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Copyright Failure and the Protection for Tables and Compilation

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Abstract

This paper attempts to show that databases, as a category of informational goods, suffer from what I term 'copyright failures'. The efficient remedy to these copyright failures is a liability rule. Property rule is socially inefficient for various reasons, and no protection leads us back to the classical problem of provision of public goods. With this in mind, a hypothesis is formulated based on Richard A. Posner's efficient common law hypothesis. Our hypothesis is that judges will tend to make liability rule decisions as it is socially efficient. This hypothesis is tested against court decisions on tables and compilations disputes from the earliest times to 1997 when a new database regime supersedes thereafter. Initial investigation shows that our hypothesis is rejected, and that in most cases, judges choose property rule over liability rule. The possible reasons for this anomaly are explored.

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1. Introduction

Informational goods such as copyrightable works exhibit public goods characteristics, namely non-excludability and non-rivalrous in consumption (Gordon and Bone 2000), which cause them to be susceptible to free-riding. As the theory of public goods postulates, when free-riding occurs, there will be a sub-optimal incentive for authors and creators to invest in the creation of new works. It goes that the provision of informational goods is a form of market failure requiring state intervention, which may come in various forms.

For example, the state may subsidise authors and creators through tax revenue, or hold a contest with a cash prize every time a new work is required. Alternatively, the state may have a law to create a special kind of property in informational goods with the power to legally exclude non-paying users. In practice, it is this special kind of propertisation which is presently being adopted to resolve the market failure in the provision of informational goods. Copyright law, in other words, is a law which creates a property out of non-excludable and non-exhaustible creations.

It is the contention of this paper that although copyright law may be an optimal mechanism to resolve the problem of informational goods provision in most cases, special circumstances may arise where secondary market failures are prevalent. The genesis of these secondary market failures, termed here as copyright failures, is examined here in Part I. In Part II, copyright failure in databases is explored and liability rule remedies are suggested. In Part III, the Posnerian hypothesis that common law courts will evolve efficient rules is tested against English and Scottish tables and compilations cases to determine whether the hypothesis holds true whereby courts grant liability rule remedies in database cases. Finally the findings are discussed.

Part I: Nature of Copyright Protection

2. The Abstraction Process

It is arguable that copyrighted works are divisible into levels of abstraction, on both the literal and non-literal aspects (dimensions) of the works.¹ The higher levels of abstraction contain common and general elements, while the lower levels of abstraction contain unique and detailed elements. For example, at the literal dimension of a text, the higher levels of abstraction consist of the letters of the alphabets, words, and short phrases; and the lower levels of abstraction consist of sentences, paragraphs, pages and chapters of text. Similarly at the non-literal dimension, the highest level of abstraction consists of the genre or a very general idea, and the lowest level of abstraction consists of specific sequences of plots, scenes and instances of a story.

It can be shown that copyright doctrines as established by case law create a protection divide where elements at higher levels of abstraction are not protected by copyright

¹ Hand J. in *Nichols v. Universal Pictures Corp.*, 45 F.2d 119 (2d Cir 1930); D W K Khong, "Copyright doctrines, abstraction and court error" forthcoming in *Review of Law and Economics*.

law, while elements at the lower levels of abstraction are protected. In American copyright law, elements in the protected levels of abstraction are called ‘expression’ and elements in the unprotected levels of abstraction ‘ideas’.

There is possibly a further inference divide below the protection divide which protects elements in the levels of abstraction below by a first appropriation, strict-liability like rule. This is evident through findings of infringement in copyright piracy cases when similarity between a protected work and an alleged infringing work is wholesale, and no proof of copying or access needs to be shown. Thus, it is as if a level of abstraction below an inference divide in the protected work is duplicated in an infringing work, regardless of culpability by way of copying.

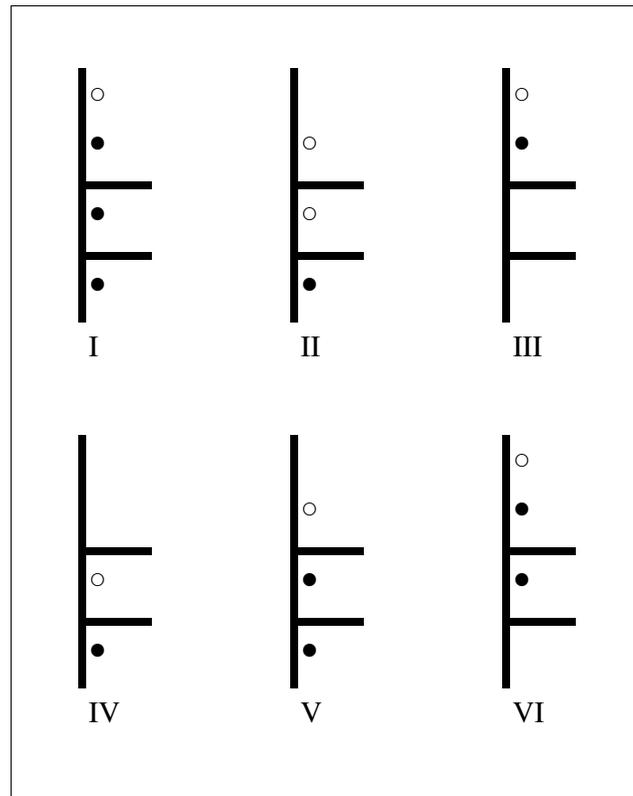
By extension, the protected levels of abstraction above the inference divide are effective only against appropriation but not against independent re-creation. This means that to prove infringement of a level of abstraction above the inference divide, extraneous evidence of actual copying or probable access has to be adduced.

It can be seen that the implication of this abstraction analysis is that low levels of abstraction in a work get strong copyright protection while the highest levels of abstraction get no protection. Substantial reuse by other authors of the elements at the higher levels of abstraction is made possible. Thus it is observable that the more levels of abstraction are found above the protection divide, the more reusable a work is by other authors. Nevertheless, the injunction of Judge Learned Hand in *Nichols v. Universal Pictures Corp.* has to be always kept in mind: “Nobody has ever been able to fix that boundary [between protected and unprotected levels of abstraction], and nobody ever can.”²

3. Significant Levels of Abstraction

Since the high levels of abstraction consist of general and common elements, consumers of copyright goods derive utility mainly from using or enjoying the elements at low levels of abstraction. These low levels of abstraction therefore are ‘significant levels of abstraction’ because they bring about an increase in the consumer’s surplus as the result of the creation of the works. It should be noted that the term ‘significant levels of abstraction’ does not include higher levels of abstraction which may only allow a right-holder to extract rent from second-comers by way of limiting entry.

² Nichols v. Universal Pictures Corp., 45 F.2d 119 (2d Cir 1930).

Figure 1: Significant Levels of Abstraction

The significant levels of abstraction may be or may not be protected by copyright law depending on the position of protection divide. Figure 1 shows a representation of six possible configurations of a hypothetical copyright regime. The black dots denote the significant levels of abstraction and the white dots denote non-significant levels of abstraction. The lower lines represent the inference divides and the upper lines the protection divides. A blank region means that there is no further level of abstraction in that region. It should also be noted that the configurations here are equally applicable to the literal and non-literal dimensions of a copyrighted work.

