Implementing Copyright Limitations in Rights Expression Languages

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Abstract

Rights expression languages (RELs) seek to provide the vocabulary and grammar necessary to express fine-grained, *ex ante* rules controlling the use of digital works. Drafters of RELs claim to search for a generic, content-neutral language to support expressions of rights in digital objects in a broad range of contexts. Generally modeled on access control languages, RELs are structured predominantly as permission languages - meaning that no rights exist in an object until they are affirmatively and specifically granted.

Simply put, current RELs reduce the expression of legal rights which may be: a) given by the objects owner, b) conveyed clearly by a legal instrument, or c) asserted by the individual (and reviewed after the fact for legal validity); to the granting of "permissions" by the owner/rights holder of the digital object. Theoretically it is possible for a third-party (government) or the user to grant rights, however it is difficult to imagine either occurring for a mix of political and practical reasons. We acknowledge that the term "rights" in RELs encompasses more than legal rights. Nevertheless, when implemented to manage copyrighted works the rights defined in RELs will have the practical effect of supplanting legal rights. Thus in the context of copyrights, RELs and the DRMs in which they are deployed will replace the balance of rights holders' and users' rights with self-enforcing, machine readable rule sets reflecting the desires of copyright holders exclusively.

The exclusivity likely to result from existing RELs and DRM is in contrast with the myriad limitations on exclusivity in the Copyright Act. To the extent DRM systems supplant the existing copyright rules with machine enforced licenses defined by copyright holders they will alter the copyright balance in the direction of copyright holder exclusivity.

If RELs are to be agnostic as to legal context they must at least support the expression of the exceptions and limits on exclusivity found in copyright policy. To do so, several additional steps must be taken to better align RELs, and thereby DRMs, with copyright policy. First, the REL must be supported by a messaging protocol that enables statements of "rights" in multiple directions and from multiple sources, and resolves conflicting assertions of rights. The messaging protocol and REL must allow for the assertion and exercise of rights not yet granted or recognized and their later resolution. Second, recognized social norms regarding the use of works should be easy to reflect in RELs. Third, recognizing that RELs alone cannot address the imbalance that DRM can introduce protocols for processing and enforcing REL-based rules should provide a buffer between rights holders and the users of copyrighted works. This separation would both alleviate some of the concerns relating to DRM technology and privacy and protect the kinds of unauthorized but fair use that the Copyright Act allows.

We consider how to implement these goals in the context of a particular REL, XrML (the eXtensibleRights Markup Language).[3]

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[3] We choose to discuss XrML because it is a published language which can serve as the basis for a concrete discussion about REL capabilities

1 Introduction

The phrase "rights expression language" encapsulates a great deal of promise and controversy. The notion of a machine-readable statement that accurately expresses the rights of both copyright holders and users is a beguiling one. Such statements could aid in providing greater clarity to copyright terms, and even allow for works to be provided on terms more generous than those dictated by copyright law. Reliable enforcement of these statements could promote wider use and distribution of works in digital form [18]. Such distribution could be of benefit to the general public, if it allowed new opportunities to view, study, learn from, comment upon, copy, re-use and transform the works. This is the promise.

The controversy arises from the strong likelihood that DRM systems in which RELs are deployed give rights holders too much control over the terms of use for copyrighted works [32]. Indeed, the "rights" in DRM may have no relationship to legal rights, and are more accurately described as "permissions." Machine-readable rules that control access to digital works could inhibit, restrict, or altogether prevent many legally authorized uses. This creates a substantial likelihood that these machine-readable rule sets, written by rights holders and offered on an accept/reject basis to purchasers, could supplant copyright law [30]. As a result, the balance remaining in our copyright policy,-reflecting the interests of many groups, including copyright holders, creators, and purchasers of that content-would be replaced with contracts and machine-readable, machine-enforceable "code constraints" that reflect the interest of the rights holders alone [21].

Instances of this kind of control have already appeared. For example, Adobe eBooks may have licenses that forbid all copying, printing, lending, and even reading aloud [9]. Neither readers of books nor listeners of music nor viewers of films encounter analogous controls with audio or visual media. Machine-enforced use restrictions, in other words, frequently defy the "real space norms" that have developed around the use of copyrighted works [10]. Some of these norms, enshrined in the Copyright Act itself, are legally protected. Moreover, copyright law leaves the private use of copyrighted materials essentially unregulated [20]. The Act does not empower copyright holders to require readers, viewers, or listeners to seek authorization before using a work privately.[4] Privacy is crucial to the full exploration of purchased works. Privacy is protected by the structure of the Copyright Act, the "real space norms" regarding the use of copyrighted works, and the constitutional protections for speech, freedom of association and access to information [38]. Preserving the privacy of readers, viewers, and listeners also has a practical benefit to copyright holders. There is substantial evidence from the digital environment that collecting usage information, especially when this data contains personally identifying information, repels people from the use of expressive materials [15, 18].

The limitations on copyright's exclusivity also extend to activities that affect the commercial value of a work. The "first sale" doctrine, for example, allows purchasers of legal copies of works to dispose of them in any manner they choose [5]. Copying, even for the purpose of publishing excerpts in a commercial product, receives substantial protection under the "fair use" statute [3]. Fair use is an especially open-ended part of the Copyright Act. Determining whether a use is fair often requires fact-intensive litigation, but this flexibility has contributed to copyright's ability to accommodate new technology and to protect the kinds of expression that the Copyright Act is meant to promote [23].

