Prometheus, Vol. 22, No. 4, December 2004

Carfax Publishing
Taylor & Francis Group

Property and Intellectual Property: Foundations in Law and Economics[1]

C. W. MAUGHAN†

ABSTRACT *The simplicity of the lay view, the complexity of the legal and economic concepts of ownership and property, and the real life gains that are to be made from using the simplistic view to justify the creation of monopoly rights, has led to considerable and often deliberate confusion in discussions about intellectual property. To reduce the confusion, this paper considers the legal and economic aspects of property. First the legal taxonomy of property, including intellectual property, is described. Then, a law and economics model of intellectual property is built, stressing not only the economic gains but also the economic losses that result from treating property as some 'thing' that can be monopolised. The paper then argues that the central policy issue is to devise methods of creating and protecting intellectual property that balance the gains from creation and protection (incentives to invest, improvements in information markets) against the losses (potential monopolisation of knowledge). A tentative conclusion is drawn that such a policy may well involve weakening present copyright and patent rights, and treating copyright and patents as if they were more analogous to trademarks. Alternatives might be to require greater dissemination of protected intellectual property by allowing two part pricing in different markets.*

Keywords: copyright; gains and losses; intellectual property; law and economics model; patents; two part pricing

Introduction

Lay concepts of property, including intellectual property, tend to be based on the idea that there is an easily identifiable 'thing', the property, which can be 'owned' by a person or group of persons, and used in whatever way the owner wishes for the economic benefit of the owner. If justification of this view is required then reference is made to the obvious physical characteristics of much property, to phenomena such as the sale and purchase of property, and to the 'rights' of the owner to do for the most part whatever they want with what they 'own'. Where evidence to the contrary exists in the form of planning and use restrictions, or compulsory purchase, the evidence is glossed over or thought of as a separate issue.

Prometheus ISSN 0810-9028 print/ISSN 1470-1030 online © 2004 Taylor & Francis Ltd
http://www.tandf.co.uk/journals
DOI: 10.1080/0810902041233131623

All of these concepts can be shown to be largely invalid, both in legal and economic terms. Ownership, though technically the highest estate in property, is not absolute ownership: the rights of the owner are socially circumscribed in many different ways for a variety of purposes, and may be curtailed at any time. Again, private and social benefit are not synonymous: where an individual acquires a monopoly ownership right to a resource and restricts quantities of that resource in order to raise prices, the individual will benefit, society will lose. Moreover, property, even when it is real and tangible, is not so much a 'thing' as a complex bundle of socially defined relationships, each of which sets out the rights (and obligations) of those who have estates in property and the ways in which these rights may be enforced.

The simplicity of the lay view, the complexity of the legal and economic concepts of ownership and property, and the real life gains that are to be made from using the simplistic view to justify the creation of monopoly rights, has led to considerable and often deliberate confusion in discussions about intellectual property. This paper will argue that little progress can be made in developing soundly based intellectual property policies until the confusion is removed. As part of the process of reducing the confusion, the paper considers the legal and economic aspects of property. First the legal taxonomy of property, including intellectual property is described. Then, a law and economics model of intellectual property is built, stressing not only the economic gains but also the economic losses that result from treating property as some 'thing' that can be monopolised. The paper then argues that the central policy issue is to devise methods of creating and protecting intellectual property that balance the gains from creation and protection (incentives to invest, improvements in information markets) against the losses (potential monopolisation of knowledge). A tentative conclusion is drawn that such a policy may well involve weakening present copyright and patent rights (essentially monopoly rights that reify intellectual property and defend it against all comers) and treating copyright and patent as if they were more analogous to trademarks (which are devices for improving flows of information—defensible only against specific persons who misuse them). Alternatives might be to require greater dissemination of protected intellectual property by allowing two part pricing in different markets.