Configuration I shows the case where the significant levels of abstraction span across all three regions. The significant levels of abstraction above the protection divide allows for reuse of those levels by competitors, and the significant levels of abstraction below the inference divide cannot be reused by competitors without licence. Configuration I represents one model of partial copyright protection in a market with imperfect substitutes.

Configuration II represents a situation where all the significant levels of abstraction are below the inference divide. In such a case, there are no meaningful substitutes from competitors, and the market can be characterised as a monopoly with complete copyright protection. Configuration III shows the other extreme. All significant levels of abstraction are above the protection divide. There is no copyright protection to the works in this market. Competitors and second-comers may appropriate the significant levels of abstraction without infringement.

The black dots in the middle region in Configurations IV, V and VI represent protection of those significant levels of abstraction only against appropriation or on proof of actual copying. Whether these levels are protected strongly or weakly depend on their likelihood of coincidental similarity, i.e. how likely can the elements be reconstructed independently without having access to a similar prior work. If the likelihood of coincidental similarity is low, these significant levels of abstraction will tend to be strongly protected as in the case of a monopoly. On the other hand, if the likelihood of coincidental similarity is high, such as for factual content, they tend to be weakly protected, as if they are competitively available to all. Such is the case of Configuration IV, and also, the middle regions in Configurations I, V, and VI.

Partial protection as represented in Configuration I may be further illustrated by two examples. In the first, we have the case of an economics textbook. We find that copyright law protects how the author expresses his content in each paragraph, and the sequence of appearance of each of the specific paragraphs. What is not protected is the knowledge of economics in the non-literal dimension. Hence, the textbook is only partially protected by copyright, so far as to the wordings of each paragraph, but not to the knowledge in its content. In the second case, we have a play. Similar to the textbook case, the wordings in a large chunk, and specific sequences and details of each scene may be protected by copyright law. But the general idea of the play is not protected. Even the idea of a specific scene may be not protected. Likewise, a play is only partially protected by copyright law.

Partial protection by copyright law may give rise to substitutes that are dissimilar in appearance, but partially similar in content. This is due to more protection on the literal dimension and less protection on the non-literal dimension. Competitors may reuse to some extent those parts of a work which are not protected or falling under the protection divide. They may also independently create those protected parts above the inference divide. As a result of this dissimilarity in appearance, the works are likely to be imperfect substitutes.

If all the significant levels of abstraction lie below the inference divide as in the case of Configuration II, a case of complete protection results and there will be no substitutes by competitors. A related example of this can be seen in technical specifications, especially in computer-related technology. In *Data Access Corporation v. Powerflex Services Pty. Ltd. & Ors.*,³ the High Court of Australia affirmed the decision of the Full Court of the Federal Court of Australia, that a specially created table of codes known as a Huffman Compression Table, used in an application development system, is protected by copyright, even though its reproduction in a competing system is necessary to achieve interoperability. The court acknowledged thus that “[the finding] may ... have wider ramifications for anyone who seeks to produce a computer program that is compatible with a program produced by others,” but it resisted from interfering with the law as it thinks that “these are ... matters that can be resolved only by the legislature reconsidering and, if it thinks it necessary or desirable, rewriting the whole of the provisions that deal with copyright in computer programs.” Since the compression table is an essential component of the appellant system, providing complete protection thereto will render competing software non-substitutes if the lock-in effect is taken into account. Even if the lock-in effect is

³ *Data Access Corporation v. Powerflex Services Pty. Ltd. & Ors.* [1999] HCA 49.

disregarded, competing products may only be considered as partial but imperfect substitutes.

Complete protection may also appear in the case of compilations of information, when such compilations are sourced from a single organisation. In *British Broadcasting Company v. Wireless League Gazette Publishing Company*,⁴ Astbury J. held that the defendant publisher was infringing the plaintiff's copyright in television programme listings by incorporating them in its weekly entertainment magazine. Since the court found that the whole of the listing is protected, the defendant could not create a substitute product without infringing on the plaintiff's copyright. Hence, copyright protection in such cases is complete.

The flip-side of complete protection is no protection. This happens when the significant levels of abstraction are above the protection divide, as represented by Configuration III. In *Feist Publications, Inc. v. Rural Telephone Service Co., Inc.*,⁵ the United States Supreme Court denied copyright protection to a telephone directory on the ground that the subscribers' details are facts and not capable of copyright protection, that there is no creativity in the selection of entries since selection is wholesale, and that there is no creativity in the arrangement either since the listings are in plain vanilla alphabetical order. The peculiar situation caused by this decision is that some significant and socially useful works such as directories may be denied copyright protection.

In conclusion, three possible situations may be envisaged by the operation of copyright law: partial protection, complete protection, and no protection, although different countries' copyright law may give rise to slightly different effects, such as in the United Kingdom where there are fewer occurrences of 'no protection' situations because of lower threshold for copyright protection. The economic implications of the three positions of copyright protection will be subject to further examination below. Furthermore, it is suggested here that a secondary market failure, which I term 'copyright failure', results when there is complete or no copyright protection.

4. Economic Implications

The three possible situations of copyright protection may lead to three types of markets for copyright goods. Partial copyright protection gives rise to a market of imperfect substitutes, complete copyright protection to a market with no substitute, and no copyright protection to a market of free competition with perfect substitutes. These three market conditions will be analysed in respect of copyright works.

For the purpose of this paper, a stylised characterisation of an informational work is one with a fixed cost of creation, and zero or non-increasing marginal cost of reproduction.⁶ Consequentially, the average total cost is ever decreasing, and the supply curve exhibits the characteristics of a natural monopoly. The existence of this

⁴ *British Broadcasting Company v. Wireless League Gazette Publishing Company* [1926] Ch 433.

⁵ *Feist Publications, Inc. v. Rural Telephone Service Co., Inc.*, 499 US 340 (1991).

⁶ See, K J Arrow, "Economic welfare and the allocation of resources for invention", in R. R. Nelson (ed), *The Rate and Direction of Economic Activity* (1962), 609–626.

natural monopoly phenomenon is a reason to prevent the duplicative effort to re-create the same work if re-creation is costly.

A second consideration to the analysis is that risk of court error arises when the court could not conclusively determine whether two informational works are the same because of copying by one from the other, or were independent creations. Therefore, it seems that copyright doctrines developed in such a way as if to minimise the occurrences of court error.⁷ This does not mean that judges consciously develop doctrines to avoid court error. More likely, courts do so in such a way as if to avoid the embarrassment of making erroneous findings of fact. Thus, it can be said that copyright law promotes evidentially dissimilar works, and discourages the duplicative creation of evidentially similar works.