We do not claim that it is necessary or even possible for a REL to provide for "fair use"

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[4] In certain contexts courts have enforced contractual restrictions on a purchaser's rights under copyright [26]. Whether such restrictions will be enforceable in all circumstances is uncertain. This uncertainty arises from the minimal requirements for assent that "clickwrap" and "browsewrap" licenses rely upon and from concern that these license violate public policy by restricting the dissemination of uncopyrightable material

statements or that DRM systems be designed to act as a "judge on a chip" [23] Instead, we highlight the fact that the Copyright Act leaves wide varieties of activity unregulated and allows for the flexible evolution of "fair use." The evolution of fair use depends on, and the exercise of exceptions to copyright presupposes that, users may determine for themselves whether to seek "permission" for a given use. The Copyright Act provides a framework that allows "rights" to flow from several sources - the owner of the object (or copyright holder), a third party (including the government), and the user.

Unfortunately, the limitations on the exclusive grants given to rights holders under the Copyright Act, the breathing room required for "fair use," and the various entities who can grant or claim rights do not appear to have prompted consideration of analogous limits and supports in RELs. Instead, common RELs take the exclusive rights of copyright [2] as an unqualified baseline and then provide the means for rights holders to make the work available under issuer-defined access models. XrML and other rights languages can do more to reflect the balance between "exclusive rights" and "unrestrained public access" that copyright law seeks to create [24]. In addition, RELs lack the ability to provide key contextual clues that would allow the REL, and DRM systems, to more closely approximate "fair use" and identify exceptions to exclusive rights.

Considering the concrete, statutory limitations on copyright provides one method of expressing this balance. We also suggest that REL designers include instances of familiar "real space" works in REL vocabularies, with semantics that approximate the real space uses of these works. We suggest the inclusion of several elements designed to provide contextual inputs to support "fair use" modeling. We recommend the inclusion of a rights messaging protocol to ensure that grants and claims of right can be made by parties other than the copyright holder. We present these ideas in detail in Section 3. A REL that approximates real space norms does not address the privacy-based objections unique to DRM systems. Specifying a license enforcement protocol that allows users to choose license processing systems not controlled by the copyright holder would substantially reduce the incentive to gather personal information from license processing transactions. Limiting the information collection supported by the REL to pseudonyms will further reduce the privacy concerns of DRM. Section 4 contains a practical discussion of how RELs, and the protocol for evaluating REL-based licenses, could be designed to better protect privacy.

2 Rights Expression Languages

Current RELs use an access control-based approach to managing all kinds of content. The result of this model is that a top-down, unidirectional flow of rights inheres in all communications of usage rules. XrML, which we briefly describe, adopts this approach. The access control model is manifestly unsuited to the kinds of communication that must take place if a REL is to facilitate any reasonable approximation to copyright law. In Section 2.2, we suggest an approach to RELs that will at least allow users to claim the rights they have under existing law.

2.1 The Present: XrML

XrML is an XML-based [34] rights expression language. Its substance is defined in two specifications: the Core Specification and the Standard Extension Specification [13, 14]. [5] These specifications are expressed in the form of XML Schemas [35]. XrML was contributed to the

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[5] Earlier versions (through Version 2.0) of XrML included a Content Extension, which defined such a number of concrete rights and methods for expressing metadata.

Rights Language Technical Committee of the standards body OASIS as the basis for a REL specification [25]. A highly simplified representation of the XrML Core Schema is given in Figure 1. Branches that are at the same depth on the tree form a valid sequence under the schema.

```
License
├─ Issuer
└─ Grant
      ├─ Condition
      ├─ Principal
      ├─ Resource, DigitalResource
      └─ Rights: Issue, Obtain, possessProperty, Revoke
```
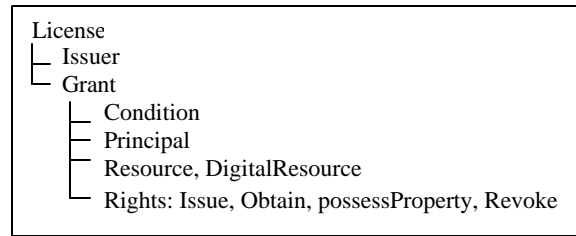
Figure 1: A simplified representation of the XrML hierarchy.

2.2 The Future: RELs that Allow Bi-Directional Communications

Copyright law grants certain rights to purchasers and other users of copyrighted works. It is neither a legal nor a practical requirement for users to declare (or claim) these rights *explicitly* in order to enjoy them. While the public's legal rights cannot be altered by DRM systems *per se*, we can imagine scenarios in which DRM systems may require users to make these kinds of declarations, in order to work around inherent technical limitations. It is therefore essential that a rights expression language (REL) provide the vocabulary necessary for individuals to express, in a straightforward way, the rights that copyright law grants them to use materials. The user's claim of right would provide the essential information for a usage-rights issuing agency to give the user the technical capability to use the work in a particular way.

For the purposes of this discussion we will set aside the question of whether contract law may qualify (or narrow) the rights that a recipient of a work has under copyright law, acknowledging that there are contexts in which a party may wish to narrow the rights it grants to the recipient of a work. Outside the context of the relationships created by copyright between rights holders and users, there are contractual relationships that the REL must also support. For example an employer may want to control employee use of company information. In many instances it is important that both parties in the relationship be able to assert their rights and/or desired terms. True negotiation between parties requires that, at a minimum, the REL provide the vocabulary and syntax to support bi-directional exchanges. Otherwise, the rights transaction reduces to the mere request for and acceptance of an offer of permissions asserted by the rights holder.

At a minimum, recipients of works must have the ability to assert their rights as recognized under copyright law, and have these assertions reflected in their ability to use the work. Extending an REL to support a broader range of statements that reflect current law is, however; insufficient. The *rights messaging protocol* (RMP) layer must also be extended to accommodate both the downstream and upstream assertion of rights [39]. We recognize that the RMP layer is not currently within the scope of this discussion, but we believe that the assumption of a one-way expression of rights has in part led to the current deficiencies in the REL.

