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The Management of Rights in the Digital Environment: Lessons from Legal A.I.

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Abstract.

Systems are being developed with the aim of managing the use of copyright protected works within the distributed communications network. Such Digital Rights Management (DRM) systems are considered integral for the commercial exploitation and control of protected works within the new medium. A central technology in DRM systems is eXtensible rights Mark-up Language (XrML), a computer language used to define and represent legal relationships and rights central to protected works in electronic licences.

An electronic licence constructed with XrML, however, might have difficulty in adequately representing and implementing legal rights and relationships central to copyright law. This difficulty is illustrated by examining how mandatory copyright exceptions under U.K. law for databases and computer programs might be incapable of proper XrML representation and implementation.

The particular difficulties for databases and computer programs might be representative of a larger theoretical difficulty for the digital management of legal rights and relationships. In particular, the abstraction and distillation of rights and relationships by XrML recalls difficulties encountered by developers of legal expert systems. Examination of the difficulties inherent in formally representing legal knowledge for computational utilisation may be of use in appreciating the possible problems in using XrML-constructed licences to manage on-line content distribution.

1. Digital Management of Rights.

A DRM system is not an independently conceived system, but rather it utilises a variety of hardware and software components[2] in order to achieve an appropriate level of control and management for content distribution in a digital environment. The system controls and manages content use by enforcement of a "rights model"[3]. Building a system on the variety of principles and technologies of control, DRM systems are considered a complete system for rights control, offering the "description, layering, analysis, valuation, trading and monitoring of the rights over an enterprises tangible and intangible assets"[4]. A brief examination of general DRM architecture is essential in appreciating the effect of such technology on copyright. Central to the DRM system is the idea and implementation of modelling rights, or "representing rights as bits"[5].

1. 2 Rights Model

A digital rights model is a starting point and framework for formal representation and specification of rights that can be tracked and/or implemented by a technological system. Rights models, or indeed any kind of model that requires implementation by software, contains a model of real-world concepts or objects. A rights model thus formalises the uses to which a user can put a particular protected work. Representational languages such as XrML undertake the implementation of right models. Created around the core concept of a rights model is the DRM architecture. Rosenblatt has provided a useful DRM reference architecture[6], which identifies three essential components, a *content server*, a *licence server* and a *client*.

1.3 DRM Architecture.

1.3.1 *Content Server*.

Situated behind the firewall of the content provider, the content server will generally consist of the content itself, information about content products that are to be distributed and the appropriate technology to prepare content for DRM distribution. The content is held in a content repository, essentially a simple file server or database system, which will also contain content metadata (information about the content). Metadata is usually a catalogue intended for use in a vendor's e-commerce shop. The DRM packager is the software system which prepares content for distribution throughout the system. Integral to the DRM packaging process is the ability to create descriptions of the rights that the content provider wants to allow the user to exercise on the content. Thus, a modelled distillation of legal rights to information becomes part of the commercial product.

1.3.2 *Licence Server*

The licence server contains information concerning the user, identifies the content to be used, and, importantly, specifies rights in relation to both user and content. General implementation of a licence involves the DRM packager creating rights specifications, and transferring such rights to the licence server, which are then rendered in the licence transferred to the user.

1.3.4 *Client*

In undertaking any transaction within DRM architecture, the client will utilise a DRM controller, a rendering application and an identification mechanism. The DRM controller can be an independent piece of software, an integral part of a rendering application, or a hardware device. A DRM controller will carry out a number of functions; undertaking the exercise of certain rights for content that the user requests; collating information on the user and communicating with the licence server in order to obtain a licence; clarifying and authenticating all applications; and performing all encryption/decryption functions.

1.4 Specifying Rights - eXtensible rights Mark-up Language (XrML.)

The problem inherent in digital rights management technology is that a specification language must formally represent both legal rights and relationships for electronic utilisation. Such rights and relationships, it can be argued, are fuzzy in both meaning and interpretation. XrML represented rights, however, must be machine-readable, and therefore not fuzzy. Although a number of languages are in development the dominant rights specification standard is XrML. XrML is defined generally as a “language to specify rights”[7]. More specifically, it has been defined as an “XML-based usage grammar for specifying rights and conditions to control the access to digital content and services”. In less technical language, XrML simply purports to allow a programmer to model the form of something (in this instance, the form of legal rights), without modelling its implementation (without saying how it should be used). Rights owners can then later utilise formal XrML terms to construct licences determining how content is managed. A brief description of XrML language terms is useful in appreciating how formally it models terms for managing distribution of copyright works [8].

