Collective Management Organizations as Fiduciaries and Blockchain’s Potential for Copyright Management

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Abstract

As widely acknowledged by academics and European copyright laws, Collective Management Organizations (CMOs) play an important role as promoters of creativity and key contributors to the quality of culture. Collective management of copyright is not just a technical problem, dealing with licensing of works or collection and distribution of royalties. Several uncertainties may occur due to the monopoly position, on the basis of which these organizations operate. In this context, authors have argued that CMOs should meet higher levels of transparency to better reach their goals. While some minimum standards are set by laws, perhaps, new ideas could be brought to the discussion table to better manage copyright in the interest of rightsholders and the culture itself. In this paper, the introduction of fiduciary laws is proposed to treat CMOs as trustees, who would act to promote the beneficiaries’ (i.e. the rightsholders’) interests. In such relationships, CMOs could manage copyright with duties of loyalty, trust, and care, which could most probably ensure the optimal level of transparency. Organizations’ superiority over their members could justify fiduciary laws, which deal with relationships based on trust. The latter could also be strengthened by promising technologies. So, blockchain is tested to examine its potential in the field of copyright management. Its intrinsic and emergent properties are distinguished from one another to highlight the need for experimenting to better understand blockchain’s possibilities and its limitations. Finally, by further analyzing its characteristics, this paper argues that blockchain could offer new opportunities, but also pose great challenges for copyright management.

Keywords: copyright, Collective Management Organizations, blockchain, fiduciary laws

1. Introduction
In 1979 the musical band “The Undertones” published the song “Teenage Kicks”. The singer, Feargal Sharkey, later became the Chief Executive of “UK Music”\(^1\).

As he stated in 2010, “[s]omewhere right now […] a young person is scribbling on a scrap of paper […] composing a song that will resonate far beyond the page […] [t]his industry may change, but that simple act of creativity, remains and will always remain, immortal and timeless […]”\(^2\). In UK Music’s “Liberating Creativity”\(^3\), one may find the romantic statement, supporting the mysterious and magical process of creativity, but also a lobbyist-like-argument for government intervention and investment in the name of creativity\(^4\).

In another example that history provides, in 1847, Ernest Bourget, a French composer, visited the Paris café “Ambassadeurs”, where his music was being played without his permission\(^5\). Bourget refused to pay his drink arguing that “you consume my music, I consume your wares”\(^6\). This argument was won before the Tribunal de Commerce de la Seine that upheld a law of 1793 recognizing a right to public performance for the first time\(^7\). He, then, co-founded an agency, which was the direct predecessor of SACEM\(^8\).


\(^3\) UK Music, Liberating Creativity, id.

\(^4\) UK Music, Liberating Creativity, id, at p. 10, mentioning that “[…] [w]hile Government has always had a profound impact on the music industry, public policy will matter even more in the future because more is at stake […] [t]he creative industries are the future […]”.


\(^8\) Martin Kretschmer, Access and Reward in the Information Society: Regulating the Collective Management of Copyright, id, mentioning that the origins of collective administration may appear as a straightforward response to a problem of transaction costs, like information, contract, and governance costs (e.g. identifying the owner, negotiating a price, or monitoring and enforcement costs).
To many authors, Collective Management Organizations (CMOs) are important in the digital economy. This is something the European Parliament and the Council have also accepted. CMOs are the intermediaries that act on behalf of their members, the rightsholders. Their main duties include, not just the

9 As Ficsor argues, the term “collective management” only refers to those forms of joint exercise of rights where there are truly “collectivized” aspects (such as tariffs, licensing conditions, and distribution rules); where there is an organized community behind it; where the management is carried out on behalf of such a community; and where the organization serves collective objectives beyond merely carrying out the tasks of rights management. Mihály Ficsor, Collective Management of Copyright and Related Rights, id, at p. 12.

10 For some historical information on collective management, see Daniel Gervais, Collective Management of Copyright: Theory and Practice in the Digital Age, in Daniel Gervais (ed.), Collective Management of Copyright and Related Rights, 3rd Edition, Wolters Kluwer, 2015, The Netherlands, pp. 3-30, at pp. 5-7, mentioning that the story of the rise of collective management begins in France with the French playwright Pierre-Augustin Caron de Beaumarchais in the “dark and dingy Parisian theatres” in the 1700s. See also Mihály Ficsor, Collective Management of Copyright and Related Rights, id, at p. 18, paragraphs 25-26 (mentioning that Beaumarchais’s legal battles against theatres led to the foundation of the Bureau de législation dramatique in 1777). CMOs are also known as “collecting societies”. See Judgment of the General Court (6th Chamber), 12 April 2013, in Case T-442/08, International Confederation of Societies of Authors and Composers (CISAC) v European Commission, at paragraph 2. As Gervais has aptly put it, the term “collecting societies” is used by one who “does not like” CMOs. Daniel Gervais, Collective Administration of Rights, Lecture (July 3, 2018), International Copyright Law Summer Course, IViR, University of Amsterdam, 2-6 July, 2018.


14 As regards the relationship between these societies and their members, the Court of Justice of the European Union has ruled that a compulsory assignment of all copyrights, both present and future, no distinction being drawn between the different generally accepted types of exploitation, may appear as an unfair condition, especially if such assignment is required for an extended period after the member’s withdrawal (Judgment of the Court of 27 March 1974, Belgische Radio
collection/distribution of royalties\textsuperscript{15} and the licensing of their members’ works\textsuperscript{16}, but also the promotion of creativity\textsuperscript{17} and of social-cultural value\textsuperscript{18} and the

\textit{en Televisie and société belge des auteurs, compositeurs et éditeurs v SV SABAM and NV Fonior}, Reference for a preliminary ruling: Rechtbank van eerste aanleg te Brussel – Belgium, BRT-II, Case 127-73, at paragraph 12). Besides, a collective management society must not discriminate among its members as regards distribution of income and it should not refuse to accept nationals of European Union member states as members (Frank L. Fine, The Impact of EEC Competition Law on the Music Industry, Northwestern Journal of International Law & Business, Vol. 12, Issue 3, Winter 1992, pp. 508-535, at pp. 521, 524). With regard to the relationship between a CMO and users, the former may only refuse to grant direct access to its own national repertoire to users established in other European Union member states for efficiency reasons (Judgment of the Court of 13 July 1989, Ministère public v Jean-Louis Tournier, Reference for a preliminary ruling: Cour d'appel d'Aix-en-Provence – France, Competition - Copyright - Amount of royalties - Reciprocal representation contracts, Case 395/87). Competition law is of major significance, as a society imposes unfair trading conditions if the royalties charged are appreciably higher than those charged in other member states, unless the differences are justified by objective and relevant factors (Judgment of the Court of 13 July 1989, Ministère public v Jean-Louis Tournier, id, at paragraphs 34-36; Judgment of the Court of 13 July 1989, François Lucazeau and others v Société des Auteurs, Compositeurs et Éditeurs de Musique (SACEM) and others, References for a preliminary ruling: Cour d'appel de Poitiers and Tribunal de grande instance de Poitiers – France, Competition - Copyright - Amount of royalties - Reciprocal representation contracts, Joined cases 110/88, 241/88 and 242/88, at paragraphs 21-33). Regarding relationship between these societies, there has been a call for efficient exchange of information and the discontinuation of B contracts, under which no money is transferred and each society collects and distributes royalties used in its territory only to its own rightsholders (European Parliament resolution on a Community framework for collective management societies in the field of copyright and neighbouring rights (2002/2274(INI)), at paragraphs 45, 56; Communication from the Commission to the Council, the European Parliament and the European Economic and Social – Committee, The Management of Copyright and Related Rights in the Internal Market, COM/2004/0261, final).