3 Copyright

The Constitution grants Congress "power...to promote progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings

and discoveries" [33]. The Copyright Act is one manifestation of this power [1].[6] The Act specifies, in 17 U.S.C. § 106, that copyright is the exclusive right of authors of original works to reproduce, distribute, publicly perform and publicly display their works. Copyright holders also have the exclusive right to prepare derivative works. As holders of a certain kind of property-"intellectual" property-copyright holders can contract with others to perform engage in some of these activities. Copyright holders can also transfer their rights to others.

3.1 Statutory Limitations on Exclusive Rights

The exclusive rights in section 106 are not as simple as they appear. Some performances, reproductions, displays, and derivative works do not infringe the exclusive rights in a work, because parts of the Copyright Act explicitly carves these uses out of the copyright. In other words, engaging in these activities is not a defensible infringement, but not an infringement at all. A good deal of the Copyright Act's prolixity[7] is attributable to these exemptions, whose contours reflect political bargaining more than a coherent approach to copyright [22].

For example, the Act establishes the "first sale" doctrine, which limits the right to distribute copies of a work to the first sale of a work from a copyright holder [5]. Non-profit and governmental agencies that produce copies of published works in "specialized formats [braille, audio, or digital text] exclusively for use by blind or other persons with disabilities" do not infringe the derivative work right, because the Copyright Act does not grant this right in the first place [8]. Teachers, students, religious organizations, persons performing for audiences of the disabled, and many other non-profit groups may perform or display copyrighted works without infringing the public performance rights of the copyright holder [6]. Additionally, the Copyright Act grants libraries, rather than copyright holders, the right to make a copy of a work for noncommercial purposes, and three copies for preservation purposes [4]. Finally, copyright holders do not have the right to control the licensing of their works under all circumstances, as compulsory licenses govern the terms for live performances of musical compositions [7] and for the transmission of musical recordings in restaurants and stores [6]. Thus, the Copyright Act places bright-line, statutory constraints on the very definition of the copyright grant and also limits copyright holders' control over the alienability of some of their exclusive rights. The exceptions to copyright listed above are framed, non-exhaustively, in terms of role, audience, use, and/or purpose. To support copyright consistent statements a REL should allow for statements about these and other variables.

Despite the statutory limitations on copyright, it is still an expansive, and expanding, right. In the 1990s Congress buttressed copyright protection by defining new criminal provisions, extending the term of copyright protection, and by passing the Digital Millennium Copyright Act (DMCA). It is a violation of the DMCA to circumvent access controls, or to provide tools to others that circumvent access controls. The DMCA places no duty on rights holders to ensure that their access control systems reflect users' rights, constitutional or otherwise. At the same time, the DMCA states that nothing in the act "shall affect rights, remedies, limitations, or defenses to copyright infringement, including fair use." Substantial question remains over whether or not courts will interpret the traditional defenses to copyright infringement as defenses to the anti-circumvention provisions as well. By making the circumvention prohibitions distinct from copyright infringement, defendants can be held liable for circumventing an access control measure even if the uses made of the work are held not to infringe on the rights of the copyright owner. The anti-circumvention provisions of the DMCA coupled with narrow RELs will

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[6] The ultimate limit of Copyright Clause power is the subject of a case that is under review by the Supreme Court of the United States at the time of this writing [17].

[7] Our discussion of statutory limitations is far from exhaustive. We highlight in our discussion those limitations that are most relevant to RELs aimed at the mass-market distribution of digital works.

essentially replace the broad contextual defense of fair use, discussed below, with a narrow set of carve outs to an otherwise absolute right of copyright owners to control access to and use of works.

If REL designers decide that the expression of legal rights is best left to semantic domains that are not part of the core REL, compliant implementations of the REL must support these semantic domains. A place to begin designing a REL that supports these rights is the fair use statute, which we discuss in the following section.

3.2 Fair Use

In addition to recognizing that certain communities have needs that are best served by limitations on copyright exclusivity, Congress recognized that original works form the basis for more than passive enjoyment. Works are praised, criticized, parodied - in general, transformed - in unanticipated ways. To restrict these transformative uses by requiring authorization from the copyright holder is to extinguish vast amounts of creative activity. Thus, fair use, along with the limitations on exclusivity discussed in Section 3.1, form the foundation for the public's rights which DRM systems,[8] and the DMCA's protection of them, will "dramatically alter[ ]" [28]. In the following section we give an overview of the fair use statute, which has been central heretofore in setting the balance between copyright holders and the public. We then explore ways to reconcile some of the tension between fair use and DRM.

3.2.1 The Structure of the Fair Use Statute
Section 107 states that "the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright." Section 107 then lists four **non-exclusive** factors that are to be balanced in determining whether a use is fair:

> 1. the purpose and character of the use;
> 2. the nature of the copyrighted work;
> 3. the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
> 4. the effect of the use upon the potential market for or value of the copyrighted work.

A few features of the fair use statute deserve emphasis. First, Section 107 draws attention to certain kinds of uses - "criticism, comment, news reporting, teaching?scholarship, or research" - that weigh in favor of a finding of fair use. Second, fair uses of copyrighted works involve uses that are within the exclusive rights of the copyright holder,[9] but a fair use "is not an infringement of copyright." Third, Section 107 presents four broad factors rather than bright-line rules. Fair use analysis therefore requires a fact intensive, case-by-case approach. This inquiry is necessary to set the correct balance between the exclusivity of a copyright and the public interest in being able to freely discuss others' works. Although the fair use statute mentions specific uses that are likely to be considered fair, the statute does not link *uses* to *roles*, though a role may be one of the facts that a court considers in determining fairness. Finally, the four factors are non-exclusive, leaving courts free to consider other factors in determining whether a use is fair. In summary, a fair use is

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[8] Although the fair use statute itself does not tie the defense to the First Amendment, courts have done so. Courts have also established the idea-expression dichotomy as a framework for curbing copyright's limitations on speech.