The core conceptual elements of the language are a) identification of *parties* allowed to use digital resources, b) identification of *rights* available to those parties and c), the *terms* and *conditions* under which rights may be exercised. The XrML 2.0 data model consists of four central conceptual terms and the relationship between those identities.

The central terms are *Principal*, *Right*, *Resource* and *Condition*.

- The *principal* term is the technical identifier for any party to whom rights are granted. Any person who is the *principal* would be identified using an associated authentication mechanism.
- *Right* is the technical identifier for a verb that the *principal* can be granted to exercise in reference to a particular *resource*. A *right* relates to an action or collection of actions that may be undertaken in connection with the *resource*. The XrML core contains both an *abstract right* element, to contain information about rights, and a set of commonly used *specific rights* relating to other rights, for example *revoke*.
- *Resource* is the technical identifier for the object in question. Using the previous terms we can state that a *principal* can be granted a *right* in order to use a *resource*. The *principal* element identifies the person to whom the grant is issued. The *right* element identifies the activity that that can be undertaken. The *resource* element identifies the object that can be used.
- Finally, *Condition* is the technical identifier for the terms, conditions, and obligations under which rights can be exercised. For example, a *right* may be issued to a *principal* in order to use a *resource* within a certain timeframe. The timeframe is the *condition* under which the right is used.

The four terms (*Principal, Right, Resource, Condition*), are the conceptual core of the data model. However, what defines and relates the four terms is the *grant* element. An XrML *grant* is issued to a *principal*; the *grant* is a specific right to do something, the *grant* specifies a particular resource and the *grant* is limited by conditions. In addition to the grant element, the *licence* construct builds on and incorporates all previous elements, and is, conceptually, the issuance of grants to their issuing parties. In this respect a *licence* will involve an *issuer*, a *principal*, a *resource*, *rights*, *conditions*, and *grants*.

A basic utilisation of the XrML terms identified above in the management of on-line content distribution and use would be as follows.

Example 1 – An XrML constructed licence to allow anyone to print a given piece of content available online. (My descriptive comments are underlined).

<*license* (**This is a licence....**
<*grant*> (**That provides a grant to**.....
<*cx:print* /> (print...
<*cx:digitalWork*> (**A certain piece of work....**
<*cx:locator*> (**at a given location – see sample url.)**
<*nonSecureIndirect URI="http://www.sample.com* />
</*cx:locator*>
</*cx:digitalWork*>
</*grant*>
</*license*>[9]

Using the extensibility of XrML and the core foundational terms as described above, content owners can control the use of a work in a number of restrictive ways for efficient profit maximisation.

Example 2 – An XrML Licence that allows a user to print only on the basis that they have relevant encryption key.

<*license* **(This is a licence....**
<*grant*> **(that provides a grant....**
<*keyHolder*> **(to a certain key holder.....**
<*info*> **(who has the information regarding confirmation of keys....**
<*dsig:KeyValue*>
<*dsig:RSAKeyValue*>
<*dsig:Modulus*>***Fa7wo6NYfmvGqy4ACSWcNmuQfbejSZx7aCibIgkYswUeTCrmS0h27GJrA15S***
<*dsig:Exponent*>***AQABAA==***</*dsig:Exponent*>
</*dsig:RSAKeyValue*>
</*dsig:KeyValue*>
</*info*>
</*keyHolder*>
<*cx:print* /> (to print ...
<*cx:digitalWork*> **(a piece of content at ....**
<*cx:locator*> **(the following location.....**
<*nonSecureIndirect URI="http://www.sample.com* />
</*cx:locator*>
</*cx:digitalWork*>
</*grant*>
</*license*>*[10]*

Thus the rationale of XrML, as illustrated above, is the distillation of legal rights and relationships. Practical difficulties in using XrML licensing technology to distribute content on-line can be illustrated by looking at mandatory exceptions in U.K. copyright law.

2. Mandatory Database Exceptions.

For the purpose of UK law, a database is defined as "a collection of independent works, data or other materials which (a) are arranged in a systematic or methodical way and (b) are individually accessible by electronic or other means."[11]. Databases have the possibility of two modes of legal protection; copyright and *sui generis* protection.