\textsuperscript{15} Daniel Gervais, Collective Management of Copyright: Theory and Practice in the Digital Age, id, at p. 7, mentioning that CMOs facilitate the establishment of unified methods for collecting and dispersing royalties and negotiate licensing arrangements for works.

\textsuperscript{16} Simone Schroff & John Street, The politics of the Digital Single Market: culture vs. competition vs. copyright, Information, Communication & Society, 2018, Vol. 21, No. 10, DOI: 10.1080/1369118X.2017.1309445, pp. 1305-1321, at p. 1307 mentioning that a CMO’s function is to provide users with licenses, collect royalties and distribute them to their members, as well as to monitor the use of works to ensure that those who owe royalties actually pay them. See also at p. 1315, arguing that they also act as lobbying organizations that represent their members in public debate “pushing for effective protection”.

\textsuperscript{17} As creativity is the raison d'être of copyright, CMOs need to go beyond the operation of a mere technical machinery. Mihály Ficsor, Collective Management of Copyright and Related Rights, id, at p. 21, paragraphs 33-34. See also Ruth Towse, Creativity, Incentive, and Reward: An Economic Analysis of Copyright and Culture in the Information Age, Edward Elgar, 2001; Recital (1) of the Directive 2014/26/EU (mentioning that previous Directives contribute to the development and maintenance of creativity).

\textsuperscript{18} Daniel Gervais, Collective Management of Copyright: Theory and Practice in the Digital Age, id, at p. 7 (“the role of CMOs has evolved to oversee copyright compliance, fight piracy and perform various social and cultural functions”); Laurence R. Helfer, Collective Management of Copyrights and Human Rights: An Uneasy Alliance Revisited, id, at p. 98 (“[...] many CMOs
contribution to the quality of culture and cultural diversity. Namely, GESAC, the European Grouping of Societies of Authors and Composers, states that it aims not only to advocate for adequate remuneration for creators but also to ensure a sustainable creative and cultural ecosystem. Besides, many CMOs mention that they aim to promote creative work, support live performances, or contribute to culture. Hence, it seems that these cultural and solidarity aspects recognize the sociological function of CMOs; they represent creative people whose activity is, not neutral but, directly linked to the cultural sphere. Thus, collective management is not just a technical problem.

These organizations mainly operate on the basis of (national) monopoly position, and it is well known that such positions can be abused. So, to better engage in a broad range of social, educational, and cultural activities [...] Commentators continue to debate the legality and wisdom of entrusting CMOs with the promotion of culture [...]”.

19 Martin Kretschmer, Access and Reward in the Information Society: Regulating the Collective Management of Copyright, id, at p. 9, mentioning that the features of the European CMOs include some characteristics under “solidarity rationale”: publishers’ control below market expectations; socio-cultural deductions for the benefit of domestic creators; cross-subsidy between big and small holders; and discrimination between genres.

20 See recital (3) of the Directive 2014/26/EU, mentioning that CMOs play and should continue to play an important role as promoters of the diversity of cultural expression by enabling the smallest and less popular repertoires to access the market and by providing social, cultural, and educational services for the benefit of their rightsholders and the public.

21 See GESAC’s website: http://authorsocieties.eu/about/about-gesac (mentioning also that its mission is to promote collective management as “the best solution to respect and protect authors’ rights”).

22 Take, for example, PRS for Music (UK: https://www.prsformusic.com/what-we-do), SACEM (France: https://societe.sacem.fr/en/presentation), or GEMA (Germany: https://www.gema.de/).

23 Ruth Towse, The Economic Effects Of Digitization On The Administration Of Musical Copyrights, id, at p. 65 (see also at p. 58, mentioning that a CMO has a “front” and a “back” office; while the former deals with licensing, including negotiating of contracts, royalty rates etc, the latter is related to procedures of collection and distribution of revenues or matching of usage reports to repertoire metadata); Ian Hargreaves, Digital opportunity: A review of intellectual property and growth, May 2011, Independent Report, at p. 36, paragraph 4.44 (mentioning that CMOs fulfill a valuable role in markets, reducing transactions costs by enabling “many to many” licensing, but they can also harm competition as they are in effect natural monopolies); Martin Kretschmer, Access and Reward in the Information Society: Regulating the Collective Management of Copyright, id, at p. 7 arguing that the monopolistic structure leaves CMOs in control of the terms of access and royalty distribution in their particular rights domain. For a definition of “natural monopolies”, see Christian Handke & Ruth Towse, Economics of Copyright Collecting Societies, id, at pp. 3-4 (CMOs are “[…] ‘natural monopolies’ meaning that as monopoly suppliers they are more efficient in the sense of having lower costs than if there were competition […]’); Thomas Riis, Collecting societies, competition, and the Services Directive, Journal of Intellectual Property Law & Practice, 2011, Vol. 6, No. 7, pp. 482-493, at pp. 483-484 (arguing that the raison d’être of CMOs is economies of scale and scope in negotiating, monitoring, and enforcing copyright, which implicitly presupposes that collective copyright
reach their goals, they should meet some standards of both governance\textsuperscript{25} and transparency\textsuperscript{26}. For instance, under Article 18(1)(f) of the Directive 2014/26/EU, a CMO should provide information concerning deductions made for any purpose other than in respect of management fees, including those that may be required for the provision of any social, cultural or educational services. The annual transparency report, provided in Article 22 of the above Directive, is also a novelty to ensure some higher levels of transparency.

European national laws concerning collective management may vary\textsuperscript{27}. Although collective management “comes in many shapes and sizes”\textsuperscript{28}, it is management is a natural monopoly, and a natural monopoly should not be regulated in order to foster competition).

\textsuperscript{24} Adolf Dietz, Legal Regulation of Collective Management of Copyright (Collecting Societies Law) in Western and Eastern Europe, J. Copyright Society of the U.S.A., 2002, Vol. 49, pp. 897-916, at p. 903 (mentioning that the antitrust approach against CMOs has been dominant for a long time). See also at p. 907, where Dietz mentions CMOs’ duty to contract with users on equitable terms, as a consequence of their predominant monopoly.

\textsuperscript{25} See recital (9) of the Directive 2014/26/EU (“[…] The aim of this Directive is to lay down requirements applicable to collective management organisations, in order to ensure a high standard of governance, financial management, transparency and reporting […]”).


