copyright regime (albeit in a very divergent manner) so as to make it more consistent with the new framework established by the digital technologies.

DRM systems have been conceived with the intent to replicate the properties of a private good into the digital manifestation of a work. In fact, just as they can emulate the characteristic of excludability by the means of specific technological measures of protection aimed at preventing the unauthorized access to a work, DRM systems are also capable of creating a situation of artificial scarcity through the combination of hardware and/or software devices specifically designed to preclude the illegitimate reproduction of the work and any further distribution thereof.³⁰ DRM systems may therefore greatly facilitate the trading of digital works by reconciling the properties inherent to the digital instance of a work with the properties that every original work of authorship has been granted with under copyright law.

However, DRM systems are usually employed in the context of particular licensing schemes, where what is being sold is not the digital instance of a work but only the right to use the work under the specific terms and conditions of the license. Moreover, to the extent that DRM systems are likely to feature a number of restrictions which extend beyond the scope of the copyright regime,³¹

than a matter of copyright law. See [29] Merges, R.P., *The End of Friction? Property Rights and Contract in the 'Newtonian' World of On-Line Commerce*. Ibid.1997. 12(1).

²⁹ See [30] Eskicioglu, A.M., *Protecting Intellectual Property in Digital Multimedia Networks*. Computer, 2004. 36(7).

³⁰ See e.g. [31] Eskicioglu, A.M. and E.J. Delp, *An overview of multimedia content protection in consumer electronics devices*, in *Signal Processing: Image Communication*. 2001, Elsevier. [32] Bechtold, S., *Digital Rights Management in the United States and Europe*. The American Journal of Comparative Law, 2004. 52(2). For a comprehensive analysis of the technological aspects of Digital Rights Management systems, see chapter 2 in [33] Becker, E., et al., *Digital Rights Management: Technological, Economic, Legal and Political Aspects*. 2004: Springer.

³¹ Copyright owners can release their works under very restrictive terms and conditions which are likely to extend beyond the scope of the copyright regime and which may eventually bypass some of the statutory limitations of copyright law and which can be automatically enforced by technological means. For more details, see [34] Elkin-Koren, N., *The Privatization of Information Policy*. Ethics and Information Technology, 2001. 2.

the properties of the work and of the digital manifestation thereof may end up being once again misaligned.

Conversely, Open Content licenses³² are mainly aimed at realigning the legal properties of the work as an intellectual creation with the physical properties of the digital manifestation thereof by reducing the scope of copyright protection and thereby reintroducing some of the public good characteristics originally pertaining to the work.³³ Although ultimately relying on the copyright regime, Open Content license are in fact using the law in order to create a series of positive rights (as opposed to the traditional exclusive

³² The term Open Content refers to certain typologies of copyright licensing agreements which are designed to increase the liberties of end-users. For a general overview of the different Open Content licenses, see [35] Liang, L., *Guide to Open Content Licenses*. 2004, Piet Zwart Institute.

³³ On the one hand, Open Content licensing is aimed at eliminating some of the copyright restrictions so as to turn the work back into a non-rival good. In particular, Open Content licenses have been designed to encourage the free reproduction of a licensed work, either in whole or in part. Moreover, although the distribution and/or the making available of the work may sometimes be subject to certain requirements of form (by requiring, for instance, that proper attribution be given and that the licensing terms under which a work has been released be readily available), Open Content licenses cannot impose any restrictions upon the distribution and/or the making available of a work. See e.g. the Open Knowledge definition at <http://www.opendefinition.org> and the definition of the Free Cultural Works at <http://freedomdefined.org>. On the other hand, Open Content licensing may also eliminate the artificial excludability established by copyright law and/or technological means. For instance, certain Open Content licenses are incompatible with the application of technological measures of protections to the extent that they prevent or restrict the access to and/or the legitimate exploitation of a work (see e.g. the Creative Commons licenses), whereas others are incompatible with the application of any technological measures of protection as such, whether or not they have been designed to prevent or restrict the legitimate exploitation of a work (see e.g. the Anti-DRM license and the GNU Free Documentation License). Moreover, a number of Open Content licenses expressly preclude the commercial distribution of a work (see e.g. the non-commercial clause of the Creative Commons licenses), so that access to the work may not be conditional to the payment of a fee. Besides, even where the commercial exploitation of a work is allowed, the terms and conditions of the license, according to which the work can be freely reproduced and redistributed to anyone, cannot be modified by the licensee (see e.g. article 4(a) of the Creative Commons licenses: “You may distribute, publicly display, publicly perform, or publicly digitally perform the Work only under the terms of this License”) and the majority of Open Content licenses generally prevent the licensee from imposing further restrictions on the rights granted by the license (see e.g. article 4(a) of the Creative Commons licenses: “You may not offer or impose any terms on the Work that alter or restrict the terms of this License or the recipients' exercise of the rights granted hereunder”). All users subsequently coming into possession of the work will therefore be entitled to redistribute the work for free, whether or not they originally had to pay for it.

rights) to ensure the public availability and the free dissemination of the content.

As a general rule, Open Content licenses could be regarded as instant licenses.³⁴ The terms and conditions under which a work can be exploited are in fact incorporated into the work and the licenses provide that anyone coming into possession of the work be automatically granted with a new license to exploit the work in accordance with the corresponding licensing terms. As such, however, the license does not attach to any particular instance of the work but only to the particular user thereof, and a new license has therefore to be created every time the item is being transferred to a new user.³⁵

4. Copyright law in the digital environment

The advent of Internet and digital technologies has disrupted the traditional equilibrium of the copyright regime, allowing for the reproduction of digital content to be performed at very low costs and without any quality loss, and for the distribution thereof to be achieved instantaneously and on a worldwide scale.³⁶ In order to ensure long-term viability of the copyright regime in the

³⁴ See e.g. [36] Fripp, C. *Instant licences move copyright into a new digital space: is it time to encourage Copyright Cannibals?* in *8th Symposium on Electronic Theses and Dissertations*. 2005. Sydney, Australia.

³⁵ Note, however, that in order to facilitate the maximum dissemination of works, Open Content licenses automatically grant a new license to anyone that come into possession of the work regardless of the approval of the licensor (see e.g. article 8(a) of the Creative Commons licenses, according to which every time a licensee distributes or publicly digitally performs the work, the licensor offers to the recipient a license to the work on the same terms and conditions).