2.1 Copyright Protection.

Literary copyright exists in a database by virtue of the high test of originality. Once such legal rights have been conferred by copyright, protection relates to the original aspect of the work, namely, the selection or arrangement of the contents. In this respect, the rights in respect of a database prevent the reproduction of a substantial part of the selection or arrangement of the database[12]. Copyright in a database will only be infringed by reproduction of a substantial part of the selection or arrangement of the database, implying that reproduction of an insubstantial part will not constitute infringement. The question of substantiality is a matter of degree to be decided under normal legal principles.

2.1.2 Permitted Acts

The law allows for the reproduction of an insubstantial part of the selection or arrangement of a copyright protected database. It also permits fair dealing with a database for the purposes of research or private study. However, if access and use of a database is constrained by licence or contract, it could easily be arranged that undertaking such permitted acts would constitute breach of contract. As exceptions only relate to statutory rights, the fact that an act does not infringe copyright protection does not mean that it cannot breach some other right or obligation.

2.1.3 Mandatory Exceptions

There is provision under U.K. law, however, for mandatory exceptions that cannot be overridden by contract. Section 50D (1) of the CDPA 1988 provides that it is not an infringement of copyright in a database to do anything that is necessary for access to and use of the contents of a database, if such acts are undertaken by a lawful user of a database who has the right to do *any* of the acts restricted by copyright. Importantly, the right of such a person to do this applies regardless of contractual terms or conditions prohibiting such acts; indeed any such terms are void.

Given this, an XrML licence that manages access and use of a copyright protected database online cannot prevent a person who has paid for *any* type of use to do anything necessary for access to and use of the contents. It is unlikely that XrML could accommodate the multitude of potential necessities that are implicit in S 50D (1). This issue, while of potentially marginal importance in the case of copyright protection of a database, appears of more importance when one considers *sui generis* protection of a database.

2.2 *Sui generis* Protection.

Sui generis protection is offered to a database if there has been substantial investment in obtaining, verifying or presenting the contents of a database. *Sui generis* protection ensures that it is prohibited for anyone but the owner to extract or re-utilise all or a substantial part of a database. Extraction, in relation to the contents of a database, is defined as the permanent or temporary transfer of such contents to another medium by any means or by any form[13]. This definition of extraction implies that the management of the digital use of a database protected by the database right might require a licence of permission to extract, because to view on screen would involve extraction. Re-utilisation is defined as any form of making available to the public any contents of a database[14].

2.2.1 Permitted Acts.

It is implicitly permissible for a user of a database to extract or re-utilise an insubstantial part of a sui generis protected database. In addition, Section 20 of the 1997 Copyright and Rights in Databases Regulations provides that a lawful user (that is any person who, whether under licence to do any of the prohibited acts or otherwise, has a right to use the database) can fair deal with a substantial part of the contents of a database if it is extracted for the purpose of illustration for teaching or research and not for any commercial purpose and the source is indicated. Schedule 1 of the Regulations also list other acts that can be undertaken for the purposes of public administration such as use for parliamentary or judicial proceedings, Royal Commissions and statutory inquiries and public inspection.However, as with copyright protection and exceptions if access and use of a sui generis database is constrained by licence or contract, it could easily be arranged that undertaking such permitted acts would constitute breach of express contractual terms.

2.2.2 Mandatory Exceptions.

The 1997 Database Regulations have, however, provided mandatory exceptions regarding *sui generis* protected databases. Section 19 provides that a lawful user (any person who, whether under licence to do any of the prohibited acts or otherwise, has a right to use the database) of a database that has been made available to the public in any manner can extract or reutilise insubstantial parts of the contents of the database for any purpose. This right cannot be prevented by any term or condition in the agreement regarding use. Any such term or agreement purporting to prevent the extraction or re-utilising of insubstantial parts of the database will be considered, by law, void.

How would an XrML licence managing distribution and use of a *sui generis* protected database on-line reflect the exception outlined above? The law states that anyone who pays to utilise such a database to do any of the prohibited acts must be able to, and cannot be prevented from being allowed to, extract or reutilise insubstantial parts of the contents for any purpose. Once again, I am not confident of the ability of XrML to adequately represent “insubstantial” or “any purpose”. The practical difficulties with XrML can be further demonstrated by examining mandatory exceptions in

U.K. law concerning computer programs.

2.3 Computer Programs.

A computer program is considered a literary work under the CDPA 1988[15]. Thus rights granted to an author/owner of a computer program allows the prevention of others from undertaking the same acts prohibited for other works by copyright. Similarly, the exceptions to the right for a computer program are the same as for any other protected literary work[16]. In addition, the proper exercise of an exception with regard to a computer program, while not an infringement of copyright protection, can be a breach of some other legal obligation such as a private law term restricting any acts permitted by statute[17].