The Legal Taxonomy of Property: the Place of Intellectual Property

The legal taxonomy of property is well established: it is divided into two parts—real property and personal property. Real property is defined as,

> Land of any tenure, and mines and minerals, whether or not held apart from the surface, buildings or parts of buildings (whether the division is horizontal or vertical or made in any other way) and other corporeal hereditaments; also a manor, an advowson, and a rent and other incorporeal hereditaments, and an easement, right, privilege, or benefit in, over or derived from land.[2]

Personal property is all other property—the residual that refers to all other goods/resources over which a 'quantum of socially permissible power'[3] may be exercised in addition to land.

The division between real and personal property is the result of historical development. Real property owes its origins to the feudal system of tenure and estates, whereby all land is held from and through the Crown; and real property is

protected at law by real actions which allow recovery of the land if the owner is dispossessed (actions *in rem*). Actions *in rem* are actions that are enforceable against the world, not just against a specific person. Real property is therefore strongly protected and the universal enforceability tends to create the impression that real property is a 'thing'.

Historically, no such structure or real actions applied to property other than land,[4] although various procedures analogous to the *in rem* actions of real property have evolved for leasehold land (a type of personal property which was originally treated by mediaeval lawyers as a contractual obligation) and for other types of personal property. In general, property other than land was historically protected by an action *in personam* (against the person). Personal property is therefore much less of a 'thing' than real property, particularly where the property is intangible. Nevertheless by analogy, and often in the hope of getting universal enforceability, lay persons treat even personal property as a 'thing'.

Personal property is itself subdivided at law into *chattels real* (leasehold land) and *chattels personal* (all other forms of personal property: chattels personal may be *choses in possession*, most corporeal movable property; or *choses in action*, an amorphous category embracing diverse types of intangible personal property such as debts, goodwill, shares, bills of exchange, money, and intellectual property). Prominent amongst intellectual property are *trade secrets, patents, copyright, trademarks,* and other related phenomena. Thus, legally, all types of intellectual property are classified as a sub-branch of personal property, even though some of them (the monopoly rights) have characteristics that are *in rem* rather than *in personam*.[5]

The description of the categories of intellectual property (IP) as 'intangible' and their grouping under a single heading can obscure the fact that the powers associated with IP are diverse and enforced under different laws. Patents and copyright involve the award of monopoly powers for defined periods under statutes related to property law, while powers related to trademarks are not monopoly powers but stem from usage and are protected under tort: enforcement powers related to trade secrets come mainly from contract law and from fiduciary duties in equity. Further complications arise in protecting IP because many manifestations of the intellect cannot be separated satisfactorily from the act/descriptions[6] with which they are associated (e.g. design elements, computer software, information on genes). Even when they can, there is apt to be confusion between an idea, an apparently physical but still abstract representation of an idea, and a physical product.[7]

The complexity of the concept of property per se, and the particular difficulties associated with intellectual property mean that discussions are often tortuous, sometimes misleading. Confusion arises for instance where there are major and imperfectly understood differences in property rights within and between societies,[8] and within and between different types of property.[9] Moreover these differences will be exacerbated where there are strong convictions about the origin and purpose of property. The concept of socially changeable entitlements to property is, for instance, anathema to those who think in terms of absolute or primordial entitlements.[10] Even where it is accepted that rights are socially sanctioned rather than preordained, the concept of abstract and limited entitlements to property may be at variance with the common perception of property as a thing that is 'owned'.[11] Moreover the possibility that rents may accrue to all forms of property can lead to deliberate attempts to distort arguments in order to redefine existing property or create new property with a view to capturing rents.

Clarification of the basic ideas of property and ownership is therefore essential before considering what may or may not happen to a particular type of intellectual property. Such clarification requires a formal model.