³⁶ Copyright infringement is a function of the benefits deriving from copyright infringement and the costs of infringement. On the one hand, in the digital environment, the costs of copyright infringement has drastically (see e.g. [37] Lee, G.B., *Addressing Anonymous Messages in Cyberspace*. Harvard Journal of Computer-Mediated Communication, 1996. 2(1).) and the public does not necessarily regard the illegitimate reproduction and dissemination of digital content as a criminal activity (see [38] Litman, J., *The Exclusive Right to Read*. Cardozo Arts & Entertainment Law Journal, 1994. 13(29).) On the other hand, copyright enforcement on the Internet has become particularly difficult (see [21] Davis, R., *The Digital Dilemma: Intellectual Property in the Information Age*, ed. C.o.I.P.R.a.t.E.I. Infrastructure. 2000, Washington: National Academy Press.) in particular, in view of the discrepancies existing within the different national copyright systems which may pose a series of challenges to the international

digital environment, copyright law has therefore been reformed, but only to the extent necessary as to restore the former status quo. Accordingly, while the WIPO Copyright Treaty (WCT) endorsed the deployment of DRM systems by extending the scope of copyright protection to certain technological measures of protection³⁷ and to any information incorporated into a copyright work and necessary for the correct operation of DRM systems,³⁸ the legal status of Open Content licenses has however not yet been recognized by any jurisdiction (with the exception of France)³⁹ and the validity and/or enforceability thereof is therefore still subject to debate.⁴⁰

resolution of copyright disputes. See [39] Goldstein, P., *International Copyright: Principles, Law, and Practice*. 2001: Oxford University Press.

³⁷ The WIPO Copyright Treaty (WCT), adopted in 1996 in Geneva, has introduced an additional layer of protection against the circumvention of particular technological measures of protection. See article 11 of the WCT, as implemented in the USA by the Digital Millennium Copyright Act of 1999, section 1201, and in the European Community by the Directive 2001/29/EC on the harmonization of certain aspects of copyright and related rights in the information society, article 6.

³⁸ See article 12(1) of the WIPO Copyright Treaty.

³⁹ The French Copyright Code has recently been reformed as a result of the enactment of the DADVSI law (Law N.2006-961 of 1 August 2006 on copyright and related rights in the information society) and now specifically provides for the possibility to license the copyright in a work without any consideration to be given in return. See e.g. Article L.122-7-1 of the French Code de la propriété intellectuelle, according to which authors are free to make their works *freely available* to the public, subject to the rights of possible co-authors or third parties and in compliance with the agreement they have concluded (emphasis added).

⁴⁰ The legal nature and the efficacy of the various typologies of Open Content licenses is difficult to ascertain, mostly because there have been so far only a few judicial precedents addressing the actual legal status of Open Content licenses. This notwithstanding, the validity of the Creative Commons licenses has recently been addressed in Spain first in the case of *SGAE v Luis* (Audiencia Provincial de Pontevedra, Sentencia de 29 Nov. 2005, rec. 3008/2005), where the court held that the licenses were invalid because they lacked a signature, and later in the case of *SGAE v Fernandez* (Juzgado de Primera Instancia de Badajoz, Procedimiento Ordinaria 761/2005, Sentencia N. 15/2006), where the court eventually acknowledged the efficacy of the licenses as a valid legal instrument, although the court did not further investigate upon their legal nature. Moreover, in the Netherlands, not only did the case of *Curry v Audax* (District Court of Amsterdam, Case no. 334492 / KG 06-176 SR) confirm the validity of the Creative Commons licenses, but it also endorsed the enforceability of their corresponding terms and conditions. Whether any given Open Content license should be regarded as a bare license or as a contract remains however an important question, which may affect not only the manner in which the provisions of the license may be interpreted, but also the extent to which the various terms and conditions can be enforced and the nature of the remedies available upon breach. For more details on the difficulty to determine the legal status of Open Content licenses, see [40] Hietanen,

The fundamental question is whether it is indeed efficient to reintroduce into the digital environment a scheme which replicates the very same rules that govern the physical world, or whether it would be more appropriate to establish an alternative regime for digital works, which would replicate as closely as possible the characteristics of the physical world while nevertheless accounting of the various benefits that the digital environment may offer so as to take advantage thereof.

There exist in fact a number of drawbacks in the current copyright regime, which may perhaps be resolved with a legislative reform that would better account of the opportunities provided by the digital technologies.

To begin with, the copyright is a proprietary right vesting in the expression of a work, which must however coexist with the property rights vesting into every tangible instance of the work. A series of discrepancies may however arise between the regime of copyright law and the regime of property law, given that the exclusive rights of the copyright regime fundamentally impinges upon the exercise of property rights in physical property.⁴¹ Accordingly, copyright law may only allow for the establishment of a partial market for information goods, since, by protecting the expression of a work with a series of proprietary rights which are necessarily distinct from the rights vesting in the tangible manifestation of the work, the copyright regime does not permit anyone to freely dispose of the items they have legitimately purchased.⁴²

Besides, a proper market for information goods may be unable to emerge in the digital environment because the sale of a digital work is generally framed as a mere licensing of rights, rather than as an actual transfer of ownership.⁴³

H., *A License or a Contract: Analyzing the Nature of Creative Commons Licenses*. 2007, Helsinki Institute for Information Technology.

⁴¹ The owner of the copyright in a work can prevent others from exploiting their property, to the extent that doing so would infringe the copyright in the work. See [41] Kinsella, N.S., *Against Intellectual Property*. Journal of Libertarian Studies, 2001. 15.

⁴² For instance, one may not draw on a painting which has been legitimately purchased in order to re-distribute it on the market, because that would infringe upon the exclusive right to make derivative works. Similarly, one may not display and/or communicate the work (albeit untouched) to the public, because that would infringe upon the exclusive right of making available, nor can one rent a work which has been previously purchased because the exclusive rental/lending right is not exhausted after the first sale of the work.

⁴³ The dissemination of works has developed into a system of access privileges imparted by the means of copyright licenses which precisely stipulate the condition under which the work can be enjoyed. Copyright owners are provided with a higher level of control over the exploitation of

Moreover, even if ownership were granted, digital items would nevertheless be excluded from the doctrine of exhaustion,⁴⁴ thereby drastically reducing the opportunities for a free market in information goods to develop,⁴⁵ despite it being one of the primary justifications for the establishment of the copyright regime.