\textsuperscript{27} In general, European CMOs need special authorization from competent bodies, like a Ministry. For instance, under Article L.321-3 of the French Intellectual Property Code the statutes and general regulations of the royalty collection and distribution should be addressed to the Minister responsible for culture. In most jurisdictions, only certain legal types of organizations are allowed. Namely, under Article L.321-1 of the French Intellectual Property Code, the societies need to be established in the form of civil law companies. See also Daniel Gervais, Collective Management of Copyright: Theory and Practice in the Digital Age, id, at p. 8 (mentioning that most CMOs are private entities). In some national laws, it is provided that only a single monopolistic CMO is allowed. See Article 86(2) of the Hungarian Act LXXVI of 1999 on Copyright (“[…] The register shall list the rights management activities a collecting society is entitled to exercise […]”); Article 151(1) of the Slovenian Copyright and Neighboring Rights Act of 30 March 1995 (“[…] The Office grants permission to a collecting society that best meets the requirements of a public tender offer, which must be published in the Official Gazette of the Republic of Slovenia […]”). The provision for the competence of a single CMO used to be the case in Greece too. Under Article 49(6) of Law No. 2121/1993 the single CMO used to be the only competent and responsible for managing related rights. But the above provision was repealed.
generally acknowledged that CMOs should act in the best interests of their members and provide for systems that enable rightsholders to exercise their membership rights by participating in the organization’s decision-making process\(^\text{29}\). Besides, rightsholders should exercise control over the activities of the CMOs\(^\text{30}\).

In this context, these complex\(^\text{31}\) and, to some, extremely problematic\(^\text{32}\) societies could be regarded as trustees, i.e. fiduciaries in a relationship where the rightsholders would be the beneficiaries. This paper proposes the introduction of fiduciary laws to achieve higher levels of transparency through the duties of loyalty and care. Such laws regulate relationships based on trust; and trust could be further promoted by the very promising blockchains. Thus, these technologies are examined to test their potential for copyright management. While blockchain is still immature and evolving, properties by construction need to be distinguished from its emergent features or desired goals. Experimenting is most probably needed to better understand possibilities and limitations. But some further discussion on blockchains’ characteristics may allow to draw some safe conclusions as regards opportunities and challenges for copyright management.

### 2. CMOs as fiduciaries

Fiduciary laws reflect society’s values and norms with great clarity\(^\text{33}\). Fiduciary duty is a legal term referring to the type of duty that a person or an organization, who/which manages someone else’s power, wealth or property, has in

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\(^{28}\) Daniel Gervais, Keynote: The Landscape of Collective Management Schemes, Columbia Journal of Law & the Arts, 2011, Vol 34, No. 4, pp. 591-617, at p. 591. See also at pp. 595-596, mentioning that some basic economic functions unite all CMOs: a CMO must acquire the ability to license from a plurality of rightsholders or some other authority to get paid; find a way to offer a license or other rights to users and this includes negotiating or setting; obtain usage data or other data from users for purposes of distribution. To Gervais, “rights management is what CMOs do”.

\(^{29}\) See recital (22) of the Directive 2014/26/EU.

\(^{30}\) See recital (55) of the Directive 2014/26/EU.

\(^{31}\) The complexity may be due to the fact that CMOs operate as businesses, but they also have a cultural function. For an analysis as regards CMOs as cultural agents, see Daniel Gervais, Collective Management of Copyright: Theory and Practice in the Digital Age, id, at pp. 17-20.

\(^{32}\) Martin Kretschmer, Access and Reward in the Information Society: Regulating the Collective Management of Copyright, id, at pp. 2, 3 (“From the perspective of European competition law, collecting societies prima facie appear extremely problematic”).

certain circumstances in relation to the owner or the beneficiary of that power, wealth or property.\textsuperscript{34}

These laws deal with relationships based on trust\textsuperscript{35}. And trust enables an individual to be willing to make herself vulnerable to another party, despite potential risks that the latter will act in a way that can harm the former.\textsuperscript{36} In case of copyright management, trust could mean the willingness to become vulnerable to a CMO, which would manage its members’ rights. An author would be the entrustor; the act of becoming a CMO’s member would be the entrusting; and the CMO would be the entrustee, the fiduciary. And, perhaps, it would be fair to argue that all rightsholders are entrustors, entrusting CMOs when becoming their members.\textsuperscript{37} They become vulnerable when they face the risk of e.g. lack of transparency\textsuperscript{38} that might lead to mismanagement of their rights.

If the concept of trust were introduced in copyright law, it could guarantee higher levels of honesty and loyalty. In fact, one of the most important fiduciary duties is the duty of loyalty; fiduciaries should act in good faith in the interests of their beneficiaries and impartially balance the conflicting interests of different beneficiaries.\textsuperscript{39} They should avoid conflicts of interest and should not act for the benefit of themselves or a third party.\textsuperscript{40} Another important duty is the duty to act prudently, which means that fiduciaries should act with due care, skill, and diligence.\textsuperscript{41} In either case, the objective is to encourage the fiduciary to take the


\textsuperscript{37} As regards authors’ rights, a CMO has been regarded as an organization that aims at advancing the moral rights and/or that has at its disposal effective machinery for the collection and distribution of copyright royalties and assumes full responsibility for the operations attaching to the administration of the rights “entrusted” to it. Mihály Ficsor, Collective Management of Copyright and Related Rights, id, at p. 20, paragraph 31.


\textsuperscript{39} The European Commission, Resource Efficiency and Fiduciary Duties of Investors, id, at p. 7.

\textsuperscript{40} To some, the duty of loyalty is a response to the impossibility of writing contracts completely specifying the parties’ obligations. Frank H. Easterbrook, Daniel R. Fischel, Contract and fiduciary duty, The Journal of Law and Economics, The University of Chicago Law School, Vol. XXXVI, April 1993, pp. 425-446, at p. 426.

\textsuperscript{41} The European Commission, Resource Efficiency and Fiduciary Duties of Investors, id, at p. 7.
beneficiary’s interests properly into account in making decisions and to facilitate
detection of her failure to do so 42.

In general, fiduciaries provide services that are socially important and it is in
the interest of society that people use them 43. In case of copyright, its management
is said to be socially important as it aims at promoting culture; it is in the interest of
an author that she receives fair remuneration; and it is in the interest of society that
people use such “services” to e.g. listen to music. If one accepts the importance,
which the European legislator has attached to CMOs, it seems that rightsholders need
44 to rely on them; it would make no sense for each author to become an expert
and e.g. negotiate the level of royalties. Besides, fiduciaries cannot perform, unless
they are entrusted with power; similarly, a physician must have full control over the
patient’s body to operate on her.

And the single goal of this entrustment is to facilitate services to the
entrustors 45. The risk that fiduciaries may use the entrusted power for purposes
other than in the service of the entrustors involves competition among fiduciaries;
they have to convince beneficiaries that they use the relevant power for the
entrustors’ benefit 46.