[9] We thank one of our reviewers for suggesting this phrasing

1. an unauthorized use
2. within the exclusive rights of the copyright holder
3. but which requires no compensation to the copyright holder.

3.3 Reducing DRM's Interference with Fair Use

The broad factors that determine whether a use of a copyrighted work is fair do not lend themselves to automated decision-making. It is impractical to expect the rights expression language component of a DRM system to support the machine-readable expression of a fair use. Focusing too heavily on the REL leads us astray and excludes many possibilities to ease the threat to fair use, so future RELs should be developed with an eye toward the REL's role in a DRM system. To illustrate the importance of the integrated development, consider the printing of a few pages from a digital book at home. Most RELs would express this proposed action as "print," the quantity printed, and identification of the resource printed, and an enforcement engine would allow or deny the request. If the REL-based rules allow the printing, the engine will allow it to proceed.

But what happens if the rules do not grant printing permission? The printing, if it could occur, would almost certainly be a fair use. In order to exercise this (legal) right, however, the owner of the book must (1) express the request in the REL and (2) communicate the request to the enforcement engine. Unless the REL is tied to a rights management protocol, as discussed in Section 2.2, the owner of the book is stuck, as he would be with current RELs. Moreover, expressions of the overall context of the use are required to more closely approximate fair use, even in this simple case, where the fact that the printing occurs for personal use is highly significant. In some cases, contextual inputs will include the recipients (audience) of the copied material, and in others the distinction between parody and satire.

We suggest three broad methods through which RELs and therefore DRM systems could reduce the burden of making fair use of a copyrighted work: defining concrete syntax and semantics for certain kinds of rights, creating a robust sphere for private use, and designing limitations on copyright holders' abilities to extract payments for fair uses. Implementing these features would help preserve the extremely limited relationship between a copyright holder and a downstream purchaser, established by the Copyright Act, in particular the first sale doctrine. Since first sale arises from a separate statute, however, we delay discussion of it until Section 3.4.

A more detailed example will illustrate some of the challenges that fair use presents to DRM systems, and particularly RELs, as well as ways in which a REL can better accommodate fair use. Suppose a music critic has purchased an album which he plans to review. Instead of submitting this review for national radio broadcast, as is his custom, our critic plans to publish this review on his Web site. This critic's reviews always include excerpts of the work under review. Sometimes his reviews are complimentary, but often they are searingly critical. Our critic wishes to keep this essential part of his reviews alive on the Web, so he decides to provide links to a few streaming audio files which contain the parts of the album that are relevant to his review. This critic has panned this band's last four albums and, after listening to the new work, plans to do the same in the present review. To complete his review, the critic must:

1. Copy portions of the album into streaming audio files. Seeking permission from the record label would be fruitless, the critic decides, because the label is unlikely to contribute to a negative review. To simplify the publishing and reading of his review, the critic decides to encode the album excerpts in an existing streaming format.
2. Publish his review.
3. Allow his readers to read his review. He does not charge a fee for access to his writings.

Thus, the critic's activities include rather extensive uses of the album, all of which would likely be found to be fair uses of the recording: limited copying without authorization, a change in file format, and access to the streaming audio files by anyone who wishes to read the review. These are difficult cases for a REL, but they are representative of the kinds of problems that must be analyzed under 17 U.S.C. § 107. We find that the general fair use problems that this scenario illustrates point to deficiencies of existing RELs in expressing fair use. The difficulty extends beyond any REL, however. DRM systems that are unrevised access control systems are unlikely ever to allow the kinds of uses that the Copyright Act recognizes.[10]

3.3.1 Define Concrete Rights

Although certain elements of the XrML Core and Standard Extension would be useful in making fair use statements, XrML provides no means of making fair use the "default" for a license. Part of this problem arises from XrML's striving to be a general REL, making no assumptions and imposing no limits on the kinds of works to which the REL can restrict access. This generality leaves the `Right` element abstract, except for a limited number of `Rights` "which are related to the domain of XrML2 itself" (i.e., `Issue`, `Revoke`, `PossessProperty`, and `Obtain`). In a related problem, XrML provides few ways to identify a work. The Core Specification specifies a `DigitalResource` element, which allows the `License` to mark "arbitrary binary data" as being the "target object of relevance within the `Grant`."

To address these shortcomings, XrML could define more specific elements for digital works that correlate specific kinds of works with specific `Rights`. Developers of data dictionaries have undertaken the data modeling part of this work [16, 19]. The fact that metadata projects are, in large part, separate from other aspects of DRM system development raises doubt about the scope of relationships that will become part of the final DRM system [27]. A new element that provides some of the human-readable convenience of `Title` with the semantic power of `DigitalResource` would facilitate `Licenses` that grant these permissions. In particular, the XrML could define a "`Work`" element, which would have concrete descendants, such as "`Book`," "`Film`," or - as or music critic would want - "`MusicalAlbum`." Although this level of specification would contrast with the emphasis that XrML places on being applicable to any kind of digital work, the neutrality that XrML claims as to the underlying content comes at a cost: the language imposes an access control model on all rule sets. To specify a few concrete kinds of `Works` does not suggest that a `License` should be required to use one of these concrete types, or a `Work` element mandatory in a `License`. Such a correlation between specific kinds of content and rights might call for a more flexible model of relationships than access control languages allow. This additional coordination of data modeling, language definition, and systems design could go a long way toward accommodating purchasers and rights holders who are concerned with maintaining vibrant fair use activities. The discussion in Section 3.3 indicates that a purchaser must be able to play the work without restriction, and also to copy parts of it. Thus, if a `Work` is a `MusicalAlbum`, the default interpretation of the `License` must be that the `Principal` - the music critic, who bought the album - must be able to play the album without restriction, and to copy arbitrary parts of the album. This suggests that a concrete `Work` would impose certain default `Rights`, which would be granted by a given kind of concrete `Work`. In the case of a `MusicalAlbum`, this would include "`Play`," "`Rewind`," "`Seek`," and "`Excerpt`" or "`Copy`" `Rights`. Similar default `Rights` can be specified for different kinds of