4.1 Imperfect Substitution

Normally, partial protection leads to a copyright market of imperfect substitutes. When copyright law protects significant low levels of abstractions and gives no protection to the high levels of abstraction, a market of imperfect substitutes appear. This happens because competing works may provide substitution in the non-protected ideas, and imperfect substitution or some differentiation in the protected expression. In the language of economics, the market exhibits the characteristics of monopolistic competition.⁸

The welfare analysis of such a market, absence concrete empirical data on a specific category of works, is at best indeterminate.⁹ It is possible that the unregulated market will produce too many variations of the same theme,¹⁰ or that competition albeit imperfectly may drive down prices and drives up quality, and inducing dynamic efficiency.¹¹ Potentially, competition has the effect of increasing consumer surplus by reducing the size of deadweight loss.

A copyright market of imperfect substitutes with evidentially dissimilar works has the additional advantage of reducing the risk of court error. Furthermore, duplicative sunk costs of creation are likely to be avoided as each work seeks to be different from the others. It would seem that partial copyright protection leading to a market of imperfect substitutes is a good solution to the public goods problem in informational goods.

4.2 No Substitution

When copyright law provides complete protection to all the significant levels of abstraction in a work, it creates a monopoly market with no substitutes. The protected

⁷ D W K Khong, *supra* note 1.

⁸ M J Meurer, "Copyright law and price discrimination" (2001) 23 *Cardozo Law Review* 55–148.

⁹ J Tirole, *The Theory of Industrial Organization* (1988), at 288.

¹⁰ M Abramowicz, "Copyright redundancy" George Mason University School of Law, Law and Economics Working Paper Series, paper 03-03.

¹¹ C S Yoo, "Copyright and product differentiation," [2004] *New York University Law Review* 79.

author or copyright owner will then be able to charge a monopoly price and earn super-normal profit with no threat from competition. From a welfare point of view, this is a form of market failure. Potential consumers who are not willing to pay the monopoly price are unable to consume the good even though their willingness to pay is lower than the marginal cost of provision. This loss of potential consumption is the proverbial deadweight loss associated with monopoly pricing.

The existence of market power, together with the ability to separate high value and low value consumers and the ability to prevent arbitrage between them, allows the copyright owner to increase his profit through price discrimination. In first-degree price discrimination, where all consumers' surpluses are captured by the seller, profit is maximised and the market is efficient. There is no deadweight loss, and as such first-degree price discrimination is also known as perfect price discrimination, although it is less desirable by the consumers. On the other hand, when the copyright owner could not perfectly price discriminate, the market is not likely to be efficient. The main cause is asymmetry of information between the seller and the consumers over the latter's willingness to pay. Hence, the monopoly seller could not perfectly price discriminate, and deadweight loss remains. In conclusion, only in the rare case of perfect price discrimination will the existence of no substitute in a copyright market be efficient.

4.3 Perfect Substitution

When copyright law affords no protection over significant levels of abstraction, free-riders may enter an incumbent's market by reproducing what was created without incurring the same fixed cost of creation. By not having the pressure to recoup a fixed cost of creation, these free-riders may charge a price as low as their marginal costs. This pricing at marginal cost in the market of a natural monopoly such as a copyright work is a first best solution, for it is efficient. However, marginal cost pricing is not feasible to the original creator, for he needs to charge at least a price equal his average total cost to recover his investment. Hence, he will not be able to compete with the free-riders and will have less incentive *ex-ante* to invest in the creation of works unless there are supplemental ways to overcome free-riding. The lack of incentive as a result of free-riding is a form of market failure as it leads to the suboptimal provision of public goods.

Part II: Copyright Failure

5. Copyright Failure Defined

The simple analysis above shows that imperfect competition is an ideal market structure for informational goods such as copyrighted works. It avoids the two extremes of monopoly and free-for-all copying. Nevertheless, secondary market failures may arise from the operation of copyright law under certain conditions described below. The term 'copyright failure' is used here to refer to these kinds of market failures associated with the operation of copyright law. A copyright failure can be defined as a deviation of an information market from the model of imperfect competition.

Three types of copyright failure may be described. Type 1 copyright failure is associated with the existence of monopoly power when the law completely protects

all significant levels of abstraction in a work and prevents competitors from introducing non-infringing substitutes. A Type 2 copyright failure appears when copyright law does not protect the significant levels of abstraction in a work, and allows free-riding perfect substitutes to appear, in which case the market failure of suboptimal provision of public goods manifests.

A further Type 3 copyright failure may occur when copyright law allows independent re-creation of the significant levels of abstraction in a copyrighted work. This failure has two aspects: natural monopoly and risk of court error. The natural monopoly aspect of a Type 3 copyright failure is related to the problem of duplicative sunk costs. If the law protects some significant levels of abstraction but allows independent recreation of the same, there may be some welfare losses when those levels of abstraction are duplicated by a second-comer. This inefficiency is the result of deviation from the first best solution of requiring all second-comers to license from the first mover instead of independently re-creating those levels of abstraction. Of course, this conclusion only holds if the creation of those levels of abstraction is a costly process; when the cost is low or negligible, or when the transaction cost of licensing is higher than the cost of re-creation, it is not efficient to compel licensing.

Maurer and Scotchmer in a paper discussing the lack of an independent invention defence in patent law suggest that this lack is inefficient from the point of patent policy.¹² They postulate that with an independent invention defence, second-comers may use the defence to threaten a patent holder to lower his licensing fee in order to induce competitors to license instead of reinventing the patented technology. The end result of this threat is that the licensing fee will be lowered and the product market incorporating the patent will be competitive owing to a multitude of suppliers. Our model here, on the other hand, suggests another scenario. We submit that in the case of copyright law, the independent creation defence is only applicable to similarity of elements in the intermediate levels of abstraction, and that the defence is generally inapplicable to low levels of abstraction below the inference divide. The defence does not apply if the second-comer intends to duplicate the copyright owner's work. Hence if the second-comer intends to come out with a differentiated but competing work, effort would have to be expended to create a different low level of abstraction, and licensing would not in any case be an useful option. For this reason, there are more uses of independent re-creation in the copyright industry than as what Maurer and Scotchmer's analysis predict.

The second aspect of the Type 3 copyright failure is about the risk of court error. This risk is a conceptualisation of the court's inability to correctly distinguish a second-comer independently re-creating a work similar to the first-moving copyright owner's and that which results from copying by the second-comer. It is similar to what Lichtman calls 'the evidential conundrum'.¹³ The risk can also be considered as a form of social cost, for it may reduce the incentive to create, although rightly this could be off set by a positive risk of being paid damages because of a similar court error.

¹² S M Maurer and S Scotchmer, "The independent invention defence in intellectual property" (2002) 69 *Economica* 535–547.

¹³ D Lichtman, "Copyright as a rule of evidence" (2003) 52 *Duke Law Journal* 683–743.

6. Copyright Failure in Databases

Databases or compilations of information pose peculiar problems in copyright law. Unlike other written works such as novels or textbooks which exhibit the characteristics of a product market of imperfect substitutes, copyright protection of databases generally leads to a few types of copyright failures. These failures are caused by the inherent factual nature of databases, and to further understand the causes of copyright failure in databases, all databases need to be categorised into three types.