There are many topics to which the label “fiduciary” can be applied 47 and the
duties may vary. But the most important duty of loyalty, the duty to act for the

42 Elizabeth S. Scott and Robert E. Scott, Parents as Fiduciaries, Virginia Law Review, Vol. 81,
No. 8, Symposium: New Directions in Family Law (Nov. 1995), pp. 2401-2476, at pp. 2420-
2421.
43 Jack M. Balkin, Information Fiduciaries and the First Amendment, UC Davis Law Review,
44 Christian Handke & Ruth Towsé, Economics of Copyright Collecting Societies, id, at p. 1,
arguing that rightsholders need the CMOs. See also Daniel Gervais, Individual and Collective
Management of Rights Online, in Johan Axhamn (ed.), Copyright in a Borderless Online
Environment, The Institute for Legal Research (Institutet för Rättstetskaplig Forskning), 2012,
pp. 89-99, at p. 89, mentioning that there is a substantial middle ground, an area comprising
compulsory licenses and collective management, in which rightsholders have, de jure or de facto,
lost the ability to say no to the use of their works, but not the right to be paid.
1075.
46 Tamar Frankel, Fiduciary law in the twenty-first century, id, at p. 1294; Deborah A. DeMott,
p. 871.
47 Frank H. Easterbrook & Daniel R. Fischel, Contract and Fiduciary Duty, id, at p. 432; Tamar
Frankel, Fiduciary Law, id, at p. 795; D. Gordon Smith, The Critical Resource Theory of
exclusive benefit of the beneficiary\textsuperscript{48}, could be introduced for copyright management. Indeed, rightsholders entrust CMOs their rights over which these organizations have control. They are the experts, who are (capable of) providing socially useful services. And it could also be argued that CMOs should have duties going beyond mere fairness and honesty; they could be obliged to act to further authors’ best interests\textsuperscript{49}. And, in fact, CMOs are required to do more than just serve the interests of their members\textsuperscript{50}.

The potential introduction of flexible\textsuperscript{51} fiduciary laws in copyright management might guarantee multiple advantages. Authors would, perhaps, choose among alternative fiduciaries\textsuperscript{52} and negotiate the terms of the relationship. Besides, a main pillar of the European Union’s policy is the freedom for copyright owners to choose the CMO they prefer; to “vote with their feet”\textsuperscript{53}. Perhaps, the CMOs would rarely have monopoly over the rightsholders’ needs and, unless the author agreed, the fiduciaries would not manipulate the terms of their performance\textsuperscript{54}. It seems that

\begin{itemize}

    \item Deborah A. DeMott, Beyond Metaphor: An analysis of fiduciary obligation, Duke Law Journal, 1988, pp. 879-924, at p. 882, mentioning that “[…] The fiduciary's duties go beyond mere fairness and honesty; they oblige him to act to further the beneficiary's best interests […]”.

    \item Simone Schroff & John Street, The politics of the Digital Single Market: culture vs. competition vs. copyright, id, at p. 1308, mentioning, amongst others, that CMOs are expected to provide social benefits in the form of trade union style collective bargaining with users or to contribute to state cultural policy by cross-subsidizing less popular music genres; CMOs have also a “solidarity function” as they provide for social insurance. Besides, case law has imposed CMOs further duties. See, in general, Martin Kretschmer, The Aims of European Competition Policy towards Copyright Collecting Societies, Paper for Society for Economic Research on Copyright Issues SERCIAC 2005, Montreal, 7-8 July 2005, available at http://serci.org/wp-content/uploads/2017/07/kretchmer.pdf, at pp. 14-15. As some argue, an exclusive right may be enjoyed to the fullest possible extent. Mihály Ficsor, Collective Management of Copyright and Related Rights, id, at p. 16, paragraph 16.


    \item Floyd Mechem, Elements of the law of partnership, 2\textsuperscript{nd} edition, 1920, Chicago Callaghan and Company, at p. 7, paragraph 5, mentioning that the law does not choose partners for people. Fiduciary relations are not mandated by law. However, when fiduciary relations are established, their legal consequences are determined by the law; the parties cannot waive the courts’ supervision over the fiduciary. Alison Grey Anderson, Conflicts of Interest: Efficiency, Fairness and Corporate Structure, UCLA Law Review, 1978, Vol. 25, pp. 738-795, at p. 756.

    \item Simone Schroff & John Street, The politics of the Digital Single Market: culture vs. competition vs. copyright, id, at p. 1312.

    \item Tamar Frankel, Fiduciary Law, id, at p. 801.
\end{itemize}
CMOs could be obliged to consult with authors and give them the opportunity to express their best interests and opinions, in accordance with which rights would be managed. Maybe, CMOs would implement internal policies and other safeguards to enhance transparency and avoid mismanagement. And this would be needed, since current transparency policies do not always meet high standards. Namely, while Article 18 of the Directive 2014/26/EU provides that a CMO should make available to each member information on e.g. royalties distribution, albeit it allows making available this information in national language that not all members may understand.

In addition to the above, in contrast to contract relations, where both parties seek to satisfy their needs, fiduciary relations are designed to satisfy only the needs of the entrustor, who may also monitor fiduciaries. As some have aptly put it, these laws are in place to avoid having the beneficiary “looking over the fiduciary’s shoulder.” Affirmative duties to disclose or “volunteer” information could also be introduced to ensure that CMOs, as decisionmakers, would become accountable. And this would very likely strengthen the member’s right to participate in decision making, a right that has already been established by Article 6(3) of the Directive 2014/26/EU. Rightsholders would be able to better monitor and exercise more scrutiny over CMOs’ activities.

A trust approach would also have a symbolic value; it would be a statement of societal expectations. And it would be fair to argue that what we need today is the

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56 Take, for instance, the Spanish CMO, SGAE, whose website provides some information only in Spanish: www.sgae.es.
57 Tamar Frankel, Fiduciary Law, id, at pp. 801, 818, 819.
61 Fiduciaries are typically decisionmakers, whose specialized function is that of recommending or making decisions of a discretionary nature about the management or investment of the (property or) power of others. Alison Grey Anderson, Conflicts of Interest: Efficiency, Fairness and Corporate Structure, id, at p. 757.
emergence of societies based on fiduciary relations, whose moral theme includes loyalty, fidelity, faith, and honor. So, maybe, the law could provide incentives to encourage potential fiduciaries and entrustors to enter into such relations, which by law demand fairness.

To sum up, CMOs do have special power over others and special relationship to others. What if the royalties collected were offered as “salaries” to the Executives of a CMO, instead of being distributed among members? The duty of loyalty and trustworthiness would probably ensure that the fiduciary would act in the interest of the beneficiary; the entrusted fiduciary would not betray the trust. Since, in almost every case, these potential fiduciaries manage important rights, it seems that they could have a duty of care, a duty to act competently and diligently. Besides, CMOs, as professionals having skills and knowledge, and rightsholders, being ill-prepared to monitor CMOs’ behavior, are not equal. This leads to asymmetry or superiority, a prerequisite for fiduciary laws to apply. In the relationship between members and CMOs, there is vulnerability, dependence, and the experts’ awareness of managing valuable rights. So, it seems that the above could justify the application of fiduciary laws.

And it might be surprising and most probably unwelcome news to CMOs that another body of law is relevant to the collective administration of copyright. Yet fiduciary laws could guarantee trust.

65 Tamar Frankel, Fiduciary Law, id, at pp. 829-832, discussing the moral theme in fiduciary regulation.
68 CMOs’ reactions may be the same as regards e.g. competition law. Laurence R. Helfer, Collective Management of Copyrights and Human Rights: An Uneasy Alliance Revisited, id, at p. 76.