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[10] Note that we do not state that these systems are "unlikely ever to implement all parts of the Copyright Act." Aside from being impractical, such an end may not even be desirable. Conceiving of copyright as a "copy" "right," for example, limits many solutions from the outset. Perhaps a more realizable goal is, to paraphrase the IETF, rough consensus, working code, and a balance of rights.

`Works`.

3.3.2 Maintain (at least) an Arm's Length between Rights Holders and Purchasers.

These suggestions would do a great deal to ensure that purchasers of works will be able to use works in ways that approximate some uses of physical works, but XrML and other RELs must go further still to ensure that these uses remain uncompensated. Some integration of the Fees currently described in the XrML Standard Extension in the Work would likely be adequate to express the expectation that the use of a lawfully obtained work is not subject to oversight by the copyright holder.

To keep with the example of the music critic, we confine our attention here to the purchase of a `MusicalAlbum`. In this case, the `Fee`'s `PaymentAbstract` should be set to `PaymentFlat` by default. Thus, the purchaser of a `MusicalAlbum` would make a one-time payment for the recording, and would then have full use of the recording as specified above. Furthermore, all that the REL should require for a processing system's decision to allow or prohibit a proposed use of a `Work` is a comparison of the exercise with the exercises contained in the statement associated with the `Work` (i.e., the `MusicalAlbum` should grant `Play` permission), and verification that the required one-time fee has been paid. The processing system should make no inquiry into the extent or frequency with which the user seeks to exercise the rights.

This example in turn suggests that instances of a concrete `Work` should trump the effect of other XrML elements. In particular, elements such as `TrackReport`, `TrackQuery`, `SeekApproval`, and various flavors of `ValidityIntervals` should be given no effect by the processing system in the context of copyright.[11] By associating default rule sets with particular kinds of concrete `Work` trump these potentially invasive inquiries into the uses of a DRM-restricted work, the REL would render fruitless attempt by rights holders to reach beyond the provisions of copyright law in monitoring the uses of the `Works`. Finally, XrML and other RELs must address the distribution of works that fairly use other copyrighted works. In the music critic example, this problem arises in the context of the critic's readers, who must be allowed to play streams of the excerpts that the critic wishes to discuss in his review.

The XrML Core Specification provides some support for this end in the form of the `forAll` option in `Grants`. We suggest that concrete `Work` types provide a `LicensePart` granting universal use permissions appropriate to the kind of `Work`. A `MusicalWork` could contain a `LicensePart`, referring to the excerpts that the critic includes in his review, which would permit any user to play the excerpts. This requirement imposes similar overrides of XrML elements that could be used to restrict access to the excerpts in a manner that is inconsistent with fair use. Alternatively, RELs could include an element that allows purchasers to change the format of the work. Although this kind of permission places some risk on the right holder of copying beyond the limits of fair use, that risk is explicitly placed on the copyright holder by the fair use statute. Other concrete `Works` require similar permissions for users of works that incorporate the copyrighted original, but we do not discuss them here.

It could be argued that the critic could obtain these Rights by negotiating with the entity that issues the rules. Indeed, some commentators have suggested that this kind of private ordering is more efficient than fair use and would increase access to informational work [39]. Others have pointed out, however, equating "social efficiency" (the optimization of progress and access) with "allocative efficiency" overlooks "the public-good nature of creative and informational works and the unpredictable pathways of creative progress" [36]. The "unpredictab[ility] of creative progress" is central to understanding how licensing usage rights,

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[11] The XrML Standard Extension also defines a Territory element, which presents the possibility that parties to a transaction would be able to apply a specific national law to their agreement.

even if a DRM system reduces the burden of doing so relative to current transactional options, severely interferes with the values that Section 107 codifies. First, a purchaser would need to declare the uses that he plans to make of the work. In general purchasers cannot make these predictions. Our music critic, for example, has no way to know which segments of the album he will use in his review before he buys the album and listens to it. But even if he were equipped with precise plans for his use of a copyrighted work, requiring him to declare and license those uses is inconsistent with a fundamental purpose of fair use: permitting unauthorized uses that might be chilled if copyright law required that the fair user seek approval from the copyright holder. The music critic who plans to issue a negative review of an album provides a particular example of how critical uses of copyrighted material are likely to suffer if fair uses are replaced by declared, licensed uses.

3.3.3 Creating Private Sphere Use
As discussed above, copyright law grants certain rights to purchasers and other users of copyrighted works. It is neither a legal nor a practical requirement for users to declare (or claim) these rights *explicitly* in order to enjoy them. Thus the structure of copyright law is in tension with the access control model of RELs and DRM. One important aspect of the structure of copyright law is that private use of works is generally unregulated. Thus the ability of a REL to aid in distinguishing private use from, regulated public uses, such as distribution and sale, would better align with copyright law. For example, many of the "verbs" discussed above as being desirable closely track private uses (playing is different from sending or transmitting) and could form the basis for the concept of private sphere use. Implementing such distinctions requires cooperation of the REL, the application, and the policy enforcement engine. The private sphere is a conceptual framework that if modeled in RELs could ease decisions about fair use.