The first type of database is the sole-sourced or private-sourced databases. In this type of database, the creator makes his list of content, either randomly, based on some personal preferences, or after research based on his own requirements. The contents of his database are unique to himself, and highly unlikely to be independently re-created by others. The contents of the database may or may not relate to an event or phenomenon post-construction. Nevertheless, in this type of database, the database is most significant before happening of an associated event, such as a broadcast or a race, and this value diminishes rapidly after the event. Therefore, even if other producers may observe the event independent of the original database, recreation of such a database has little value to other producers. Examples of this type of database are the television programming and horse racing schedules. Television programming and horse racing schedules, as databases, have the most value before the broadcast or the race. Although other producers may recreate such databases, if legally allowed, after observing the event of the broadcast or the race, it will be valueless by then. Thus, the creator is the sole or private source of this type of databases.

The second type of database is what is called quasi-public sourced database. Unlike, sole-sourced databases where their values diminish after happening of an event relating to the contents, the value of a database remains at all times. Therefore, if not legally prevented, other producers may have incentive to re-create the database either by copying or by independently observing the related events. Examples of this type of database are bank and social security numbers, telephone directories, street directories by the city planning agencies, and lists of professionals or accreditation by the regulatory bodies. The normal situation is that the database is a by-product creation of another activity, and the creator enjoys economies of scope. Thus, it is common that a creator of a quasi-public sourced database has substantial cost advantage in the construction or compilation of the database compared to other producers.

The third type of database is the public-sourced database. In this type of databases, the contents are found in publicly observable events or phenomena. Therefore, different producers may independently or concurrently compile the same database. No producer has any cost advantage over the other, although some producers may have some technological or financial advantage or endowment which makes them more likely to be successful in compiling the database. Examples of this type of database are maps, astronomical, geographical and meteorological data.

These three types of databases may be analysed against the different configurations of copyright protection in Figure 1. Configuration I must be ruled out because it is not a probable configuration due to the factual nature of databases. This is because the content of a database can normally be described as a single level of abstraction. Furthermore, for simplicity sake, Configurations V and VI are not considered here as their implications are potentially indeterminate, depending on the implications of

protecting the middle region. Therefore, that leaves us with Configuration II, IV and V to consider.

Table 1: Copyright Failure in Databases

<i>Configuration Type</i>	<i>Sole Sourced Databases</i>	<i>Quasi Public Sourced Databases</i>	<i>Public Sourced Databases</i>
II	Type 1	Type 1	Type 3
IV	Type 1	Types 1, 3	Type 3
III	Type 2	Type 2	Type 2

Table 1 tabulates the different types of databases against the three configurations of copyright protection and derives the possible economic implications. It can be observed that a no protection strategy—Configuration III—always leads to a suboptimal provision problem—Type 2 copyright failure—as long as the fixed cost of creation is lower than the cost of reproduction.

When copyright protection is complete as in Configuration II in a sole-sourced database, a monopoly is created, leading to a Type 1 copyright failure. Allowing non-infringing independent re-creation is useless in this type of database because the content is highly unique to the copyright owner, and cannot be independently re-created. Thus Configuration IV, where independent re-creation is allowed, also leads to a Type 1 copyright failure.

When copyright protection is complete in a quasi-public sourced database, and competitors may not re-create a database indirectly from public sources, the situation is the same as in a sole-sourced database. The advantage of this strategy is that a Type 3 copyright failure is avoided. The disadvantage is that potentially a Type 1 copyright failure occurs. On the other hand, when protection is of Configuration IV, where competitors may re-create a database indirectly, a Type 1 copyright failure may still appear because of the absolute cost advantage of the first creator, but when competitors do independently re-create the database, a Type 3 copyright failure appears.

In public-sourced databases, the predominant feature is a Type 3 copyright failure. The natural monopoly argument applies because it is socially optimal to have one party incur the fixed cost of creation while the others save on this cost by relying on what the first compiler has incurred. Also the risk of court error may also appear because more than one party has access to the same source of information. In conclusion, legal protection of databases seems to be shrouded with economic market failures, for whatever the type of database and for whatever protection strategies. This is the result of protection under what Calabresi and Melamed would call a ‘property rule’,¹⁴ where the object of protection is sacrosanct and any infringement has to be stopped and the infringer punished. Perhaps, protection of database through a property rule is not an optimal strategy, and a liability rule remedy may cure some of these failures.

¹⁴ G Calabresi and A D Melamed, “Property rules, liability rules, and inalienability: One view of the cathedral” (1972) 85 *Harvard Law Review* 1087–1128.

7. Solution to Copyright Failure

The existence of copyright failures should not paint a gloomy picture on the copyright system. Indeed there exist remedies to overcome situations of copyright failure. One possible solution is a liability rule remedy.

The seminal article on property rules and liability rules is Calabresi and Melamed's.¹⁵ Extending from what Coase and Stigler showed that under the assumption of zero transaction cost, property rule protection of property rights will lead to efficient final allocation of those rights after bargaining,¹⁶ Calabresi and Melamed demonstrated using the examples of accidents and negative externalities, that property rights is better protected by liability rules, i.e. compensation through payment of damages, *ex post facto* when bargaining is costly or that transaction cost is prohibitive. When *ex ante* bargaining is impossible, such as in the case of accidents, or that transaction cost is prohibitive, such as when anti-commons appear,¹⁷ liability rules protection might be efficient. Furthermore, as Professor Wendy Gordon alluded in her paper on transaction cost and the fair use doctrine, liability rule remedies can be used to avoid strong monopoly power, such as in the case of the market for piano rolls at the turn of the twentieth century.¹⁸

A liability rule remedy is one where a person is permitted to infringe a property right provided that compensation is paid; while under a property rule, infringement without prior consent is not permitted and the infringer can be punished with criminal sanctions or imposed aggravated damages. The idea for this distinction is to encourage contractual exchanges of rights where feasible and only allow non-contractual intrusions in those special circumstance where bargaining is not possible or is socially justified, or in the case where there is strong monopoly power. It has to be noted that a property may be protected by both a property rule and a liability rule at the same time depending on specific circumstances. For example, a real property may be protected with property rules against trespass and adverse possession, but at the same time may be subject to compulsory acquisition with compensation by the State.

A special case of liability rule is one with zero compensation. A zero-rated liability rule is the same as a no property rule, i.e. there is no infringement or that protection is not afforded to the property for a particular type of infringement. A common example of a zero-rated liability rule in copyright law is the fair use doctrine. In *Sony Corporation of America, et al. v. Universal City Studios, Inc., et al.*, (*Betamax case*),¹⁹ the US Supreme Court held that recording of broadcast television programmes using a video cassette recorder for time-shifting purposes may constitute fair use and is excused from copyright infringement. Similarly in the UK, section 70 of the Copyright, Designs and Patents Act 1988 provides for the an exception by allowing without infringement "the making in domestic premises for private and domestic use

¹⁵ Ibid.

¹⁶ R H Coase, "The problem of social cost" (1960) 3 *Journal of Law and Economics* 1–44; G Stigler, *The Theory of Price*, 3rd edn (1966), 110–114.