Electronic copy available at: https://ssrn.com/abstract=3293055
And, maybe, technology could strengthen relationships of trust.

3. The promising chains

Transactions and the records of them are among the defining structures in economic and legal systems\(^{70}\), protecting assets, creating ownership, or establishing a layer, where people interact in trust. Laws of trust are said to be partly inside technologies\(^{71}\) and it is believed that a “programmable economy”, enabled by meta-coins and smart technologies, may support new forms of exchange, new markets, and new kinds of economies\(^{72}\).

And, in fields of copyright, industries tend to adopt new technology solutions\(^ {73}\). Since in a movie or a song many rightsholders can be involved, complexity may occur in terms of right claims, ownership, or collection and distribution of royalties\(^ {74}\). So, some\(^ {75}\) have proposed blockchain\(^ {76}\) to address the

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\(^{69}\) Such laws might, for instance, question the competence of a CMO, as a fiduciary, to transfer the beneficiary’s (e.g. author’s) right to receive fair remuneration to another CMO.


\(^{72}\) Viveca Woods, Gartner Says the Programmable Economy Has the Potential to Disrupt Every Facet of the Global Economy, October 8, 2015, Gartner, Inc., available at https://www.gartner.com/newsroom/id/3146018, mentioning as examples the attention economy, the reputation economy, the on-demand economy, and the resource optimization economy. See also Panos Constantinides, Ola Henfridsson, Geoffrey G. Parker, Introduction-Platforms and Infrastructures in the Digital Age, 2018, Information Systems Research, Vol. 29, No. 2, available at https://doi.org/10.1287/isre.2018.0794, pp. 381-400, at p. 390, mentioning that blockchain offers infrastructure leaders the opportunity to not only increase efficiency and reduce costs, but also evolve how physical commodities are distributed and consumed.


\(^{74}\) Benji Rogers, How the Blockchain and VR Can Change the Music Industry (Part 1), Nov. 2016, Medium, available at https://medium.com/cuepoint/bc-a-fair-trade-music-format-virtual-reality-the-blockchain-76fc47699733. For a discussion on how musicians are paid, see Aisling Quinn. Are online music platforms undermining the principles of copyright law?, Journal of Intellectual Property Law & Practice, 2018, Vol. 13, No. 1, pp. 49-60 (at p. 52, mentioning that contract terms limited Prince to a certain number of concert tours). See also Kevin Gray, Kobalt changed the rules of the music industry using data – and saved it, Wired, May 1, 2015, available at https://www.wired.co.uk/article/kobalt-how-data-saved-music (“songwriters signed to big music publishers often wait up to two years to get their money after it’s been collected”).

copyright “mess”; thanks to its potential for digital proof of identity and costless verification, blockchain could have a wide range of applications including the sphere of copyright management. By deploying cryptographic mechanisms to reach consensus, these chains are said to eliminate the need for an intermediary; as many scholars argue, they create a distributed trust system of value transfer. After having shifted from Bitcoin to Ethereum, to some, the second generation or the “Blockchain 2.0”, experts state

76 Buterin offers a definition of blockchain: “[…] A blockchain is a magic computer that anyone can upload programs to and leave the programs to self-execute, where the current and all previous states of every program are always publicly visible, and which carries a very strong cryptoeconomically secured guarantee that programs running on the chain will continue to execute in exactly the way that the blockchain protocol specifies […] They’re Lego Mindstorms for building economic and social institutions […]”. Vitalik Buterin, Visions, Part 1: The Value of Blockchain Technology, April 12, 2015, Ethereum Blog, available at https://blog.ethereum.org/2015/04/13/visions-part-1-the-value-of-blockchain-technology/. As others have argued, blockchains compete with organizations, but they are not organizations; they have market-like properties, but they are not markets; they facilitate transactions, not (just) exchange. Sinclair Davidson, Primavera De Filippi, Jason Potts, Economics of Blockchain, March 8, 2016, available at https://ssrn.com/abstract=2744751 or http://dx.doi.org/10.2139/ssrn.2744751, pp. 1-23, at p. 11.


that no intermediaries need to be involved and, hence, the network can have speed\textsuperscript{81} and lower transaction costs; this emerging \textit{“beating heart of the global financial system”}\textsuperscript{82} could reduce organizational complexity\textsuperscript{83} and verification and networking costs\textsuperscript{84}.

Blockchain has been regarded as a meta-technology that involves game theory, cryptography, and software engineering\textsuperscript{85}. Simply put, the process can be understood as follows: A wants to send coins to B; the transaction is represented online as a block; the block is broadcasted to every party in the network; those in the network approve this transaction is valid; the block can be added to the chain that provides a transparent record of transactions; coins move from A to B\textsuperscript{86}. In this

\textsuperscript{81} Marina Niforos, Beyond Fintech: Leveraging Blockchain for More Sustainable and Inclusive Supply Chains, in Ofeoritse Daibo & Matt Benjamin (eds), Blockchain: Opportunities for Private Enterprises in Emerging Markets, id, pp. 44-50, at p. 47 (“Walmart discovered that, while it normally takes more than six days to trace a package of mangoes from the supermarket back to the farm where they were grown, blockchain can reduce this time to seconds”).


\textsuperscript{83} Marco Iansiti & Karim R. Lakhani, The Truth About Blockchain, id; Marina Niforos, Blockchain in Development -How It Can Impact Emerging Markets, in Ofeoritse Daibo & Matt Benjamin (eds), Blockchain: Opportunities for Private Enterprises in Emerging Markets, id, pp. 16-22, at p. 16.


\textsuperscript{85} Marina Niforos, Blockchain in Development - A New Mechanism of ‘Trust’?, id, at p. 11; Matt Lockyer, Building Blockchain Solutions to Real World Problems - “The revolution will not be centralized”, December 9, 2017, Medium, https://medium.com/@mattlockyer/understanding-blockchain-technology-2cb5636823eb; Staples, M., Chen, S., Falamaki, S., Ponomarev, A., Rimba, P., Tran, A. B., Weber, I., Xu, X., Zhu, J., Risks and opportunities for systems using blockchain and smart contracts, Data61 (CSIRO), Sydney, May 2017, at p. 2 (mentioning that blockchains combine cryptographic, data management, networking, and incentive mechanisms to support the checking, execution, and recording of transactions); Sinclair Davidson, Primavera De Filippi, Jason Potts, Economics of Blockchain, id, at p. 6 (blockchain is a “product of cryptography, invented as a solution to a problem in the design of digital money”).

\textsuperscript{86} Lemieux provides a more technical and detailed overview concerning Bitcoin transactions: X proposes the transfer of Bitcoin to Y; the network checks that there is sufficient Bitcoin in X’s wallet; nodes (miners) bundle the proposal with other transactions to create a new block; the blocks are cryptographically hashed (i.e. they are used as input to an algorithm that converts them into an alphanumeric string: the “hash value”); the hash is put into the header of the proposed block; the header becomes the basis for the proof of work performed by the nodes on the network; when a node reaches a solution to the proof-of-work, other nodes check it and then each; the node that confirms the solution updates the blockchain with the hash of the header (of the proposed block); this becomes the new block’s identifying string (and is part of the distributed ledger); the
infrastructure, experts believe that trust is not brokered by intermediaries, but is embodied algorithmically in the transaction and the “algo-consensus” process is the trust agent\textsuperscript{87}.