5. Copyright works as virtual goods

5.1 A new regime of property rights

One of the main challenges for the establishment of a market for information goods is that every work may be subject to a variety of rights, owned by a variety of right holders, so that any particular instance of the work may not be unconditionally disposed of without first obtaining the consent from all the right holders involved.⁴⁶

As previously mentioned, a work is composed of different layers – namely, the work as an intellectual creation, the expression as a particular realization of the work, the manifestation as the actual embodiment of the expression into a particular medium, and the item as a single exemplar of the manifestation. At any of these layers, different rights pertaining to different right holders may be

their works, which can be preserved even after the works have been transmitted to the users. See [42] Elkin-Koren, N., *Public/Private and Copyright Reform in Cyberspace*. Journal of Computer-Mediated Communication, 1996. 2(2).

⁴⁴ The principle of exhaustion has been expressly excluded from the digital environment by the WIPO Copyright Treaty, which allows for "the Contracting Parties to determine the conditions, if any, under which the exhaustion of the right [of distribution] applies after the first sale [...] of the original or a copy of the work with the authorization of the author" but only with regard to "fixed copies that can be put into circulation as tangible objects" (article 6 and Agreed statements concerning article 6).

⁴⁵ Since the doctrine of exhaustion does not apply to the digital environment, digital works cannot be freely traded in the market for information goods, thereby reducing the overall availability of works, as well as the affordability thereof. See [43] Reese, R.A., *The first sale doctrine in the era of digital networks*, in *Law and Economics Research Paper*. 2003, University of Texas.

⁴⁶ This situation has been described as the tragedy of the anticommons, which basically refers to the fact that, whenever multiple owners hold an effective right of exclusion over a scarce resource, the resource may be prone to underuse, in any case where collecting the different rights into a useful set of property rights would be too expensive and/or excessively time consuming. For more details, see: [44] Heller, M.A., *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*. Harvard Law Review, 1998. 111(3).

recognized. In particular, although generally owned by the same entity, the rights vesting in the expression of a work may be owned by someone other than the holder of the rights in the work (e.g. in the case of translations or other derivative works). Moreover, in any jurisdiction that recognizes protection in the typographical arrangement of a published edition, the publisher would be the owner of that copyright, although not necessarily the owner of the copyright in the work or in the expression of the work. Finally the purchaser of an item of the work will generally be the owner of the proprietary rights in that particular copy, the exploitation of which may however be restrained by the rights vesting in any other layer of the work.⁴⁷

The proposed reform is based on a clear distinction between the rights vesting in the work, in the expression, and in the manifestation of the work, and those pertaining to each individual instance of the work. In particular, although copyright law protects the expression of every original work of authorship with a bundle of exclusive rights, every instance of the work may be subject to a different set of rights, the scope and the extent of which are ultimately determined by the respective right holders. Accordingly, as a general rule, every time the copyright owner incorporates a work into a specific medium and releases it under specific terms and conditions, that particular instance of the work will basically only inherit those rights which have been specifically selected from the default bundle of rights vesting in the expression of the work.⁴⁸ However, as opposed to the various contractual agreements upon which both DRM systems and Open Content licenses are based, under the proposed scheme, the various prohibitions and/or permissions pertaining to any given instance of a work would be automatically incorporated into the digital item

⁴⁷ See e.g. [45] Ginsburg, J.C., *Conflicts of Copyright Ownership Between Authors and Owners of Original Artworks: An Essay in Comparative and International Private Law*. Columbia Journal of Law & the Arts, 1992. 17.

⁴⁸ Right holders may release their works under particular licensing terms, either by the means of particular technological measures of protection which automatically enforce the terms of the contractual agreement, or by way of instant licenses which automatically apply to the content into which they have been incorporated. The contractual license under which the instance of a work has been released thus fundamentally becomes an integral part of the product, as the various term and conditions collapse into the work so as to produce a new product whose specific characteristics ultimately depend upon the terms of the license. For more details on the concept of contract as product, see [46] Radin, M.J., *Humans, Computers, and Binding Commitment*. Indiana Law Journal, 2000. 75.

under a proprietary scheme⁴⁹ and the level of copyright protection granted to every digital instance of a work would ultimately depend upon the choices made by the copyright owner at the moment in which the item has been created.

Under the proposed regime, therefore, the digital manifestation of a work would not necessarily be governed by the standard provisions of the copyright regime. In particular, while the default level of protection granted to any digital work would be the same as the one granted to any tangible work, as long as they are not fully satisfied with the default provisions of copyright law, right holders would be given the opportunity to reduce and/or to expand upon the scope of copyright protection by incorporating a number of permissions and/or restrictions into every digital instance of a work, so as to regulate the overall exploitation thereof.

Copyright owners would therefore not be deprived of any of the rights vesting in the work, in the expression or in the manifestation of the work. Instead, in the digital environment, the copyright in a work would ultimately amount to the exclusive right to determine the nature and the scope of the rights vesting in every digital instance of the work. These rights would distinguish themselves from the standard model of property rights to the extent that they could be refined with a number of rights and obligations governing the manner in which and the extent to which any given instance of work can be legitimately exploited. Rather than as a contractual instrument, the various terms and conditions regulating the exploitation of the work would therefore be regarded as a series of restrictive covenants, the number, the nature and the extent of which would basically depend upon the way in which the proprietary rights have been framed at the moment in which the digital work has been created.⁵⁰

Once they have been assigned to a particular instance of the work, in fact, the new typologies of property rights would become forever bound with the

⁴⁹ While contract law creates rights and obligations *in personam*, which can only be enforced between the parties to the contract, copyright law establishes a series of exclusive rights which are governed under a property rule and are enforceable *erga omnes*. See [47] Elkin-Koren, N., *Copyright Policy and the Limits of Freedom of Contract*. Berkeley Technology Law Journal, 1997. 12(111).