2.3.1 Mandatory Exceptions.

CDPA 1988 provides for certain uses of a protected computer program that are allowed, irrespective of restrictive terms. Section 50 (A) ensures that a lawful user of a computer program can make any back-up copy of the program which is necessary for him to have for the purposes of his lawful use. Back-up copies of computer programs are made usually for safety, and for a professional individual would constitute a necessary act. Since potentially, an owner of copyright in a computer program could restrict the exercise of this necessary act, the legislation provides that the right to back-up cannot be prohibited or restricted by any private law term or agreement. Admittedly, in the context of an XrML licence managing access and use for a computer program available on-line, it may be relatively easy for such a right to be incorporated as an XrML specification. However, the possibility that an undefined number of back-up copies could be necessary for the purpose of a lawful purpose would conflict with such ease of formal representation.

The exceptions regarding the right of decompilation are rather more worrying. Section 50B provides that a lawful user of a computer program expressed in a low level language can (a) convert the computer program into a version expressed in a higher-level language, or (b) incidentally in the course of so converting the program, to copy, or decompile it[18]. The right can only be exercised if (a) such decompilation is necessary to obtain information necessary to create an independent program with can be operated with the program decompiled or with another program, and (b) the information is not used for any purpose other than the permitted objective[19]. Further reflected in statute is the fact that a lawful user may not exercise the right if (a) the information is readily available necessary to achieve the permitted objective and (b) the decompilation is not confined to such acts as are necessary to achieve the objective of interoperability[20].

If one examines the exception in the light of a computer program available for use online and controlled by an XrML licence, major difficulties arise. First, if it were attempted to incorporate the condition that any allowed decompilation must be “necessary” to create an interoperable independent program, how would necessity be considered as a formal XrML term, or within the context of formal XrML terms? Another condition to be met for lawful decompilation is that information obtained in decompilation is not used for any purpose other than the necessary objective of creating an independent interoperable computer program. How is the management of this right to be undertaken with a rights specification language when a particular use may appear unnecessary but is, in context, actually quite reasonably necessary? In exercise of the mandatory right such actions must be undertaken by the lawful user in light of consideration of actual context and not formalised as a term of specification in an XrML licence.

3. Law and Artificial Intelligence.

3.1 Expert Systems and XrML: A (somewhat) common rationale?

The rationale behind XrML shows some controversial similarities with the rationale behind

representing legal knowledge for expert system use. XrML is a language that attempts formal semantic representation of legal rights and legal relationship, such as the legal right to print a copy of a work, and the legal relationship between a licensee and licensor. Knowledge representation in an artificial intelligence context attempts to formally represent legal knowledge processes. Common to the two is the philosophical and practical thread of formalism. Thus in appreciating the difficulties inherent in knowledge representation for expert systems one can appreciate the shortcomings of XrML in attempting something quite similar.

Artificial intelligence, while an ambiguous term, can be said to mean involving the creation of computer systems that adequately undertake and complete tasks usually undertaken by human beings. A pure definition of AI would provide the addendum "tasks for which thought particular to humans is considered to be required". An expert system is a manifestation of artificial intelligence research. It is a system that performs a specific (expert) human task. Thus expert systems have been developed in a number of separate expert fields, with some degree of success[21]. An expert system purports to contain both the knowledge (the bare facts) and the expertise (interpretation of facts) required for undertaking and completing tasks in the specific expert area. For example, an expert system dealing with diagnosis of a particular group of diseases would contain facts relating to the diseases and rules for interpretation of those facts for successful diagnosis. In the early 1980's major research was undertaken in the area of legal expert systems.

3.2 Knowledge Representation & Expert Systems.

The creation of an expert system can be categorised into three distinct areas, knowledge acquisition, knowledge representation and knowledge utilisation. In order that an expert system function it must have information that can be utilised in a computer system. However, the knowledge particular to a certain area must be represented in a form that can be understood by computer systems.

The fundamental problem in representing knowledge for utilisation in a computer system thus revolves around an interesting paradox. First, in order for an expert system to utilise knowledge, the information needs to be adequately represented. However, in order to adequately represent knowledge for use on a computer system, that knowledge must be represented in a certain fashion, a formal fashion. The paradox is that some areas of knowledge lose definition when formalised. The requirement for formal representation is less of a problem in certain areas, more difficult in others. For example, the “empirically based causal, descriptive laws of the natural sciences”[22], such as medicine, geology and chemistry will undoubtedly have less fundamental problems with the transfer to formal representation, because formality is already an inherent part of their make-up.