Paradoxically, distinguishing between public and private use could diminish privacy. Plausible DRM implementations designed to make this distinction might: a) require declaration of when private use is being made; b) require that works be registered for use with certain pieces of hardware; or c) might require GUID/tracking of works. While there are methods of mitigating against the identification, data collection, and data reuse threats posed by these options they do not reflect the current norm of no data collection once a work is purchased. As others have noted, Fair Information Practice Principles, particularly collection limitation, disaggregation of identifying and transactional data, and data destruction should inform the design and implementation of all aspects of DRM [18]. We do not attempt to resolve the privacy concerns here, but rather to call attention to the competing requirements placed upon RELs and DRM.

3.4 First Sale

As indicated in Section 3.1, Section 109 of the Copyright Act authorizes a person who has lawfully obtained a copy of a work to "dispose of the possession of that copy" by sale or otherwise. Thus, the copyright holder retains no control over the distribution of copies after the "first sale" to a purchaser. First sale encourages people to explore new works by using them as they see fit, and then transferring possession to another party. When this transfer involves a sale, the seller recovers some money to apply to another purchase, if she wishes. The buyer obtains a copy of a work, perhaps at a lower price than the original buyer paid. XrML and other RELs should define language elements that permit analogous post-first sale transfers of digital works.

A workable implementation of Section 109 requires not only (1) that no permission be obtained from, nor any compensation paid to, the copyright holder but also (2) that the seller no longer be able to use the copy that she has sold. Thus, the basic problem for a REL is to indicate that a work has been transferred without tracking transfers of the work, or providing the right

holder with an opportunity to interfere with the transfer. This kind of balance raises privacy concerns, which are best handled by a broader consideration of a license processing protocol. That discussion is in Section 4. Here, we outline REL vocabulary that lays the foundation for this protocol.

3.4.1 Create a Transfer Right
Within the context of XrML, the core `Rights` should include a "`Transfer`" Right. `Transfer` should be part of all `Licenses` by default. Although `Transfer` may be inconsistent with certain kinds of transactions, such as rentals, overriding the `Transfer Right` should be left to those particular situations. Exercising a `Transfer Right` would trigger a mandatory response from the processing system, as described below.

3.4.2 Require that Processing Systems Issue New Licenses for Transfers
License processing systems must honor `Transfer` exercises. As Section 109 makes plain, a copyright holder has no right to restrict the alienability of copies of a work after the first sale. To preserve this separation between rights holders and users, processing systems must not reject `Transfer` requests. In effect, we suggest that processing servers be required to issue new rule sets upon the request of a holder of the current rule set, with the effect that the previous license is terminated. Mark Stefik has already described how this information could be recorded by maintaining a record of keys or digital signatures that are valid (or invalid) for use with a given work [31]. If a right holder wishes to restrict transfers of copies of the work, he must do so by reaching some agreement with the purchaser that removes the default `Transfer Right` from the `License`. Such a transaction requires recording of information about the work as an incident of transfer, but not about the buyer or seller. Furthermore, and in contrast to Stefik's proposal, neither the REL nor the DRM system should assign the copyright holder the default right to collect a royalty on each transfer of a work. Allowing the purchaser to specify a processing system would help to enforce this behavior, as discussed in Section 4.

3.5 Some Materials are not Copyrightable

It is crucial that REL designers recognize that not all expressions receive the protection of copyright. Two important examples are facts (as opposed to the expression of a fact) and works that reside in the public domain, either because the author dedicated the work to the public domain, or because copyright protection on the work has expired. XrML and other RELs should specify elements in the REL that help to identify such works.

3.5.1 Facts
The `DigitalResource Resource` (see Section 3.3 above) of an XrML Grant would appear to lend itself to an expression of where a fact is located within a work. We suggest that XrML contain a sibling `Fact Resource`, which could be used to mark the parts of a work that the copyright on the work as a whole does not protect. Although adding this markup to rule sets would involve some effort and expense, this effort would introduce tremendous value by marking information that can be freely shared, without a cloud of uncertainty as to copyrights claimed in the information. Use of the `Fact` element could be especially conducive to automated markup when a copyrighted work contains segments of data that are not themselves copyrightable, and the author wishes to signal that the data are not protected by copyright.

3.5.2 Public Domain
The access restrictions that DRM systems place on copyrighted works must not be used to restrict access to works in the public domain. XrML and other RELs would likely meet with wider

approval if they provided a robust mechanism for marking public domain works. This specification could be quite simple. We propose a `Grant` sibling, `PublicDomain`, which would grant permission to all Principals to exercise all `Rights` relevant to the `Resource`. These children of `PublicDomain` should be the only possible children; since the work is in the public domain, there is no basis for imposing stricter access control to the work. A `PublicDomain` would contain no `Conditions` restricting its use.

4 Privacy

When a person buys, rents, or borrows a copy of a creative work fixed in a tangible medium, he does not expect that his use of that work will be monitored by the seller or the right holder. An author, for example, cannot count how many times a reader flips to a given page, nor can a movie studio determine how many times a home viewer watches a given scene. Purchasers of physical copies of works also expect that any intermediaries, such as retailers or libraries, will not reveal data about who has bought which work. These expectations are admittedly somewhat different on the Web, where it is well known that many sites collect detailed data about how visitors use a site. But the more applicable set of expectations here are those of "physical" purchase or borrowing, that is, of transactions between two parties that involve an explicit agreement about what each party is providing the other.[12] There may be some revelation of personal information at the time of purchase, but that exchange of information is incidental to the transaction, not somehow tied to the purchaser's use of the work. Purchasers of digital works will expect that DRM systems do not diverge from these boundaries.