As some authors have argued, the main variants are either private or public closed blockchains (private/public permissioned) versus private or public open blockchains (permissionless)\textsuperscript{88}. Whether a ledger is public or private determines who has access to copies of the ledger; the attribute of permission versus permissionless determines who maintains the ledger\textsuperscript{89}. It is argued that in permissionless blockchains, like Bitcoin, anyone can participate and anyone, who is willing to pay the fees, can create accounts and propose transactions; a lack of control over who can participate is often the goal of such systems\textsuperscript{90}. On the other hand, with regard to permissioned systems, authors state that participation is controlled by an authority; this helps comply with the “know your customer” regulation\textsuperscript{91}.

works. It could introduce traceable and verifiable ownership\(^92\) and fair distribution of royalties\(^93\). Some state that via such technologies users could directly pay rightsholders\(^94\). Others mention several advantages that could be achieved\(^95\): smart contracts\(^96\) could help rightsholders manage their rights and allocate revenue shares\(^97\); transparent and secure\(^98\) peer-to-peer transactions could be established;

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\(^96\) Some have defined the “smart contract” as a computer program that can automatically execute the terms of a contract. By being self-executing and having property ownership information embedded, these contracts may solve the problems of counterparty trust; they are said to be trustless, autonomous, and self-efficient, making their formation and performance more efficient, cost-effective, and transparent. Peter Frøystad & Jarle Holm, Whitepaper, Blockchain: Powering the Internet of Value, 2015, EVRY Labs, at p. 30. Available at https://www.evry.com/globalassets/insight/bank2020/bank-2020---blockchain-powering-the-internet-of-value---whitepaper.pdf.

\(^97\) To some, smart contracts can reduce costs of negotiation, verification, and enforcement by turning legal obligations into “self-executing transactions”. Primavera De Filippi, Samer Hassan, Blockchain technology as a regulatory technology: From code is law to law is code, First Monday, Vol. 21, No. 12, December 5, 2016, available at http://firstmonday.org/ojs/index.php/fm/article/view/7113 (mentioning as earlier examples of “non blockchain-based” smart contracts traditional vending machines, DRM systems, and cars with automated speed limitations).

tracking the demand for content might lead to a more dynamic pricing; even snippets could be made available; and a reputation system could be built, where producers and consumers would verify one another.

So, it seems that the standard ways of producing content could change. Exclusive contracts between rightsholders and entities to e.g. assign copyright could be replaced by smart ones. This new environment could include one or multiple networked databases for copyright information, new file format, fast payment, and transparency.

But some might fear that art, the multibillion dollar unregulated market “with unclear criteria just waiting to be harnessed”, would then be controlled by “supercomputer” systems that would deploy it, not for aesthetical purposes but, purely for maximized marketability and value. To others, risks might occur, as the ability to control works as scarce objects could bring art and science (back) to a quasi cyber system characterized by the scarcity of the analogue environment.

100 Infinity, Blockchain Labs, Blockchain - A game Changer for the Art Industry?, May 7, 2018, available at https://www.blockchainlabs.asia/news/blockchain-a-game-changer-for-the-art-industry/ (“[…] By tracking the demand for creative content, pricing could be more dynamic […]”).
104 Marcus O’Dair, Music on The Blockchain, id, at p. 5 mentioning that the music industries are worth an estimated 45 billion dollars globally.
106 Lauren Cornell, Algorithmic Models of Art’s Future, id.
107 As some have argued, blockchain essentially allows the reinstatement of artificial scarcity in the online world through tokenization of digital items. Joao Pedro Quintais, Lars Groeneveld, Balázs Bodó, Blockchain Copyright Symposium: Summary Report, Institute for Information Law (IViR), August 3, 2017, available at
Interestingly, recent projects may allow creators or collectors to document or verify the authenticity of digital artefacts in order to secure their commercial value. But securing the value is the aim, an emergent property of a project; it is not something given, not a feature by construction. Moreover, smart contracts “may be set” to enforce rules attached to the artworks “quasi-autonomously”; they do not fully autonomously enforce themselves in any case.

While Blockchain’s advantages are said to be decentralization, cost efficient micro-transactions, lack of complexity, and information sharing, commentators argue that its disadvantages may include: the fact that smart contracts cannot always trigger themselves; blockchain relies solely on the correctness of predefined rules, which need to be secure, reliable and accurate; technical


108 Take, for example, “Monegraph” that allows to verify digital art via a work, a claim (e.g. a public tweet stating the work’s ownership), or a record (an entry in the blockchain recording this information in some format). Anil Dash, A Bitcoin for Digital Art, Currency is boring. Let’s make GIFs!, The Message, May 9, 2014, https://medium.com/message/a-bitcoin-for-digital-art-8c7db719e495; Monegraph Project: https://monegraph.com/#Overview. Monegraph’s licenses include: an Artwork license (for non-commercial use and personal enjoyment); a News Photo license (for editorial non-commercial use); a Product Image license (a more typical commercial rights-managed license); and a Snapshot license (which is a commercial agreement that virtually gives all rights to one party). See Monegraph’s Support Center, What is a Monegraph license? September 28, 2015: https://monegraphhelp.zendesk.com/hc/en-us/articles/208202708-What-is-a-Monegraph-license.

109 Martin Zeilinger, Digital Art as ‘Monetised Graphics’: Enforcing Intellectual Property on the Blockchain, Philosophy & Technology, March 2018, Vol. 31, Issue 1, pp. 15-41, at p. 16 (“[...] so that, it is hoped, they can more efficiently secure the commercial value [...]”).


112 Sinclair Davidson, Primavera De Filippi, Jason Potts, Economics of Blockchain, id, at p. 5.


115 Sapumal Ahangama and Danny Chiang Choon Poo, Credibility of Algorithm Based Decentralized Computer Networks Governing Personal Finances: The Case of Cryptocurrency, in International Conference on HCI in Business, Government, and Organizations, HCIBGO 2016:
problems\textsuperscript{116} might occur with regard to scalability, latency or query issues; and consensus algorithms might involve additional costs\textsuperscript{117}.

To some, the statement that these technologies are “unforgeable” or afford truly trustless transactions is not technically correct, since software flaws could allow for corruption\textsuperscript{118}. So, the blockchain’s trustworthiness could be doubted\textsuperscript{119}. Besides, permissioned blockchains could allow manipulation. This means that immutability and security\textsuperscript{120} may be exaggerated; since blockchain is powered by the consensus protocol (proof-of-work), its “history” could be rewritten by attackers, who would control more than the half of the proof-of-work resources\textsuperscript{121}.

As commentators argue, most of the features that are stated as intrinsic, like “exact copy”, are not intrinsic, but desired properties of a system that involves many users; not all of them may be trusted\textsuperscript{122}. The system can be ordered, digital, or


\textsuperscript{116} Roman Beck, Jacob Stenum Czepluch, Nikolaj Lollike, Simon Malone, Blockchain – The Gateway to Trust-free Cryptographic Transactions, id, at p. 11.