¹⁷ B Depoorter and F Parisi, "Fair use and copyright protection: A price theory explanation" (2002) 21 *International Review of Law and Economics* 453–473.

¹⁸ W J Gordon, "Fair use as market failure: A structural and economic analysis of the *Betamax* case and its predecessors" (1982) 82 *Columbia Law Review* 1600–1657, 1613

¹⁹ *Sony Corporation of America, et al. v. Universal City Studios, Inc., et al.*, 464 US 417 (1984).

of a recording of a broadcast solely for the purpose of enabling it to be viewed or listened to at a more convenient time.”

Gordon (1982), in analysing the economic rationale for zero-rated liability rule in copyright, in the context of the fair use doctrine, proposes a three-part test consisting of (i) proof of market failure, (ii) cost and benefit analysis, and (iii) no substantial injury to the rights owner. By market failure, it has to be established that use of the copyrighted work would not have happened under contract; by cost and benefit analysis, it should be shown that there is a net social gain after the adoption of the fair use doctrine; and finally, by substantial injury, it must be shown *hypothetically* that the doctrine would not substantially affect the author’s original incentive to create, or in other words, the use is Pareto optimal. Using this three-part test, Gordon argues that the US Supreme Court decision in *Williams & Wilkins Co. v. United States*²⁰ of finding the fair use doctrine to be applicable to mass photocopying of medical journal articles was economically sound, and that the same test can equally be applied to the *Betamax* case.

The drawback of a zero-rated liability rule is that it might in certain cases lead to sub-optimal level of incentive to create, i.e. a Type 2 copyright failure. On the other hand, a zero-rated liability rule has the advantage of dispensing with the cost of determining the quantum of compensation.

The alternative to a zero-rated liability rule is a normal liability rule where only compensation is payable. The problem of enforcing a normal liability rule is that it is informationally intensive and requires the court to make a determination as to the level of compensation. As liability rule is not punitive, the compensation should not be excessive so as to unnecessarily deter the defendant from carrying out his activity.

One form of a normal liability rule is a compulsory licensing scheme, where the price or compensation is predetermined. Unfortunately compulsory licensing as a judicial remedy is not common. Unless specifically provided by statute, courts normally do not grant compensation in lieu of an injunction and delivery up. The main reason may be attributed to the difficulty of determining a ‘fair’ price. This difficulty applies as well to tribunals managing compulsory licensing schemes. Nevertheless, there are some evidences of courts beginning to temper traditional copyright remedy with competition law liability rule remedies.

In *Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) v. Commission of the European Communities* (the *Magill* case),²¹ the European Court of Justice had the occasion to consider the circumstances when a copyright may be subject to compulsory licensing under competition law. In that case, three broadcasting organizations, RTE, ITV and BBC, refused to grant a licence to Magill TV Guide Ltd for including their television programming listings in a weekly publication of all schedules. An investigation by the European Commission found that their refusal to license amounts to an abuse of a dominant position, and ordered them to supply to “third parties on request and on a non-discriminatory basis with their individual advance weekly programme listings and by permitting reproduction of

²⁰ *Williams & Wilkins Co. v. United States*, 420 US 376 (1975).

²¹ *Radio Telefis Eireann and Anor. v. European Commission (Intellectual Property Owners Inc. and another intervening)* (*Magill case*) ECR [1995] I0743, [1995] All ER 416, [1995] FSR 530 (ECJ, 6 April 1995).

those listings by such parties,” and “if they chose to grant reproduction licences, any royalties requested must be reasonable.” An ensuing application to the Court of First Instance to annul the Commission’s order was rejected, and further appeal to the Court of Justice was also unsuccessful.

The defendant undertakings argued, in the main, that refusal to license is part and parcel of the rights in copyright granted by national legislation, and is further exempted from community competition rules by Article 36 (now Article 30) of the EEC Treaty.²² The ECJ however rejected this argument. It held that although refusal to grant a licence on itself cannot constitute an abuse of dominant position, “the exercise of an exclusive right by the proprietor may, *in exceptional* circumstances, involve abusive conduct [emphasis mine]”.²³ Finding the undertakings to be “the only source[s] of . . . information” and having “a de facto monopoly over the information” which puts them “in a position to prevent effective competition on the market in weekly television magazines,” the ECJ held them to be in a dominant position.²⁴ To show exceptional circumstances sufficient to find an abusive conduct, the ECJ considered the following four factors: (i) there is “no actual or possible substitute” to what Magill plans to offer,²⁵ (ii) the undertakings sought to “prevent the appearance of a new product”,²⁶ (iii) there is “no justification for . . . refusal” to grant a licence,²⁷ and (iv) the undertakings sought to “reserve to themselves the secondary market of weekly television guides by excluding all competition on that market”.²⁸

The principle in *Magill* has recently been followed in two competition cases involving intellectual property rights. In *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*,²⁹ the ECJ heard a reference for preliminary ruling from a German court on the question, *inter alia*, whether a refusal to licence a database, being an industrial standard structure for the presentation of pharmaceutical regional sales data, by an undertaking in a dominant position which has an intellectual property right therein, to a competitor who would otherwise would not be able to offer an alternative service, constitute an abuse of dominant position within the meaning of Article 82 EC. Similarly in *Microsoft Corporation*,³⁰ the European Commission found that Microsoft had contravened Article 82 by refusing to disclose and license, to Sun Microsystems Inc., key interoperability information necessary to connect Sun’s workgroup servers to Microsoft’s client operating system. In both cases, the decision in *Magill* was followed, and all four factors were found to be present.

²² Treaty Establishing the European Community (previously, Treaty Establishing the European Economic Community 1957), [2002] OJ C 325.

²³ *Magill*, para. 50.

²⁴ *Magill*, para. 47.

²⁵ *Magill*, para. 52.

²⁶ *Magill*, para. 54.

²⁷ *Magill*, para. 55.

²⁸ *Magill*, para. 56.

²⁹ *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*, Case C418/01, [2004] ECR I5039.

³⁰ *Microsoft Corporation*, Commission decision of 24 March 2004, Case COMP/C3/37.792 Microsoft.

Arguably, the conditions prescribed in *Magill* restrict the wider application of liability rules and compulsory licensing to copyright and intellectual property cases. By requiring the condition of “preventing the appearance of a new product,” *Magill* seems to confine the application of compulsory licensing to cases where a new market is created through the introduction of a new product as against sharing of an existing market by way of price competition. If that were the case, compulsory licensing would be a Pareto improvement, for no one is worse off and the new producer and new consumers are better off. Unfortunately, the factual circumstances of *Magill* do not square with the Pareto improvement idea. Although *Magill*, read narrowly, requires the introduction of a new product and that the new product is to satisfy an unfulfilled demand, the probable outcome is that the new weekly guide will be an effective substitute to the undertakings’ guides, and demand will be diverted from the undertakings to the new producer.