⁵⁰ The rights and obligations governing the manner in which a digital work can be legitimately exploited would become inherently connected with that particular item of the work, i.e. they would run with the item in the same way as servitudes and/or restrictive covenants run with the land. For more details on the possible implementation of servitudes in personal property and, more particularly, in intellectual property rights, see [48] Robinson, G.O., *Personal Property Servitudes*, in *Law & Economics Research Papers*. 2003, University of Virginia School of Law.

digital item and could no longer be modified. Consequently, by the mere fact of obtaining a digital copy of the work, users would automatically acquire the right to exploit it in accordance with the terms and conditions under which it has been released but only insofar as the exploitation is confined to that particular instance of the work which has been legitimately obtained, as it would otherwise infringe the copyright in the work.⁵¹

Accordingly, the main distinction between the current model of copyright law and the proposed regime for the digital environment is fundamentally that the terms and conditions governing the exploitation of a work would no longer be based on a contractual relationship between the copyright owner and the end-user, but would instead be inherent to the digital item they have been embodied into and consequently acquire validity *erga omnes*.⁵² The terms and conditions

⁵¹ Although the digital manifestation of a work may be freely exploited according to the specific terms and conditions under which it has been released, the work as an intellectual creation would nevertheless be protected by copyright law. In other words, the possession of a digital item incorporating a work protected by copyright law would allow for anyone to exploit the work under certain conditions, but only to the extent that the exploitation is confined to that particular instance of the work and does not extend to the work in general. While users may be able to e.g. reproduce the digital work they have legally purchased, they may however not reproduce the work into a different logical entity. For instance, if a user purchased a book in a particular format which categorically prevents the book from being printed, the item may only be reproduced in the very same format and with the very same restrictions as the original, whereas, the user has no right to reproduce the work (i.e. the content of the book) into a text editor in order to save it into a different format. Similarly, with regard to the right of distribution and the right of communication to the public, while the owner of a digital work may be allowed to redistribute that particular instance of the work and/or communicate it to the public, the distribution and/or the making available of the work as embodied into a different item would nevertheless be condemned by copyright law. However, although, on the one hand, the reproduction, the distribution and the making available of a work are inherently connected with a particular instance of the work and it is therefore relatively easy to draw a line between what constitutes legitimate exploitation (related to the digital item of the work) and illegitimate exploitation (related to the actual content of the work), on the other hand, with regard to the exclusive right of adaptation, identifying the dividing line between what is legitimate and what not may be slightly more controversial, since the right relates more to the expression of the work than to the item per se. For instance, while users may be able to e.g. use a particular digital work for the making of a derivative work by incorporating it (in whole or in part) into another digital work, the making of a new work based upon the content of the original work would not be allowed, as it would essentially relate to the expression of the work, in which the copyright subsists independently of the rights vesting in any given instance of the work.

⁵² As opposed to contractual rights and obligations which can only be enforced *inter partes*, rights and obligations with *erga omnes* effect can be enforced against everyone. An *erga omnes* right may thus create an obligation for anyone to act in compliance with the content of the right. For instance, the copyright in a work is an *erga omnes* right which creates an obligation for anyone

under which the work can be exploited would fundamentally amount to a series of rights and obligations *in rem*,⁵³ enforceable against anyone coming in possession of that particular item of the work without the necessity to enter into any contractual relationship with the corresponding copyright owner. The enforceability of every provision will however necessarily be limited in duration, since, once the copyright in the work has expired, the rights would automatically revert back to standard property rights.⁵⁴

5.2 Mandatory requirement of notice

In order to reduce the costs of processing information, the regime of property law in many jurisdictions endorsed the idea that proprietary rights in a

not to reproduce, distribute or communicate the work to the public, as well as not to make any derivative works based upon it. A copyright license, conversely, is a mere contractual instrument, which is therefore unable to create obligations towards all. Under the proposed regime, however, the copyright license would be directly incorporated into the proprietary right vesting in a digital product, and would therefore become enforceable against everyone. For more details on the characteristics of *erga omnes* rights and obligations, as opposed to other types of rights and obligations, see: [49] Sartor, G., *Fundamental Legal Concepts: A Formal and Teleological Characterisation*, in *Law Working Paper*. 2006, European University Institute.

⁵³ From a legal point of view, a right can be either *in personam* or *in rem*. A right *in rem* is a proprietary right, which relates to the ownership of a thing and does not rely upon any contractual relationship, as a right *in personam* necessarily does. Likewise, an obligation *in rem*, as opposed to an obligation *in personam*, is an obligation which relates to the proprietary right in a thing. Accordingly, since they are not concerned with any personal or contractual relationship, rights and obligations *in rem* are inherent to the thing into which they have been embodied, irrespectively of the owner thereof. The right can thus be enforced against anyone who comes into possession of the thing and will be passed to any subsequent owner along with the ownership of the thing. For a more detailed overview of the distinction between rights *in personam* and rights *in rem*, see [50] Merrill, T.W. and H.E. Smith, *The Property/Contract Interface*. Columbia Law Review, 2001. **101**(4).

⁵⁴ Copyright law has been designed to counterbalance the deadweight loss deriving from the initial appropriation of information with the long-term benefits deriving from the widespread dissemination and free availability of information. The exclusive rights granted by the copyright regime are therefore weaker than a standard property right to the extent that they only allow for the limited appropriation of a work, as they are themselves limited in duration and in scope. See e.g. [5] Landes, W.M. and R.A. Posner, *An Economic Analysis of Copyright Law*. The Journal of Legal Studies, 1989. **18**(2). Accordingly, in order to preserve the original *ratio* of the copyright regime, whenever the copyright in a work expires, any restrictions which have been imposed upon the exploitation of a particular instance of the work should equally expire. As soon as the term of the copyright in a work is over, all the restrictions impinging upon the exploitation of the proprietary right vesting in the digital manifestation of the work should therefore automatically come to an end and full ownership be granted to the owner of the digital work.

thing must necessarily comprise a default set of rights which may not be disposed of separately,⁵⁵ although they may nevertheless be licensed to third parties by contractual means. For instance, the *numerus clausus* principle of property rights, according to which only a limited number of exceptions are allowed to deviate from the unitary principle of property law,⁵⁶ has been widely adopted in the property regime of most civil law jurisdictions and beyond.⁵⁷

Under the actual copyright regime, the owner of any given instance of a work is in fact granted with full ownership of the item, although the exercise of that proprietary right is limited to the extent that it does not infringe upon another right vesting in the same work, namely, the copyright in the original work of authorship.⁵⁸ The reduction in the costs of processing information with regard to the nature of the property right vesting in the digital instance of a work should therefore be counterbalanced with the increased costs to be incurred in order to identify the copyright status of the work and the various terms and conditions under which it has been released.