4.1 The rights expression language must minimize expressions of personally identifying information.

One way in which a REL can limit the expression of personal information is to specify a concrete implementation of the `Principal` element, rather than leaving the `Principal` abstract. The `Principal` should identify only the work, not the individual who purchased it. Thus, the `Principal` need be no more complicated than some unique alphanumeric string. The specification should prohibit extensions in the copyright domain that allow the expression of information that is tied to the person who purchases the work. Threats to users' privacy may also arise from elements that are necessary to enforce certain rules. Creating a rule set with an "expiration date," for example, obviously requires that the REL be able to express the time interval during which the work may be used. XrML should specify, however, that the program evaluating the license may use such elements only for the purpose of rendering a ternary decision-granting or denying permission to use the work in the way the user requests, or granting permission of no other `Condition` exists preventing its exercise. The processing system must not store or otherwise use this kind of information outside the context of transient decisions about use permissions. Although it may be impossible to include this restriction in a REL itself, the

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[12] Of course, privacy concerns also affect how people use the Web [15]. The privacy problem maybe somewhat less
acute on the Web, because a) frequently tracking occurs without name, address or other personally identifiable information; b) there are often several sites that provide similar information; and, c) Web sites have come under regulatory and public pressure to create better privacy policies. Copyrighted works in contrast to Web sites are more likely to be unique. Thus copyright holders may have a stronger position than a Web site to demand access to private information as a condition of access to a work.

REL could still make honoring such a restriction a condition of compliance with the REL's specification.

Another way to discourage storage of data about users' actions is to remove from the basic REL the capacity of the right holder unilaterally to terminate or otherwise modify the license. The `RevokeRight,` is one example of an element that invites monitoring of the uses of protected digital works for purposes other than ternary yes/no/maybe decisions. Including a `RevokeRight` in a license provides an incentive to determine whether users are attempting to exceed the terms of their licenses, which in turn provides an incentive to monitor and store information. For example, an `Issuer` should not be allowed, upon discovering that a purchaser has tried 15 times within the last half-hour to copy all of a work, to terminate the license to view the work. There is no need, and no basis in copyright law, for a license processing system to permit a right holder or rule issuer to monitor and track attempted uses of a work. While such a `RevokeRight` may be appropriate in other domains its existence in the core invites misuse in the copyright domain. Finally, REL designers should note that intermediaries can protect individual privacy, a role RELs and the protocols that use them should exploit [11, 18]. A right holder generally has no direct access to the personal information that intermediate parties might be able to collect about purchasers, and the specification should preserve this state of affairs. While the preceding discussion provides suggestions which, if implemented, would severely restrict rights holders' access data that becomes available as a byproduct of DRM restrictions, the REL should do even more. The following sections contains more specific suggestions for how the REL can promote user privacy.

4.2 The REL must allow users to select license processing systems.

The need for a vertical approach to DRM again becomes apparent when one examines the role of enforcement systems. Both rule makers and the purchasers of digital works must be able to trust the entity that processes usage rules. While a rule issuer has an obvious interest in ensuring that the terms of a license are executed, the purchaser of a work also will also require that the processing system does not use personal information about the user for any purpose other than rendering a yes/no/maybe decision on the proposed use of a work. It is therefore essential that the REL allow users be able to control the choice of processing system, whether the user possess a physical copy of a work or accesses it via a "locker services," which permit users to access works upon authentication and authorization [29].

XrML's support for multiple Issuers of Licenses suggests an analogous construction for license processors. In particular, the REL should contain a `Processor` entity, which would specify the location of a trusted (by the `Issuer` and the end user) license processing system. The `Processor` must not be assumed, by default, to be identical to the `Issuer.` The `License` must be able to contain multiple `Processors.` Furthermore, the REL must allow the user to select this processing system, and to change it at any time after purchase. Finally, RELs should specify that the processing system may not store any data related to a use request beyond the time required to render a ternary yes/no/maybe decision. It is expected that this time will be very short, lasting only as long as the rule evaluation. REL specifications should also require that information generated as an incident of transactions not be shared with any entity outside the processing system.

5 Conclusion

The vocabulary and structure of a REL is of central importance to a DRM system. Creating a

REL robust enough to support copyright consistent rule sets is a significant challenge. To do so REL developers must consider the limitations on copyright exclusivity. This challenge must be confronted by REL designers for DRM systems to be useful in the copyright context and gain public acceptance. The fact that published works can be examined and used as their lawful possessors see fit - without authorization and without surveillance by rights holders - is the basis for much of the demand for these works and, more importantly, is a central feature of cultural participation and development. RELs should provide a platform that supports rule sets and access to copyrighted works in a fashion that tracks social norms and the limitations of copyright law itself.

References

[1] 17 U.S.C. § 101 *et seq.*

[2] 17 U.S.C. § 106 (exclusive grants in copyright).

[3] 17 U.S.C. § 107 (fair use).

[4] 17 U.S.C. § 108.

[5] 17 U.S.C. § 109 (first sale).

[6] 17 U.S.C. § 110.

[7] 17 U.S.C. § 115.

[8] 17 U.S.C. § 121.

[9] John R. Therien, "Exorcising the Specter of a 'Pay-Per-Use' Society: Toward Preserving Fair Use and the Public Domain in the Digital Age." 16 BERKELEY TECH. L.J. 979, 1030-31, n. 268 (2001) (citing an eBook license, one of whose terms is "Read Aloud: This book cannot be read aloud").