This kind of competition can be characterised as a Cournot competition by a duopoly. A Cournot competition is more likely to occur than Bertrand competition because producers of the weekly guides are less likely to adjust the quantity produced once the guides are being printed. The theory of Cournot competition predicts that firms will set an equilibrium price lower than the monopoly price but higher than the perfectly competitive price of which each party’s profit is maximised given that each party could predict the other’s quantity produced. Consumers’ surplus will increase and the joint producers’ surplus will decrease. A Kaldor-Hicks improvement, in theory, will result.

An alternative to pricing compulsory licensing is the Efficient Component Pricing Rule (ECPR).³¹ According to this pricing rule, production efficiency in the entrant will be ensured by fixing the compulsory licensing fee, also known as the access fee, at the average incremental cost of supplying the essential facility plus all antecedent opportunity cost of the incumbent-licensor. This opportunity cost is equated to the reduction in the incumbent’s profit as the result of supplying one unit of the licence to the entrant-licensee. Proponents of ECPR argue, notwithstanding the fact that the incumbent’s holds a monopoly position vis-à-vis the essential facility, the proper criterion for determining the opportunity cost is that under the condition of perfectly contestable market. In practice, the opportunity cost component may include the monopoly rent from the copyright, and henceforth, the incumbent copyright owner will, in theory, be indifferent between being paid for a licence and selling the copyrighted good himself. In fact, if the licensee can sell a competitive substitute product at a lower price than the incumbent, the incumbent’s profit from licensing fees will go up because of the effect of the Law of Demand.

Opponents such as Economides and White, and Tye and Lapuerta on the other hand contend that the Efficient Component Pricing Rule preserves the incumbent’s monopoly profit and shields it from the effect of competition.³² Thus recognising the

³¹ W J Baumol, “Some subtle pricing issues in railroad regulation” (1983) 10 *International Journal of Transport Economics* 341–355; W J Baumol and G Sidak, “The pricing of inputs sold to competitors” (1994) 11 *Yale Journal on Regulation* 171–202; W J Baumol, J A Ordover, and R D Willig, “Parity pricing and its critics: A necessary condition for efficiency in the provision of bottleneck services to competitors” (1997) 14 *Yale Journal on Regulation* 145–163.

³² N Economides and L J White, “Access and interconnection pricing: How efficient is the ‘efficient component pricing rule’?” [1995] *The Antitrust Bulletin* 557–579; W B Tye and C Lapuerta,

ill social effects of monopoly pricing and transferring of monopoly rent from the entrant to the incumbent, Baumol and his supporters have at various forums insisted on supplementing ECPR with a regulated opportunity cost. In a latter article, they clarified that the Efficient Component Pricing Rule is a necessary but insufficient condition for efficiency, and regulation of the opportunity cost component of the access fee has to be in place to limit monopoly rent.³³ Nevertheless, it is not particularly clear why regulation of the opportunity cost component is of any difference from setting a lower licensing fee than one under ECPR as long as it covers the average fixed cost. Indeed, opponents of this rule show that a lower licensing fee than the ECPR could still be welfare enhancing notwithstanding that the entrant is productively less efficient than the incumbent.³⁴

Where the marginal cost of a copyright licence is assumed to be zero, as what Arrow characterises in relation to the marginal cost of information, the quantification of the average incremental cost component becomes problematic.³⁵ The fact is that zero marginal cost means zero average incremental cost. Although Baumol tries to advocate the application of the Efficient Component Pricing Rule as the right approach to the “socially desirable size of copyright fee”,³⁶ he failed to respond to his own challenge of determining the copyright fee when marginal cost is assumed to be zero. One way around this challenge is to think of ‘incremental cost’ as the cost of moving from no copyrighted work or component to having one, i.e. the fixed cost of making the copyrighted work or the relevant component. Thus average incremental cost in this respect would be the average fixed cost of making the copyrighted work or component.

An occasion arose in the New Zealand courts a few years ago to test the acceptability of the Efficiency Component Pricing Rule. In *Telecom Corporation of New Zealand Ltd. v. Clear Communications Ltd.*,³⁷ the Judicial Committee of the Privy Council heard an appeal from New Zealand over a dispute on the interconnection access and traffic charges to a telecommunications network, based on competition law. Having taken advice from Baumol and Willig, the incumbent network provider, Telecom Corporation sought to apply the Efficient Component Pricing Rule to charges on the new entrant, Clear Communications, of which the latter objected. In the High Court, the ECPR found favour with the judges, as being more likely than other alternatives to improve efficiency and promote competition in the telecommunications sector. More importantly, the Court acknowledged that although the ECPR would permit the incumbent to retain its monopoly profit, there is no clear evidence Telecom Corporation was doing so. Thus, it was held that by applying the ECPR to pricing of its access and traffic charges, Telecom Corporation was not in breach of section 36 of

“The economics of pricing network interconnection: Theory and application to the market for telecommunications in New Zealand” (1996) 13 *Yale Journal on Regulation* 419–500.

³³ W J Baumol, J A Ordovery, and R D Willig, *supra* note 31.

³⁴ N Economides and L J White, *supra* note 32.

³⁵ K J Arrow, *supra* note 6.

³⁶ W J Baumol, “The socially desirable size of copyright fees” (2004) 1 *Review of Economic Research on Copyright Issues* 83–92.

³⁷ *Telecom Corporation of New Zealand Ltd. v. Clear Communications Ltd.* [1995] 1 NZLR 385 (Privy Council).

the New Zealand Commerce Act 1986, which to an extent is similar to Article 82(1) of the EC Treaty.

Clear Communications appealed to the Court of Appeal against the High Court decision. In relation to the ECPR, Cook P. found that “stated in that bald form, the rule would seem obviously anti-competitive and in breach of s. 36 of the Commerce Act. It would amount to allowing a new entry into a market on condition only that the competitor indemnifies the monopoly against any loss of custom.”³⁸ Gault J. provided a scathing attack on ECPR:

*“That the employment of the perfectly contestable standard can lead to a price incorporating monopoly profits suggests to me a contradiction. In a perfectly contestable market I would not expect any monopoly profits to be chargeable. I therefore do not see how monopoly profits legitimately can be included in any opportunity cost. That they can in Professor Baumol’s model invites a conclusion that the model is imperfect.”*³⁹

Having lost its ability to charge an opportunity cost component in the appellate round, Telecom Corporation appealed further to the Privy Council in London. Delivering a unanimous opinion, Lord Browne-Wilkinson found that section 36 did not have the function of regulating prices. Rather, there exists a Part IV in the Commerce Act which allowed regulators to impose price restriction by regulation. Furthermore, relying on the High Court’s earlier finding, the Privy Council reversed the Court of Appeal decision on the ground that there is no evidence that Telecom Corporation had sought to retain monopoly profits in the opportunity cost component of its calculation. In the final analysis, the applicability of the ECPR was resurrected and affirmed by the Privy Council, although emphasis was paid to the need to regulate the pricing of the opportunity cost component.