What about Law? At first blush, the law may seem suitable for representation on an expert system. After all, the law can be described as “ a discipline concerned with the elaboration of the practical art of government through rules” its concern being “prescriptive and technical”[23]. However, two factors act to repel this initial consideration. First, knowledge can be separated into factual knowledge, readily formal, and heuristic knowledge, which is informal, judgemental discretionary. Heuristic knowledge is developed through experience and assists the expert in the application of mere facts. If one applies the distinction to a practical area of law it appears more apparent. For example, on picking up a copy of Laddies Modern Law of Copyright, one will discover the variety of statutory clauses that define exceptions to copyright protection. Also provided will be the rules, or facts, of precedent that have emanated from the Courts. However a true understanding of how the facts of statute and the rules of precedent could apply to a new and original case would only be available from someone who has practised in the field of copyright law and has expert judgement.

The second factor that would dispel any thoughts of law being suitable for formal representation is the social and political context that law operates in. Contextual considerations impart meaning to what the law is and how it develops. It is unlikely that formal computational representation can represent such important factors. The combination of these two factors means that the potential for misrepresentation, distortion and oversimplification of the way in which legal problems are dealt

with is very high.

3.3 The Exception that proves the Rule.

One company's commercial success with "expert systems" can be seen as empirical evidence of the discussion above. SoftLaw Corporation Limited[24] is an Australian company that supply what they describe as "software solutions for the administration of complex legislation, policy and procedure". The ability of Softlaw to undertake these tasks is personified in their major product, STATUTE Expert. STATUTE Expert is an expert system tool that creates rule base models of legislation or policy guidelines, so allowing computational utilisation of the legislation or policy. Established in 1989, Softlaw have had considerable success in their field. Clients include the Australian Departments of Defence, Family and Community Services, and Veterans Affairs, Environment Australia and the South Australian Community Housing Authority.

Examination of some of the projects that SoftLaw has developed applications for provides some interesting illumination as to their success. For example, the project undertaken for the Department of Family and Community Services is the EDGE Claims Processing Application System, a decision support system for the administration of family based payments under Australian social security law. The project completed for the Department of Veterans Affairs was the Compensation Claims Processing System, a system to improve the administration of compensation entitlements for military service veterans and their dependants. Without prejudice to either of these areas of legal affairs, one could suggest that accessing eligibility for benefits and calculating entitlements is hardly a matter that requires excellent legal knowledge or reasoning skills. Statutory provisions and administrative rules regarding such issues are in the main procedural and clear. In such areas of public administration the "distribution of justice" has to be utilitarian in nature. Knowledge representation is unlikely to be problematic.

It could thus be argued that the nature of the legislative material tackled by Softlaw benefits any legal expert system they care to create. It does not seem disingenuous to suggest that SoftLaw systems are successful because they minimise the elements of risk that would arise from either the standard of heuristic knowledge required in a legal area or a contextual political difficulty. Softlaw have realised that some areas of law are less contentious and more technical than most. In such scenarios, the processing and calculation of a veterans benefits is probably better done by a so-called legal "expert system" because it will free up experienced lawyers to handle cases that require knowledge experience and skill. Thus, STATUTE Expert is the exception that proves the rule and illustrates the paradox: formal representation of law will only work when law is formal itself.

3.4 XrML

The issue that requires addressing is whether distribution, use and sale of copyright works should be (or can adequately be) managed by a technology such as XrML, given its requirement for formal representation. A rights owner would respond affirmatively, because the private and formal management of his intellectual production makes as good an attempt as is possible at preventing un-authorized uses. From the perspective of a right owner managing rights *is* an administrative area of law, and should be so.

However, can the use of copyright works be separated so much from public policy considerations? Contractual use of copyright works exists in the non-digital distribution environment. What is so very different? First, in the analogue distribution environment, there is less of a requirement for complete control. In the analogue environment "All Rights Reserved" is *de jure* required, but cannot be always be *de facto* enforced, because of the technologies of distribution. One can argue that this lack of complete control over the use of works has an important subsidisation effect and benefits both economic and social activity. In the distributed communications network, a work protected by XrML within a DRM system allows for both *de jure* and *de facto* reservation of rights. No subsidisation is permitted.