If the *numeros clausus* principle is exclusively based on the need to decrease transaction costs to ensure that all assets are put to their most valuable use,⁵⁹ however, a proper mechanism of notification allowing for the immediate

⁵⁵ See [51] Parisi, F., *Entropy in Property*. American Journal of Comparative Law, 2002. **50**(3).

⁵⁶ The *numerus clausus* (closed number) principle in property law is a principle according to which only a limited set of property rights are made available in any given legal system, see [52]

Rudden, B., *Economic Theory v Property Law: The Numerus Clausus Problem*, in *Oxford Essays on Jurisprudence*, J. Eekelaar and J. Bell, Editors. 1987.

⁵⁷ Originating from the principles of Roman law, the *numerus clausus* principle has been adopted by a large number of civil law jurisdictions, as an attempt to reduce the potential fragmentation of property rights. Although not expressly articulated in the legal system of most common law countries, the principle may also be found in some aspects of the common law tradition which are basically aimed at discouraging the creation of new typologies of rights enforceable against the world at large. See [53] Merrill, T. and H. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*. Yale Law Journal, 2000. **110**.

⁵⁸ See e.g. [45] Ginsburg, J.C., *Conflicts of Copyright Ownership Between Authors and Owners of Original Artworks: An Essay in Comparative and International Private Law*. Columbia Journal of Law & the Arts, 1992. **17**. and, more in general, [41] Kinsella, N.S., *Against Intellectual Property*. Journal of Libertarian Studies, 2001. **15**.

⁵⁹ Originally meant to encourage the free circulation of goods by limiting the number of different property rights that may vest in any given resource, the *numerus clausus* principle has also been justified in terms of economic efficiency through the theory of the anti-commons. See [54]

Michelman, F., *Ethics, Economics and the Law of Property*. Nomos, 1982. **24**(3). and

verification of the content of any given property right would not necessarily infringe upon the principles of property law. In fact, to the extent that the restrictions and/or obligations restraining the scope of the property rights vesting in the digital manifestation of a work can be precisely defined and communicated to the public, and insofar as the ownership of the digital work, albeit limited, only pertains to one individual right holder, the establishment of a new typology of property rights is unlikely to impose any restriction upon the free circulation of goods or to negatively affect the most efficient allocation of resources to the parties who will put them into the most efficient uses.⁶⁰

Accordingly, the law may limit the number of property rights by merely regulating the level of notice that is required in order to establish a new typology of property rights. A number of verification rules have in fact been implemented in order to justify the emergence of atypical proprietary claims over particular assets.⁶¹ Any given verification rule involves however a series of costs both for right holders to establish the proper scope of their rights in an asset and for users to ascertain the legal status of the asset, as well as for the implementation of the property system as a whole.⁶² A new typology of property rights will therefore be created only when the advantages deriving

[44] Heller, M.A., *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*. Harvard Law Review, 1998. **111**(3).

⁶⁰ See, in particular, [55] Hansmann, H. and R. Kraakman, *Property, Contract and Verification: The Numerus Clausus Problem and the Divisibility of Rights*. 2002, Harvard Law School. (claiming that the *numerus clausus* principle is not specifically meant to restrict the number of property rights which can be created, but is merely aimed at encouraging the use of a specific set of property rights which have been expressly recognized by the legal system).

⁶¹ If the property right in a particular asset does not constitute full ownership of the asset, the party interested in acquiring the right needs a mechanism to verify what is the proper scope of the right. For an overview of the different types of verification rules, see [56] Hansmann, H. and R. Kraakman, *Property, Contract, and Verifiability: Understanding the Law's Restrictions on Divided Rights*. 2001, University of California, Berkeley.

⁶² The more information is provided by a particular verification mechanism, the higher are the costs of establishing and maintaining the verification system. Property rights related to different kinds of assets may therefore have different verification rules which are designed to provide the maximum amount of information, but only insofar as that the advantages deriving from the additional information are capable of justifying the overall costs of the system. See [57] Baird, D. and T. Jackson, *Information, Uncertainty, and the Transfer of Property*. Journal of Legal Studies, 1984. **13**.

from the emergence of the new right exceed the overall costs of creating and administering the right.⁶³

In particular, the principle of *numerus clausus* is mainly concerned with the idea of limiting the categories of property rights which can be officially recognized by the legal system rather than with the fact of restraining the specific content of these rights.⁶⁴ An alternative regime of property rights could therefore emerge in the digital environment, allowing for the establishment of a new form of property rights in the digital manifestation of a work, where the actual scope of the right could be arbitrarily defined by the copyright owner to the extent that the content of the right can be easily identified.⁶⁵ In other words, the proposed regime would essentially be based upon the concept of ascertainability: whenever it becomes too difficult for the owner of a digital work to ascertain the number and the scope of the proprietary rights vesting in a particular instance of the work, the right would ultimately be regarded as a standard property right and the protection granted to the work would thus inevitably revert back to the default copyright protection regardless of the

⁶³ The emergence of a new typology of property rights ultimately depends upon the costs and the benefits deriving from the establishment and the enforcement of rights. See, e.g. [58] Parisi, F., *The Fall and Rise of Functional Property*, in *Law & Economics Research Paper*. 2005, George Mason Law School.

⁶⁴ For instance, servitudes and restrictive covenants in land are particular category of property rights which are included into the *numerus clausus* of most legal systems. While the rules governing the creation and/or the enforcement of these rights are generally well regulated, the scope and the content of these rights are usually left to the discretion of the parties, which are consequently free to establish the manner in which and the extent to which the right can be exploited. [56] Hansmann, H. and R. Kraakman, *Property, Contract, and Verifiability: Understanding the Law's Restrictions on Divided Rights*. 2001, University of California, Berkeley.