\textsuperscript{117} Karl J. O’Dwyert and David Malone, Bitcoin Mining and its Energy Footprint, in 25\textsuperscript{th} IET Irish Signals & Systems Conference 2014 and 2014 China-Ireland International Conference on Information and Communications Technologies, ISSC 2014/CIICT 2014 (available at https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6912770); Panos Constantiindes, Ola Henfridsson, Geoffrey G. Parker, Introduction-Platforms and Infrastructures in the Digital Age, id, at p. 391 (arguing that Bitcoin mining operations in Iceland consume more energy than all Icelandic households combined). But see Sinclair Davidson, Primavera De Filippi, Jason Potts, Economics of Blockchain, id, at p. 3, arguing that the basic economics of blockchain can be thought of the case for why decentralized solutions are likely to become increasingly cost effective, as they run down three exponential cost curves: Moore’s law (cost of processing information halves every 18 months); Kryder’s law (cost of storing information halves every 12 months); and Nielsen’s law (cost of shipping information halves every 24 months).

\textsuperscript{118} Martin Zeilinger, Digital Art as ‘Monetised Graphics’: Enforcing Intellectual Property on the Blockchain, id, at p. 22.


\textsuperscript{120} Staples, M., Chen, S., Falamaki, S., Ponomarev, A., Rimba, P., Tran, A. B., Weber, I., Xu, X., Zhu, J., Risks and opportunities for systems using blockchain and smart contracts, id, at p. 42 (mentioning that confidentiality, a property of security, means that unauthorized disclosure of information does not take place; this is usually hard to establish in blockchains, since the default is that information is visible for everyone in the network).


\textsuperscript{122} To some, trust cannot be replaced by algorithms instead of institutions and market authorities; to ensure a trustless infrastructure in financial transactions would require all financial agreements
cryptographically verifiable. But other features, such as “distributed”, are believed to be characteristics added by sharing, distribution, communication, and protocols\textsuperscript{123}. To some, the “immutability” is also an emergent property and the statement that transactions “cannot be modified” is incorrect and misleading\textsuperscript{124}. The reduction of energy might also be questionable, since the use of more computing nodes might result in the opposite\textsuperscript{125}. And one could further argue that, in the absence of a central authority, integrity of the system is also emergent\textsuperscript{126}.

So, it seems that the goals of a blockchain should not be regarded as its existing and intrinsic properties. There are some uncertainties and further experimenting would be needed to fully understand its possibilities and its limitations\textsuperscript{127}.

4. What future for copyright management? (Conclusions & discussion)

Regardless of emergent properties and expected goals, it seems that blockchains, like collective management of copyright, may “come in many shapes and sizes”. Yet, free entry to some blockchains can be allowed. And this resembles to be cash-collateralized at 100% that is very challenging from a cost-of-capital perspective.

Panos Constantinides, Ola Henfridsson, Geoffrey G. Parker, Introduction-Platforms and Infrastructures in the Digital Age, id, at p. 391. Besides, trust is not created by a technology. Svein Ølnes, Jolien Ubacht, Marijn Janssen, Blockchain in government: Benefits and implications of distributed ledger technology for information sharing, Government Information Quarterly 34, 2017, pp. 355-364, at p. 360 (mentioning that blockchain technology “can” facilitate better control and audit which ultimately “might” lead to some level of trust).


Daniel Conte de Leon, Antonius Q. Stalick, Ananth A. Jillepalli, Michael A. Haney, Frederick T. Sheldon, Blockchain: properties and misconceptions, id. See also: at p. 292, where the authors question the “speed of convergence” and the “size of the consensus”, which, to the authors, are not by construction properties; at p. 294, arguing that the blockchain cannot be unique, since not all users may observe the same blockchain at the same time.

Svein Ølnes, Jolien Ubacht, Marijn Janssen, Blockchain in government: Benefits and implications of distributed ledger technology for information sharing, id, at p. 360.

For a discussion on blockchain “myths”, see Staples, M., Chen, S., Falamaki, S., Ponomarev, A., Rimba, P., Tran, A. B., Weber, I., Xu, X., Zhu, J., Risks and opportunities for systems using blockchain and smart contracts, id, at pp. 33, 43, challenging, amongst others: trust (users are exposed to risk in their use of the technology); smart contracts (which are not agreements per se, and, in case of Ethereum, where smart contracts are written in Turing-complete programming language, it is hard to verify that they correctly implement integrity properties); and costs (electricity is wasted by not leading directly to a successful puzzle solution).

For a discussion, see Maurice Herlihy, Mark Moir, Blockchains and the Logic of Accountability: Keynote Address, id, at p. 27 (focusing on challenges concerning authorization, fairness, and incentives).

Electronic copy available at: https://ssrn.com/abstract=3293055
“voting with one’s feet”, an environment, where the efficiency advantage derives from the elimination of a centralized monopoly control over the rules of the game. This is some kind of “crypto-secession”, which brings us back to the freedom for copyright owners to “vote with their feet”, a main pillar of the European Union’s policy.

Blockchains could be a good fit for copyright management; they could create a “Commons 3.0” environment to algorithmically address the problems of cooperation in production and maintain the benefits of commons-type governance. And it was over a decade ago, when some asked what happens when all books in the world become a single liquid fabric of interconnected words and ideas; some answered that a universal library would deepen our grasp of history, transforming isolated books into the universal space of all human knowledge. In this context, one could argue for a potential single 24/7 “all-you-can-eat and whatever-you-want restaurant” of all arts and science ever produced.

To some, the tokens could be digital copies of the works. If this were the case, works could be subjected to a radical regime; an extreme alternative to copyright, under which all intellectual products would remain non-owned, or would be used by all participants of the blockchain, who would have a copy of a given work. Products of human intellect would not be owned by individuals, firms, or governments; ideas and the expressions of them would be available to be used by

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128 Sinclair Davidson, Primavera De Filippi, Jason Potts, Economics of Blockchain, id, at p. 14 (arguing that the political economy of blockchain is a kind of private order competitive federalism).

129 Trent MacDonald, Theory of Non-Territorial Internal Exit, February 1, 2015, available at https://ssrn.com/abstract=2661226 or http://dx.doi.org/10.2139/ssrn.2661226, at pp. 8-9, defining crypto-secession as the process in which citizens secede from an incumbent state and recoalesce in new “virtual states” that are akin to non-territorial public good clubs; it can be described as a form of tax evasion, but it is more accurately classified as a process of partial secession and de facto jurisdiction formation. To the author, secession is “permissionless” and non-territorial, while the cost of forming seceding groups is greatly diminished.

130 Sinclair Davidson, Primavera De Filippi, Jason Potts, Economics of Blockchain, id, at p. 13.


133 Kevin Kelly, Scan This Book!, id.


135 Joao Pedro Quintais, Lars Groeneveld, Balázs Bodó, Blockchain Copyright Symposium: Summary Report, id (“These tokens can be digital copies of copyright works; they can also refer to rights, license terms or payment for the use of works”).
anyone\textsuperscript{136}, who would participate in the blockchain. This might be the “information socialism”\textsuperscript{137} that would expand intellectual commons\textsuperscript{138}, foster creativity, and lead to a greater political and economic equality\textsuperscript{139}. A utopian universal digital library that would leave no room for intermediaries; CMOs might be left out of the game. And in the absence of intermediaries, markets could, perhaps, work to their full capacity\textsuperscript{140}.