To a certain extent, the difference of opinion between the Privy Council and the Court of Appeal was more in form than in substance. Both acknowledged the need to regulate the inclusion of monopoly rent in the opportunity cost component of the Efficient Component Pricing Rule. The Court of Appeal thought that this could be done within the framework of section 36, while the Privy Council held that section 36 could not be given such a wide interpretation as a specific Part IV in the same Act had provided for such a function. It has to be reminded that even Baumol and Willig agree that monopoly rent in the opportunity cost component has to be regulated, notwithstanding the theoretical validity of ECPR. Finally, it might be useful for other cases to take note that the Efficient Component Pricing Rule has been accepted by a court of highest ranking in the common law world, for the learned opinions of the Privy Council is of highly persuasive value on related questions of law, even though they do not have a binding effect.

An application of non-zero rated liability rule to the same factual situation in *Feist* occurred in the European Union. Article 5 of the Universal Service Directive (2002) read together with recital 35 of that Directive mandate that publicly available telephone service providers in the European Union have a legal duty to furnish their

³⁸ *Clear Communications Ltd. v. Telecom Corporation of New Zealand Ltd.* [1993] 4 NZBLCV 103 (Court of Appeal), at 340.

³⁹ *Ibid.*, at 356.

telephone subscribers' information, in a fair, cost-oriented and non-discriminatory manner, for the provision of telephone directories.⁴⁰ Henceforth, telephone service providers cease to have a right to refuse provision or licensing of their subscribers database. Furthermore, competition authorities have powers to investigate if the price is excessive, although not strictly in a price regulation sense.⁴¹

There are, on the other hand, detractors such as Professor Robert Merges who does not believe that there are legitimate uses of liability rules for the protection of intellectual property rights.⁴² He categorically states his objection to the imposition of liability rule remedies in the form of compulsory licensing in intellectual property cases in favour of voluntary collective licensing schemes. He argues that if there were high transaction costs to licensing, profit-seeking copyright owners would devise mechanisms such as voluntary collective licensing organisations to reduce these transaction costs. Thus there is little scope for state intervention by way of compulsory licensing. Furthermore, he claims that the history of compulsory licensing in the USA in respect of player piano rolls and mechanical reproduction rights thereafter, demonstrates that compulsory licensing creates a market distorting effect by allowing pressure groups to impose a low compulsory licensing rate of two cents per song from 1909 to 1978. Unfortunately, without explicitly stating so, his main gripe about compulsory licensing is not about liability rule per se, but the low, and probably below 'market', royalty rate set by the political and interest group process.

In conclusion, it is suggested and shown here that a liability rule remedy in the form of a compulsory licence may be an efficient solution to copyright failure in the protection of tables, compilations and databases.

Part III: Analysis of Table and Compilation Cases

8. Hypothesis

Some years ago, Richard A. Posner put forward an efficient common law hypothesis.⁴³ Paraphrased by Michelman, this hypothesis suggests that court decisions, "taken as a whole, tend to look as though they were chosen, with a view to maximizing social wealth (economic output as measured by price) by judges subscribing to a certain set of ('microeconomic') theoretical principles."⁴⁴ Judges, as

⁴⁰ Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive), [2002] OJ L 108/51–77; L J H F Garzaniti, *Telecommunications, Broadcasting and the Internet: EU Competition Law and Regulation*, 2d edn. (2003), para. 1–228.

⁴¹ C.f. European Commission, Directorate General for Competition, "Settlement reached with Belgacom on the publication of telephone directories: ITT withdraws complaint" press release of 11 April 1997.

⁴² R P Merges, "Of property rules, Coase, and intellectual property" (1994) 94 *Columbia Law Review* 2655–2673; R P Merges, "Compulsory licensing vs. the three 'golden oldies': Property rights, contracts, and markets" [2004] *Cato Institute Policy Analysis*, no. 508, at http://www.cato.org/pub_display.php?pub_id=1366.

⁴³ R A Posner, *Economic Analysis of Law*, 2d edn (1977).

⁴⁴ F I Michelman, "A comment on 'Some uses and abuses of economics in law'" (1979) 46 *University of Chicago Law Review* 307–315, 309.

the hypothesis predicts, will tend to unconsciously choose legal positions and make decisions which maximise social wealth.

Henceforth, if the efficient common law hypothesis holds in our copyright failure problem, we shall observe the same effect whereby judges often grant liability rule remedies in tables and compilations cases, because liability rule is the efficient remedy. This hypothesis may be tested by British court decisions from the earliest times to 1997 when a new database regime (Database Directive) takes over thereafter.⁴⁵ For the purpose of this testing, 50 cases are identified, with best effort, from law digests, textbooks and subsequent cases and labelled accordingly in the Appendix, and are divided into the three types of databases described below. Within the public sourced database, a special category is identified where the selection of content is not wholesale but involves individual creativity in its selection or composition. Also, indicated in the public source databases category is whether the database owner can be characterised as the ‘cheapest cost compiler’ because of his unique position.

9. Results

Of the 50 cases examined, only one of the decisions partially resembles a liability rule remedy (P24). Six sole-sourced databases were examined: one granted an injunction (S4), three interlocutory injunctions (S1, S6, S7), one was held to have no copyright (S3), one copyrighted was recognised and had the case remitted back to the trial court (S2), and another was declared to have copyright, but no injunctive remedy for the potential future injunction was known (S5). This last case is to be contrasted with another case with similar circumstances (C6), namely unknown future football lists, where an injunction was granted. In the case where an interlocutory injunction was granted (S6), it was noted that a licensing scheme for the database was available.

Seven quasi-public source database cases were examined. All but one had an injunction granted. In the one where the Appeal Court found no infringement (Q7), it was because the defendant claimed to have obtained the information from the physical components sold by the plaintiff instead of copying straight from the plaintiff’s database. This is a case where “reverse-engineering” of information is allowed. In all but one cases, there were substantial network effect in the use of the information, *e.g.* telegraphic codes, shorthand codes, and compatible after-market components for cutter-crush machines.

In the category of public source databases, excluding those with creative or unique selection or composition of data, thirty cases were investigated. The remedies ordered were more varied. Fourteen injunctions were ordered or maintained. Two preliminary or interlocutory injunctions ordered. Nine cases were dismissed or found to be not infringing, partly on the ground that the database is not protected by copyright. Two cases were referred to a jury or an arbitrator with no result reported. In one single case, nominal damages were ordered on the ground that the defendant contributed substantial improvement to the work copied (P6); and another had only damages as there is no more potential future infringement of the said matter (P24). Nevertheless, case (P24) *H. Blacklock & Co. v. C. Arthur Pearson* (1915) cannot be strictly termed

⁴⁵ Directive 96/9/EC of the European Parliament and the Council of 11 March 1996 on the legal protection on databases (Database Directive), [1996] OJ L 77/20.

as a liability rule remedy in a copyright sense, because it does not cover future use of the copyright material.

As for public-sourced database exhibiting creative or unique selection or composition of information, four cases had injunctions granted, while two were held not to be entitled copyright protection (C4) or were not infringing (C5).

The cases examined suggest that property rule remedies in the form of injunctions are the predominant results in sole-sourced, quasi-public sourced databases, and public-sourced databases with creative selection. General public-sourced databases show a mixed result with injunctions granted slightly more often than when infringement of copyright was rejected. A careful examination of public-sourced database cases further shows a general trend of granting of injunction against infringement after (P12) *Kelly v. Morris* (1866).