⁶⁵ By providing for only a limited number of standard property rights, the *numerus clausus* principle is fundamentally intended to reduce the costs of evaluating the scope and/or the content of the rights vesting in a particular asset. The problem of excessive information costs can however also be resolved by requiring that clear notice be given of the various forms that a given property right may take, so that the establishment of atypical property rights will be unlikely to undermine the free circulation of goods. See [55] Hansmann, H. and R. Kraakman, *Property, Contract and Verification: The Numerus Clausus Problem and the Divisibility of Rights*. 2002, Harvard Law School.

various terms and conditions that had been originally incorporated into digital work.⁶⁶

Knowledge of the terms and conditions governing the exploitation of a work would therefore constitute a precondition for the coercibility of obligations.⁶⁷ Accordingly, while the mere creation of an original work of authorship is usually sufficient for it to qualify for copyright protection, in the digital environment, in order to avail themselves of the alternative proprietary regime, all the digital instances of a work will have to satisfy a certain level of formalities.⁶⁸ For instance, the scope of the proprietary rights vesting in a digital work could be encoded into specific metadata which would precisely stipulate the manner in which and the extent to which that particular instance of the work can be legitimately exploited. The incorporation of specific metadata into a digital work would thus enable the owner thereof to become aware of the rights and obligations vesting in that particular instance of the work and may eventually ensure that the terms and conditions under which the work has been released be ultimately complied with by technological means.⁶⁹

The terms and conditions governing the exploitation of the digital work could theoretically extend to anything within the scope of the copyright regime,

⁶⁶ Most legal systems implemented a number of mechanisms to encourage the reunification of fragmented proprietary rights into a complete bundle of rights. For more details, see [51] Parisi, F., *Entropy in Property*. American Journal of Comparative Law, 2002. **50**(3).

⁶⁷ The requirement that proper notice be given for the enforcement of certain rights and obligations is a common feature of property law. In fact, in the context of real property, actual or potential knowledge of the rights and obligations shaping the scope of the property rights vesting in a particular resource is generally regarded as an essential requirement for the rights to be enforceable against third parties. For more details, see e.g. [59] Epstein, R., *Notice and Freedom of Contract in the Law of Servitudes*. California Law Review, 1982. **55**.

⁶⁸ In view of the absolute nature of proprietary claims with *erga omnes* effects, the owner of a property right in a particular asset is allowed to dispose of it through the creation of a limited property right only to the extent that the scope of the right is clearly communicated to the public and the peculiarities thereof are not likely to mislead the expectations of third parties. Whenever an asset is subject to an idiosyncratic property right, the owner has therefore the duty to ensure that it is being conveyed in such a way as to allow for the nature and the content of the right to be easily recognized by anyone who may subsequently come into possession of the asset. See [53] Merrill, T. and H. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*. Yale Law Journal, 2000. **110**.

⁶⁹ For a comprehensive overview of the technological aspects related to the exploitation of digital works, see chapter 2 of [33] Becker, E., et al., *Digital Rights Management: Technological, Economic, Legal and Political Aspects*. 2004: Springer.

as long as they can be formalized in an objective structure which can be understood by a machine.⁷⁰ In particular, every digital item should precisely identify the date in which the work has first been embodied into a tangible medium of expression (in order to determine the period of validity of any non-standard proprietary right vesting in the digital work) and what are the specific rights and obligations that have been incorporated into the digital instance of the work.

Finally, the new framework introduced by the digital technologies may require shifting from a strict liability regime to a fault liability regime. Under the default copyright regime, in fact, as long as they do not fall under the regime of copyright exemptions, the reproduction, the distribution and the making available of a work, together with the making of derivative works, necessarily constitute copyright infringement, regardless of the real intent of the user.⁷¹ Anyone taking part in the unauthorized exploitation of a work without the consent of the copyright owner would therefore automatically be liable of primary infringement, even if in *bona fide*, because the burden is ultimately for the user to obtain a license to exploit the work.⁷²

Under the proposed regime, instead, while copyright protection applies to the original expression of the work by default and without the need for any kind of formality, in order to benefit from the regime of limited property rights in the digital manifestation of the work, the copyright owner will have to provide appropriate notice of the terms and conditions under which that particular

⁷⁰ For an overview of Right Expression Languages, see [60] Coyle, K., *Rights Expression Languages*. 2004, Library of Congress.

⁷¹ Under copyright law, primary infringement arises whenever an individual engages in an activity which itself constitutes copyright infringement. Lack of intention and/or lack of knowledge is not a valid defense against copyright infringement. In order to be absolved from liability, the burden is therefore on the alleged infringer to prove that the exploitation of the work was comprised within the scope of the regime of copyright exemptions and/or that the supposedly infringing work was the result of independent creation. For an overview of the historical and economical foundations of the strict liability regime of copyright law and a critical analysis thereof, see [61] Ciolino, D.S. and E.A. Donelon, *Questioning Strict Liability in Copyright*. Rutgers Law Review, 2002. 54(2).

⁷² Since, by default, a copyright work is protected against any unauthorized act of exploitation which does not fall within the scope of copyright exemptions, there exists a general presumption that any exploitation of the work will be infringing the copyright in the work and it is thus for the user to determine whether or not it is necessary to acquire a license from the copyright owner before exploiting the work. See e.g. [62] Cohen, J.E., *The Place of the User in Copyright Law*. Fordham Law Review, 2005. 74.

instance of the work can be exploited. The various terms and conditions will therefore be incorporated into the digital work, so that users will no longer need to acquire a copyright license in order to exploit the work but will merely have to act in compliance with the proprietary rights they have been granted with when acquiring the digital instance of the work. The burden falls therefore on the copyright owner to provide an accurate description of the scope of the rights that are being conveyed together with the digital instance of the work.

Accordingly, while tampering with the metadata would necessarily give rise to an action for copyright infringement under a strict liability regime,⁷³ dealing with the digital instance of a work whose metadata has been tampered with and exploiting the work in accordance with the resulting metadata may only constitute copyright infringement if the user knows or has good reasons to believe that the digital item does not constitute a genuine work and that the exploitation thereof would therefore be infringing the copyright in the work.⁷⁴

⁷³ See e.g. article 12 of the WIPO Copyright Treaty, which called for the introduction of an additional layer of protection against the unauthorized manipulation of rights management information (defined as any information incorporated into the copy of a copyright work, capable of identifying the work, the copyright owner and/or the terms and conditions for the exploitation of the work) through the implementation of effective legal remedies against anyone deliberately removing or altering rights management information. However, although the protection of rights management information has been for the most part implemented under a fault liability regime, in view of the key role played by the right management information under the proposed regime, the actual removal and/or alteration thereof should be punished under a strict liability regime, so as to ensure that once a digital work has been made available to the public under a certain proprietary regime, no one will be likely to subsequently manipulate the information governing the manner in which and the extent to which the digital instance of the work may be exploited.