Secondly, contractual arrangements in a non-digital distribution environment are subjected to both external scrutiny and flexible interpretation. Competition law and consumer law regulate private law terms regarding intellectual property. Even within the confines of contractual use of copyright material, policy considerations are imposed as illustrated by mandatory exception for databases and computer programs. All these examples provide support for the principle that while in the main, contractual use of copyright is a matter of private law, there is always the potential for contractual overridability.

4. Conclusion.

The lesson, or at least one of the lessons that appears to have been learnt by those who wish to develop practical and commercially successful "expert systems" is that in representing knowledge for utilisation in a closed computer system, the topic should ideally be administrative in nature *and* have an uncontroversial context. This requirement allows formalism of legal concepts and relationships to succeed because the topic demonstrates formal qualities naturally.

Those who want to use and those who develop XrML licences in DRM system must abide by the formalism inherent in XrML representation, but do not realise, or are indifferent to, the important fact that the topic for representation requires these attributes.

Arguably, the law relating to how protected "expressions of information" are distributed and used is *too* controversial and political. Admittedly, private law regulation of such works attempts to minimise these elements, and in theory would be expected to do so. However, as illustrated by the difficulties of XrML of representing adequately mandatory exceptions for databases and computer programmes, even in private law regulation, external considerations are borne upon copyright work use. The inadequacy of XrML in accommodating these theoretical considerations is a major flaw in XrML. The flaw is inherent because XrML, as a representational language, is inherent formal. Law, even in it most rigid an incarnation, such as contract, belies a contextual fluidity.

For the right owner, distributing content on the communications network *is* an entirely administrative act, or at least the right owner wants it to be. This is why right owners might favour XrML licence control within a DRM environment. However, the inherent formalism in XrML representation must be addressed. No longer can the use of *all* copyright material be considered as a mere property right that can be traded and licensed to the ignorance of other considerations. Over the last 20 years competition and consumer law has made its presence felt in the previously isolated area of copyright law. More recently human rights and public interest considerations are bearing upon the use of copyright. XrML licences, and DRM systems operate a philosophical model that rejects the complexity of external political consideration. Given this, the management of rights in the digital environment must be thoroughly examined and remedies may be required where such management is, possibly, inequitable.

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[2] Components such as encryption/decryption software, watermarking, rights expression languages. More recent DRM hard/software components include Intel and Microsoft initiatives under the

auspices of the Trusted Computing Platform Alliance, initiatives such as Microsoft's Next Generation Secure Computing Base, essentially an operating system within an operating system that can be configured to manage the use of content on the main operating system.
[3] Rosenblatt, B., et al, *Digital Rights Management: Business and Technology*, M&T Books, 2002.
[4] Open Digital Rights Language (ODRL), Version 1.1, 2002.
[5] *Supra* 2, p.59.
[6] *Supra* 2, p.79.
[7] XrML 2.0 Technical Overview.
[8] This description is based on the most recent technical specification of XrML 2.0 Technical Overview, Version 1.0, March 8, 2002,
at http://www.xrml.org/reference/XrMLTechnicalOverviewV1.pdf
[9] Adopted from XrML 2.0 Specifications & Schema
[10] Adopted from XrML 2.0 Specification and Schema.
[11] CDPA 1988 Part 1, Chapter 1 Section 3a (1).
[12] CDPA 1988 S. 16 3 (a).
[13] Copyright and Rights in Databases Regulations 1997, Section 12 (1)
[14] *Ibid.*
[15] CDPA 1988, S. 3(1) (B)
[16] CDPA 1988, Ch. III.
[17] CDPA 1988, S. 28 (1)
[18] CDPA 1988, S. 50B
[19] CDPA 1988, S. 50B (2)
[20] CDPA 1988, S. 50B (3)
[21] For example, DENDRAL, used for inference of molecular structures of unknown molecules and developed at Stanford University in 1965; PROSPECTOR, an intelligent assistant that dealt with the location of ore deposits for geologists based on geological data; MYCIN, a medical consultative system that provides advice on diagnosis and antibiotic therapy for infectious diseases such as blood infections and meningitis; CADUCEUS, a diagnostic tool for internal medicine; and CASENET, a diagnostic tool for glaucoma.
[22] Susskind, R. *Transforming the Law* OUP 2000, p. 193
[23] Cotterrell, *The Sociology of Law* Butterworths 1984 p. 23
[24] www.softlaw.com