In conclusion, the hypothesis that courts will grant efficient solution in the form of a liability rule remedy is rejected. This finding however must be qualified, as it does not wholly reject Posner's efficient common law hypothesis, but only in regards to tables and compilations cases.

10. Discussion

There are a few possible explanations for the results obtained. First, almost all the cases on tables and compilations are heard in the Court of Chancery or the equity court. Traditionally, this court is an alternative to the King's Bench or Queen's Bench which provides the common law remedy of damages. The Chancery on the other hand provides injunctions as remedies, and accounts of profits following an injunction. Thus so, a counter-argument can be made by reference to the practice of the Scottish Court of Session. In the handful of Scottish cases examined, the court had no problem or reservation against granting an interdict. Therefore, this phenomenon can be rationalised as that granting of injunctions and interdicts is supply driven—offered by the court—rather than demand driven—requested by the claimants.

The second reason is that of path dependence. Courts are bound by the doctrine of *stare decisis*, which means that courts are obliged to follow the same reasoning in earlier decisions. Since the earliest copyright infringement cases, injunctions have been granted in the Chancery. Hence, courts in subsequent cases follow what had been decided. Likewise in the law and economics literature, Backhaus and Blume and Rubinfeld have argued that precedent can hamper the efficient evolution of law.⁴⁶

The third possible explanation is that it is difficult to compute damages in the case of copyright infringement, especially for potential prospective use. Courts are anathema to prescribing prices for compulsory licensing or damages for unique goods.⁴⁷ In most cases, each copyrighted work is a unique work with no perfect substitute in the market. Hence there is no equivalent price to determine compensation. Also, the

⁴⁶ J G Backhaus, "Efficient statute law" in P Newman (ed) *New Palgrave Dictionary of Economics and the Law* (1998), 24–28; L E Blume and D L Rubinfeld, "The dynamics of the legal process" (1982) 11 *Journal of Legal Studies* 405–419.

⁴⁷ W Pengilly, "The Privy Council speak on essential facilities access in New Zealand: What are the Australasian lessons?" (1995) 3 *Competition & Consumer Law Journal* 1–92.

copyright owner might not be willing to divulge its own accounts for the court to assess compensation.

11. Epilogue

The EU Database Directive which was passed by the European Council and Parliament introduced two forms of protection for databases. Implementation of this Directive came into force on 1 January 1998.⁴⁸ Databases, specifically defined as “collection[s] of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means,”⁴⁹ which, by reason of the selection or arrangement of their contents, constitute the author’s own intellectual creation are protected as such by copyright.⁵⁰ A separate sui generis database right exists for “a database which shows that there has been qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents to prevent extraction and/or re-utilization of the whole or of a substantial part, evaluated qualitatively and/or quantitatively, of the contents of that database.”⁵¹ No other form or criterion of protection for databases is supposed to exist when the Database Directive is being implemented,⁵² although UK’s implementation retained its copyright for tables or compilations other than databases.⁵³ Nevertheless, given the broad definition for a database, it is difficult to envisage any table or compilation which is not a database.

Although a higher “intellectual creation” criterion for copyright protection of databases was standard fare in many continental European countries even before the Database Directive, the sui generis database right was a new legislative. National courts hearing a case on the relevant provisions were not certain as to how the test of having “qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents” was to be interpreted. In four largely similar references,⁵⁴ the ECJ gave its interpretation to the question of what constitutes a database under the Database Directive. In particular, the ECJ had to answer the question on whether creation of data as opposed the collection of data at large, falls within the scope of “obtaining, verification or presentation of the [database] contents”. By examining the preamble of the Database Directive and applying a strict interpretation to the phrase “obtaining, verification or presentation”, the ECJ answered this question in the negative. Consequently, sole-sourced databases

⁴⁸ Database Directive, Article 16(1).

⁴⁹ Database Directive, Article 1(2).

⁵⁰ Database Directive, Article 3(1).

⁵¹ Database Directive, Article 7(1).

⁵² Database Directive, Article 3(1).

⁵³ See, E Derclaye, “Do sections 3 and 3A of the CDPA violate the Database Directive? A closer look at the definition of a database in the UK and its compatibility with European law” (2002) 24 *European Intellectual Property Review* 466–474.

⁵⁴ *Fixtures Marketing Ltd. v. Oy Veikkaus Ab*, Case C-46/02, [2004] ECR I-10365; *The British Horseracing Board Ltd and Ors. v. The William Hill Organization Ltd.*, Case C-203/02, [2004] ECR I-10415; *Fixtures Marketing Ltd. v. Svenska Spel AB*, Case C-338/02, [2004] ECR I-10497; *Fixtures Marketing Ltd. v. Organismos Prognostikon Agonon Podosfairou AE (OPAP)*, Case C-444/02, [2004] ECR I-10549.

which do not exhibit any intellectual creation in the selection or arrangement of their contents get no protection under copyright or database right law.

The implication of the ECJ judgments is that a Type 2 copyright failure may occur, with the result of sub-optimal production of sole-sourced databases. Nevertheless, this might remain a theoretical conclusion, as the factual situations in the four cases above demonstrate. Perhaps, for many sole-sourced databases, the creation of database content is merely a by-product of a commercial activity, and thus there is no significant loss in the incentive to create those contents at the first place. Thus, non-protection only results in loss of revenue but not a reduction in the number of databases.

12. Conclusion

In this paper, we first define the term significant levels of abstraction. Taking that copyright protection creates two divides—the protection divide and the inference divide—around the significant levels of abstraction, we show that there can be possible six configurations of copyright protection. Within these six configurations, there can be a partial copyright protection, a complete copyright protection, or no copyright protection. Partial copyright protection leads to a market of imperfect substitutes, which some literature shows is dynamically efficient given the public good nature of copyright goods. Complete copyright protection on the other hand leads to monopoly, which we term Type 1 copyright failure. Insufficient or no copyright protection of the significant levels of abstraction leads to a market of perfect substitutes, and resurface the problem of provision of public goods, which we term Type 2 copyright failure. Further more, the wasteful nature of duplicative sunk costs to independently re-create an evidentially similar work, and its related evidential conundrum are causes for another form of copyright failure. These three forms of copyright failure can generally be identified as market failures stemming from the operation of copyright law.

In the main, we show that databases as a category of informational goods suffer from the problems of copyright failure of all three types, depending on the type of database and the form of protection. For this purpose, we identify three types of databases: sole-sourced databases, quasi-public sourced databases, and public-sourced databases. These three types of databases are analysed against three different configurations of copyright protection. These copyright failures in databases can be efficiently remedied by a liability rule, for which a detailed discussion of judicial experience in applying liability rule remedies follows.

At the end, we test a hypothesis that common law courts will make efficient decisions by granting liability rule remedies, by examining 49 decided British cases on tables and compilations of information. The results reject the hypothesis as most cases ended with an injunction, *i.e.* a property rule remedy. Three possible reasons for these findings are offered.