⁷⁴ Conversely, the dissemination of a work whose rights management information has been tampered with should only be punishable to the extent that the work is being disseminated by someone knowing or having good reasons to believe that the rights management information originally incorporated into the digital work has been removed and/or modified without authority of the copyright owner or of the law. Likewise, in order to reduce the risks for users to be found liable of copyright infringement when innocently exploiting a copy which have been maliciously modified, the illegitimate exploitation of a work in accordance with corrupted rights management information should constitute copyright infringement only insofar as the user knows or has good reasons to believe that the rights management information incorporated into the digital work has been tampered with and that the exploitation of the digital instance of the work is therefore likely to infringe the copyright in the work.

5.3 Resulting benefits

The proposed reform could replace the complex system of contractual relationships that is today required in order to release an original work of authorship under certain terms and conditions which may only be enforced against the particular users to whom the license has been granted⁷⁵ with an alternative regime of proprietary rights incorporating certain rights and obligations which would effectively contribute to shaping the distinctive features of the digital work into which they have been embodied and would therefore be enforceable *erga omnes*.⁷⁶ The licensing of rights would therefore only become necessary in the case where the copyright owner is planning to license one or more of the exclusive rights vesting in the work for the subsequent exploitation thereof by third parties.⁷⁷ If the work is to be merely consumed by end-users, conversely, the licensing of any right in the work would no longer be required, since, by the mere fact of purchasing a digital copy of the work, end-users would be granted with a proprietary right in the digital item, the definition of which will determine the extent to which that particular instance of the work can be legitimately exploited.

In addition, the various rights and obligations governing the exploitation of a work would no longer be tied to a particular user but would run with the item as it is being transferred from one user to the other. The fundamental idea underlying the proposed regime is basically that the copyright owner would no

⁷⁵ According to the doctrine of privity in contract law, it is not possible to enforce any contractual claim against a third party who did not consent to a particular contractual arrangement. See e.g. [63] Hatzis, A.N., *Rights and Obligations of Third Parties*, in *Encyclopedia of Law & Economics, Vol. III: The Regulation of Contracts*, B. Bouckaert and G.D. Geest, Editors. 2000, Edward Elgar.

⁷⁶ Property rights are enforceable *erga omnes*, regardless of who is the current owner of the property. Whenever an asset is being transferred to a third party, all rights and obligations vesting in the proprietary right of the asset will thus be automatically transferred to the new owner. See [64] Mattei, U., *Basic Principles of Property Law*. 2000, Westport, CT: Greenwood Press.

⁷⁷ A copyright license can take the form of (1) a covenant by the copyright owner not to sue a particular user for a specific exploitation of the work – usually in exchange of a lump sum payment, or (2) an assignment of rights allowing for the exploitation of one or more of the exclusive rights provided for by the copyright regime – generally based upon a particular royalty scheme. See [65] Schroeder, R.A., *Licensing of Rights to Intellectual Property*. Albany Law Review, 1986. 50. Under the proposed regime, while the former type of licenses would no longer be needed, the latter would nevertheless be required any time the copyright owners are unable and/or unwilling to exploit their work by their own means.

longer enter into any contractual agreement with the users, but would rather introduce specific rights, restrictions and/or obligations within the digital instance of a work by the means of a unilateral act. In other words, right holders would be given the opportunity to delineate the boundaries of any of the exclusive rights they have been granted with in any way they see fit so as to precisely determine the manner in which and the extent to which users are allowed to exploit a particular instance of the work, as well as any subsequent reproduction thereof.⁷⁸

As they have been incorporated directly into the property rights vesting in a particular instance of the work, the provisions concerning the extent to which and the manner in which the work can be legitimately exploited would however no longer amount to a contractual arrangement between the licensor and a particular licensee but would attach to the digital item as such, regardless of the identity of the owner thereof. As a consequence, any successive owner of the digital work would be automatically granted with the same rights and inevitably bound by the same obligations as the original owner, without prejudice to the possibility to enter into a contractual relationship with the copyright owner in order to create additional rights and obligations of a purely contractual nature.⁷⁹ This would allow for the reintroduction of the doctrine of exhaustion into the digital environment, as the copyright owner would no longer be able to control the dissemination of the digital copies of a work after they have been made available to the public.⁸⁰

⁷⁸ When producing a digital work, the copyright owner could decide that it may not be reproduced at all, that it may be reproduced only under certain circumstances, or that it may be freely reproduced, although any new copy of the work may be subject to different terms and conditions as the original. For instance, the copyright owner could specify that anyone coming into possession of a digital work is allowed to reproduce the particular instance of the work, while nevertheless introducing a specific condition according to which every reproduction of the work would not permit any further reproduction, e.g. by requiring that the proprietary rights vesting in the newly reproduced instances of the work only incorporate the right for anyone to freely redistribute the digital work to the public but not the right of making any further copies thereof.

⁷⁹ The interaction between copyright law and contract law is in fact one of the main characteristics of the copyright system, which basically enables the owner of the copyright in a work to extract value from the exploitation of the work. See [66]Nimmer, R.T., *Breaking Barriers: The Relation Between Contract and Intellectual Property Law*. Berkeley Technology & Law Journal, 1998. **13**.

⁸⁰ Under the proposed regime, the exploitation of a work would be ultimately regulated by the specific terms and conditions incorporated into the digital manifestation thereof. Accordingly, whenever the reproduction of the digital work has been made with the consent of the copyright owner or in accordance with the provisions incorporated into the digital instance of the work, any

In fact, the exhaustion of rights would occur with regard to all the exclusive rights provided for by the copyright regime, since after they have been used to model or to refine the proprietary rights vesting in the digital manifestation of a work, copyright law would have no more authority over the exploitation of that particular instance of the work.