But it seems that this straightforward alternative to copyright is far from simple and, most probably, we are far from being there. In another scenario, where the tokens would be digital copies of the works, CMOs could be let in. Blockchains could promise an environment similar to registration systems that were proposed in the past\textsuperscript{141}; authors could be required to declare by a clear affirmative action their wish to protect their works. Flexible blockchains\textsuperscript{142} might better comply with the digital environment and today’s uses of works, guaranteeing a more equitable, accessible and innovative world. Smart licenses, inspired by Creative Commons, could perhaps become the default. Namely, artworks or scientific works could be made available under open licenses that would foster creation and cultural diversity.

\textsuperscript{136} See Martin Brian, Information liberation, Challenging the corruptions of information power, London, Freedom Press, 1998 (available at https://www.uow.edu.au/~bmartin/pubs/98il/ilall.html#chapter%2010). The author mentions language and scientific knowledge as examples of non-owned intellectual products and points out that the most dynamic parts of science are those with the least secrecy; turning knowledge into a commodity inhibits science.

\textsuperscript{137} Richard Spinello & Maria Bottis, A Defense of Intellectual Property Rights, Edward Elgar, UK, USA, 2009, at p. 6 (with further references).

\textsuperscript{138} Non-owned public spaces have enormous social value, but, on the Internet, everything is owned by some private entity; even these websites independently run by natural persons are hosted on some private server. So, there is no commons on the Internet. See Schneier Bruce, Data and Goliath, The Hidden Battles to Collect Your Data and Control Your World, W.W. Norton & Company, NY, London, 2015, at pp. 221-222, arguing that we need places to speak, converse, gather, or protest.

\textsuperscript{139} Richard Spinello & Maria Bottis, A Defense of Intellectual Property Rights, id; Martin Brian, Information liberation, id.

\textsuperscript{140} Simone Schroff & John Street, The politics of the Digital Single Market: culture vs. competition vs. copyright, id, at pp. 1305-1306 (mentioning that the European Commission has come to the view that the music market is not working to its full capacity and a “\textit{main source of this underperformance has been attributed to the collective management organisations}”).


\textsuperscript{142} Joao Pedro Quintais, Lars Groeneveld, Balázs Bodó, Blockchain Copyright Symposium: Summary Report, id, ("\textit{blockchain technology is remarkably flexible}").
However, many scholars argue that the very works could not be stored in a blockchain\(^{143}\); only metadata would be stored\(^{144}\). Storing only a hash of data on-chain and keeping contents off-chain might improve confidentiality and performance, but would perhaps create a point of failure reducing system availability and reliability\(^{145}\). Another question here would be whether private or public blockchains should be preferred. For instance, using private ones might allow greater control over the admittance of processing nodes and transactions, but would most probably increase barriers to entry for participation and could, hence, reduce some of the benefits of using a blockchain\(^{146}\). The opposite would be true in case of public blockchains.

In any case, as regards CMOs, it seems that a fair and transparent licensing process to secure an appropriate level of royalties for rightsholders could be achieved in the interest of all parties and, therefore, of cultural diversity. Besides, this was what many big players (including Amazon, Nokia, PRS for Music, Universal Music Publishing) argued for in their joint statement of 19 October 2009 on “General principles for the online distribution of music”\(^{147}\). So, projects could aim at enabling rightsholders to receive a high percentage of sales income\(^{148}\). CMOs could resolve ownership uncertainties by using blockchains to create shared and decentralized databases with real-time update and tracking capabilities\(^{149}\). And one


\(^{148}\) Brendan Howley, The Razor’s Edge, Blockchain, Ledger Legerdemain, and the Public Library, Information Today, Nov. 2016, pp. 14-15 (mentioning that MUSE is touted as a “third generation” blockchain; it may enable artists to receive a high percentage of sales income; more than 90%).

\(^{149}\) This seems to be the direction towards which some CMOs are moving. See SACEM, Blockchain: SACEM, ASCAP and PRS for Music join forces to improve the identification of the

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or multiple databases could be introduced not only to act as a clearing house for information on rights and ownership, but also to perform as a CMO and, hence, promote competition.\footnote{Similarly, the Digital Copyright Exchange was proposed to, amongst others, enable licensees to look for different types of content or define the uses they wish to make. Richard Hooper, Rights and Wrongs, Is copyright licensing fit for purpose for the digital age? The first report of the Digital Copyright Exchange Feasibility Study, Intellectual Property Office, London, UK, March 27, 2012, at p. 12 (available at http://bufvc.ac.uk/copyright-guidance/mlr/index.php/site/279); Ruth Towse, The Economic Effects of Digitization on the Administration of Musical Copyrights, id, at p. 56.}

But commentators could argue that even metadata would be huge.\footnote{David Gerard, Why You Can’t Put The Music Industry On A Blockchain, 2017, available at http://www.hypebot.com/hypebot/2017/08/why-you-cant-put-the-music-industry-on-a-blockchain-excerpt.html/.} There would be too many contracts leading to high computing costs. In case of a public blockchain, while read access to metadata could be achieved\footnote{David Alexander Savelyev, Copyright in the blockchain era: Promises and challenges, id, at p. 551.}, users might not be able to pay for these computing resources to execute all smart contracts. On the other hand, if CMOs, as operators of private chains, were willing to pay these costs, the very network might limit access to metadata and contradict the alleged decentralized nature of blockchains; users would need approval from the operators.\footnote{David Alexander Savelyev, Copyright in the blockchain era: Promises and challenges, id.}

So, it seems that the advent of blockchains will most probably bring many new opportunities, but also challenges for copyright management. While a utopian universal library of all arts and science would most probably not be the case, different licensing scenarios could be introduced to meet the standards that the proponents of the commons have long been proposing. This would be a copyright-friendly approach that could be brought to the discussion table to let arts and science flow, encourage rightsholders, and let audiences get to share in whatever is going on. But if it were true that only metadata would be stored, then a commons-like management would probably not be introduced. Yet, higher levels of transparency could be guaranteed in the existing regime to benefit rightsholders and the culture itself.

So far, it has been argued that although CMOs’ importance is acknowledged by both the academic community and the law, albeit, there is a need for higher levels of transparency. In this context, fiduciary laws were proposed to regard CMOs as entrustees that would act for the benefit of the rightsholders. This framework could allow CMOs to better perform their role as promoters of creativity works, April 13, 2017, available at https://societe.sacem.fr/en/news/authors-rights/blockchain-sacem-ascap-and-prs-for-music-join-forces-to-improve-the-identification-of-the-works.
and culture. Acting to benefit or even further the rightsholders’ interests, CMOs could also reform their strategies through blockchain that would guarantee some higher levels of transparency and trust. While blockchains’ potential has not yet been fully predictable, albeit some investment could be promoted to allow experimentation and, hence, better understanding of possibilities and limitations. Perhaps, what all parties could do is cooperate in a spirit of trust, make the best out of technologies, and interpret laws in ways to promote science and arts.