[10] Ann Bartow, "Electrifying Copyright Norms and Making Cyberspace More Like a Book." Presented at the "Fair Use by Design?" Workshop at Computers, Freedom, and Privacy, San Francsico, CA, April 16, 2002. Available at <http://www.cfp2002.org/fairuse/bartow.pdf>.

[11] Dan Burk and Julie E. Cohen, "Fair Use Infrastructure for Rights Management Systems," 15 HARV. J. LAW & TECH. 41 (2001).

[36] Julie E. Cohen, "Lochner in Cyberspace: The New Economic Orthodoxy of `Rights Management.'" 97 Mich. L. Rev. 462 (1998).

[37] Julie E. Cohen, "A Right to Read Anonymously: A Closer Look at `Copyright Management' in Cyberspace." 28 Conn. L. Rev. 981 (1996).

[12] Committee on Intellectual Property Rights and the Emerging Information Infrastructure, THE DIGITAL DILEMMA: INTELLECTUAL PROPERTY IN THE INFORMATION AGE. National Academy Press. Washington, D.C. 2000.

[13] ContentGuard, eXtensible Rights Markup Language Core Specification, Version 2.1. Available as part of a ZIP archive at <http://www.oasis-open.org/committees/rights/documents/xrml200205.zip>.

[14] ContentGuard, eXtensible Rights Markup Language Standard Extension Specification, Version 2.1. Available as part of a ZIP archive at <http://www.oasis-open.org/committees/rights/documents/xrml200205.zip>.

[15] Lorrie Faith Cranor, Joseph Reagle, and Mark S. Ackerman, "Beyond Concern: Understanding Net Users' Attitudes About Online Privacy," AT&T Labs-Research Technical Report TR 99.4.3. Available at <http://www.research.att.com/resources/trs/TRs/99/99.4/99.4.3/report.htm>

[16] Dublin Core Metadata Initiative. *See* <http://dublincore.org/>.

[17] *Eldred v. Ashcroft*, 255 F.3d 849 (D.C. Cir. 2001), *cert. granted* - 122 S. Ct. 1062 (2002).

[38] John S. Erickson, "OpenDRM: A Standards Framework for Digital Rights Expression,

Messaging and Enforcement." Available at
<http://www.ait.utk.edu/drmworkshop/opendrm_20sep02.pdf>.

[18] Joan Feigenbaum, Michael Freedman, Tomas Sander, and Adam Shostack, "Privacy Engineering for Digital Rights Management Systems." In PROCEEDINGS OF THE 2001 ACM WORKSHOP ON SECURITY AND PRIVACY IN DIGITAL RIGHTS MANAGEMENT. Springer. Berlin. 2002. Available at <http://cs-www.cs.yale.edu/homes/jf/FFSS.ps>.

[39] I. Trotter Hardy, "Property (and Copyright) in Cyberspace." 1996 U. CHI. LEGAL F. 217.

[19] Interoperability of Data in E-commerce Systems (<in*d*ecs>) Project. *See* <http://www.indecs.org/>.

[20] Lawrence Lessig, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD. Random House. New York. 2001.

[21] Lawrence Lessig, "The Law of the Horse: What Cyberlaw Might Teach," 113 Harv. L. Rev. 501, 529 (1999).

[22] Jessica Litman, DIGITAL COPYRIGHT, pp. 70-74. Prometheus Books. Amherst, New York. 2001.

[23] Fred von Lohmann, "Reconciling DRM and Fair Use: Preserving Future Fair Uses?" Presented at the "Fair Use by Design?" Workshop at Computers, Freedom, and Privacy, San Francsico, CA, April 16, 2002. Available at <http://www.cfp2002.org/fairuse/lohmann.pdf>.

[24] Neil W. Netanel, "Copyright and a Democratic Civil Society," 106 YALE L.J. 283 (1996).

[25] OASIS Rights Language Technical Committee. <http://www.oasis-open.org/committees/rights/>.

[26] *ProCD v. Zeidenberg*, 86 F.3d 1447 (7th Cir. 1996).

[27] R. Martin Röscheisen, "A Network-Centric Design for Relationship-Based Rights Management." December 1997. Ph.D. dissertation, Stanford University. Available at <http://pcd.stanford.edu/~roscheis/dissertation.pdf>.

[28] Pamela Samuelson and Suzanne Scotchmer, "The Law and Economics of Reverse Engineering," 111 YALE L.J. 1575 (2002).

[29] Tomas Sander and Nic Garnett, "What DRM Can and Cannot Do - and what It Is or Isn't Doing Today." Presented at the "Fair Use by Design?" Workshop at Computers, Freedom, and Privacy, San Francsico, CA, April 16, 2002. Available at <http://www.cfp2002.org/fairuse/garnett.pdf>.

[30] Joseph H. Sommer, "Against Cyberlaw." 15 Berkeley Tech. L.J. 1145 (1999).

[31] Mark Stefik, "Shifting the Possible: How Trusted Systems and Digital Property Rights Challenge Us to Rethink Digital Publishing." 12 Berkeley Tech. L.J. 137, 145-46 (1997).

[32] "User" comments to the United States Senate Committee on the Judiciary. April 15, 2002. Available at <http://judiciary.senate.gov/special/input_form.cfm>.

[33] U.S. CONST., Art. I, § 8, cl. 8. ("To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.")

[34] World Wide Web Consortium, Extensible Markup Language (XML) 1.0 (Second Edition). Available at <http://www.w3.org/TR/2000/REC-xml-20001006>.

[35] World Wide Web Consortium, XML Schema Part 1: Structures, <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/>, and XML Schemas Part 2: Datatypes, <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>.