If the copyright can be regarded as the right to define the scope of the proprietary rights vesting into every digital instance of the work, under the proposed regime, this right could however only be exercised at the moment in which a new copy of the work is being produced. After they have been incorporated into a particular instance of the work, the various rights and obligations would collapse into the digital item and could no longer be adjusted by anyone, including the copyright owner. Accordingly, by eliminating the need to establish a contractual relationship between users and right holders, the proposed regime would essentially convert every digital work into a virtual good, thereby allowing for a free market for information goods to develop not only at the level of the work as an intellectual creation but also with regard to every digital manifestation of the work.⁸¹

Finally, the proposed model may bring substantial advantages in terms of privacy. Traditionally, copyright owners had little to worry about the privacy of end-users, since after a work was sold, it was impossible to keep track of the owner and the activities thereof.⁸² In the digital environment, however, the work

reproduction would constitute a legitimate copy of the work for which the distribution right may or may not be regarded as having been exhausted, according to the way in which the copyright owner originally framed the property rights vesting in the original instance of the work.

⁸¹ While copyright law allowed for the development of a market for information goods by assigning a series of exclusive rights to the author of any original work of authorship, the market for information goods is limited to the rights vesting in the expression of the work and does not necessarily relate to the rights vesting in the tangible manifestation of the work. In fact, while the exclusive rights granted by the copyright regime can be freely disposed of by the copyright owner, the tangible manifestation of the work may not be disposed of without the consent of the copyright owner because that would otherwise infringe upon the exclusive right of distribution, to the extent that the right has not been subject to exhaustion. Under the current copyright regime, therefore, the market for digital information goods is limited to the first layer of transactions (i.e. from the copyright owner to end-users), because, since the exhaustion of rights does not apply in the digital environment, end-users are necessarily precluded from trading or even exchanging digital works between amongst others.

⁸² After a physical copy of the work has been sold, the copyright owner has no longer the possibility to control and/or to restrain the access to and/or the exploitation of that particular

is usually being licensed to a particular user whose identity has to be ascertained.⁸³ Whenever a work is protected by technological means, the user's consumption and/or exploitation of the work may therefore be recorded by any technological device on which the content resides⁸⁴ and the information be automatically reported to the content provider without asking for the user's consent.⁸⁵

Under the proposed regime, instead, the exploitation of a work would no longer be associated with a particular user and the identity of users would become ultimately irrelevant. Since the terms and conditions according to which a work can be legitimately exploited are no longer incorporated into a contractual license but are directly incorporated into the property right vesting into the digital manifestation of a work, anyone coming in possession of the

instance of the work, to the extent that the copyright in the work is not being infringed upon. See [42] Elkin-Koren, N., *Public/Private and Copyright Reform in Cyberspace*. Journal of Computer-Mediated Communication, 1996. 2(2).

⁸³ Under a standard DRM scheme, user identification is regarded as an essential condition for the user to be able to access protected content, since it would otherwise be impossible to ascertain whether the user has the right to access the content or not. Moreover, even where the content is freely accessible by anyone, identification may be required for the DRM system to be able to obtain information about users' activities and preferences and an increasing number of DRM systems are therefore disabling anonymous access to information. See e.g. Microsoft's Windows Media Player's unique identifier in order to keep track of users and Apple iTunes / Microsoft eBook Reader mandatory activation process in order to link a device to the corresponding user's account. Besides, in order to complete commercial transactions on the Internet, users are generally required to provide their credit card numbers and/or billing information, as a result of which their identity can be unambiguously established. Some alternative mechanisms of payment have been developed to protect users' privacy based on the concept of virtual money (e.g. Digicash), coupons or electronic gift certificates, although their success so far has been rather limited.

⁸⁴ The implementation of many DRM systems may require that a large amount of information be collected with regard to the preferences and the activities of end-users, which may eventually impinge upon their right to privacy. See e.g. [67] Cohen, J.E., *DRM and Privacy*. Berkeley Technology Law Journal, 2003. 18. and [68] Cohen, J.E., *A Right to Read Anonymously: A Closer Look at Copyright Management in Cyberspace*. Connecticut Law Review, 1996. 28.

⁸⁵ See e.g. Sony BMG's CDs, which secretly infected users' computers with a software application that collected information on the activities of users and reported it to Sony BMG without appropriate notice and consent. Although it did not collect any personal information but only data concerning the songs played and the IP addresses of users, the real identity of users could actually be tracked back from their IP address by their Internet Service Providers. For more details, see [69] Felten, E.W. and J.A. Halderman, *Digital Rights Management, Spyware, and Security*. Security & Privacy, 2006. 4(1).

digital work will be allowed to exploit the work in accordance with the specific terms and conditions that have been incorporated therein. The identity of a user will thus no longer be required in order to determine whether a particular exploitation is legitimate or not. The fundamental question would thus no longer be who has the right to do what, but what can be done with a particular instance of the work, regardless of who the actual owner is.

6. CONCLUSION

The viability of the copyright regime has been considerably challenged by the advent of Internet and digital technologies, which have led to the establishment of a new framework for the production and the dissemination of digital works, whose characteristics are substantially different from that of physical works. The legislative reforms implemented so far, however, have been limited to replicating the characteristics of the physical world into the digital environment without accounting of the new opportunities provided by digital technologies. By recognizing the distinction between the rights vesting in the expression of a work and the rights vesting in the digital manifestation of the work, the proposed reform may be capable of reintroducing the self-regulating features of the copyright regime, while simultaneously reducing the discrepancies that subsist between copyright law and property law in the digital environment. Copyright owners would in fact no longer release their works under specific terms and conditions which may only be enforced against the particular users to whom a license has been granted, but would rather rely on the copyright in their works in order to refine the content and the scope of the proprietary rights vesting in every digital instance of their works, the enforceability of which would ultimately depend upon the extent to which proper notice thereof has been communicated to the public.

The major benefit of the proposed regime would reside in the abolition of the complex system of contractual relationships which are currently required for the mere consumption of content in the digital environment. The ownership of a digital work could in fact be transferred to any potential third party, who would be automatically bound to the very same obligations as the former owner without the need of entering into any contractual agreement. Digital works would fundamentally be regarded as virtual goods, replicating some of the characteristics of tangible goods and thereby allowing for the doctrine of

exhaustion to be restored in the digital environment and for the free market for information goods to further develop. Accordingly, although ultimately aimed at replicating the traditional state of affairs of the tangible world into the digital environment, the proposed regime would nonetheless benefit from the advantages that can be derived from the recent deployment of digital technologies.

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