A Law and Economics Approach to Property

Economic Analysis

Economic analysis of the law presupposes that there is a commonly shared definition of economic analysis. Despite the plethora of economic text books and a more or less common acceptance among economists of the principles of micro-economics, there are differences of opinion as to how to use economics as an analytical tool.[12] One methodology is to start with the 'basic' classical micro-economic model[13] of resource allocation by individuals[14] through voluntary exchanges in competitive markets with undistorted prices as signals. In the basic model the persons exchanging the goods are individuals, not firms or governments, and the goods exchanged are *private goods*, such as food and clothing. Private goods have the characteristics that they are depletable, that each consumer may choose different quantities to consume, and that the owner of the good may easily (cheaply) exclude other people from consuming the goods (in economic terms they are 'rival in consumption').

In contrast, *public goods* (such as defence, law and order, the landscape, television signals, and knowledge) have the characteristics that they are non-depletable, that all consumers 'consume'[15] the same quantity regardless of their preferences, and that the owner of the good cannot easily (cheaply) exclude other people from consumption. Since public goods contravene the idea, essential to the basic model, of voluntary exchange according to personal preferences they are not included in the basic model. However, since public goods are very much part of real life, the basic model has to be extended to be of practical use. Similarly the existence of real life group activities such as governments and economic firms—both assumed away in the individual exchanges of the basic model—needs also to be included in an extended model. The basic model is therefore modified to take account of these real life activities. There are three main extensions in the 'extended' model. First, *governments* are included as decision makers on what to do about public goods and as providers of some public goods (notably rules and laws and defence). Second, *economic firms* are included as reducers of the costs of multiple contracting.[16] Third, various real life practices such as advertising, information markets, and insurance are also included in the extended model as responses to other real life transaction costs.[17]

Property Rights in General

The basic model does not include any specific mention of property rights except to talk about endowments, and to imply that goods and resources are transferable. However in both the basic and the extended models there are, or there must be assumed to be, a set of property rights with the particular characteristics needed to attain economic efficiency. Without them it would not be possible to have endowments: it would not be possible to protect resources from free riders: voluntary trade might be replaced by theft.[18] Within these constraints, property can be conceptually analysed in the following way.

1. *Property* is whatever societies choose to define as property and can protect as property.[19] In some societies people are property; in most societies land and transferable goods are property; in many societies various manifestations of the intellect are property. Land is often conceived of as the primary form of property and other forms of property are defined later, sometimes in an analogous manner, sometimes not.[20]
2. Various rules are associated with property in order to make clear who is entitled to use the property, and in what way they are entitled to use it. These rules or *property rights* may be defined as 'attributes of property created by enforceable rules of obligation'.[21]
3. Three basic types of entitlement can be used when protecting and transferring property—property rules, liability rules and inalienability.[22] *Property rules* specify that if someone wishes to remove the entitlement from its holder, that person must buy it in a voluntary exchange process on the open market. *Liability rules* specify that when someone wishes to remove the entitlement, they must pay an objectively determined value for it. Here the 'price' is set not by a market but by an arbiter of some kind. *Inalienability* specifies that the entitlement is not transferable between a willing buyer and a willing seller: any transfer or modification is solely the prerogative of the state. It should be clear that most entitlements in real life are mixed. For instance, a house may be sold under a property rule, purchased by government for public works under a liability rule, and have its form preserved as a listed building under an inalienability rule. In terms of economic efficiency the property rule is preferable in that it involves the least compulsion.
4. The rules are socially sanctioned, and may be made and changed in any way that society decides. Since the rules apply to everyone and since they are 'consumed' in the same quantity by everyone, they may be viewed as economic public goods that are usually, but not always, provided by central government. (This view will be contested by those who think in terms of divine or primordial rights.)
5. In a democratic society the basic nature of property rights can only be changed by society, not by the individual. Nevertheless the rules are changed[23] from time to time; and the existence of a particular set of rules at a particular time should not obscure the fact that the property rule needed to operate economic markets can be changed at any time to a liability rule or even to inalienability by majority voting. Conversely land thought to be held under an inalienability rule can be transferred to a property rule.[24]
6. According to Hohfeld[25] all property rights (including ownership) are definable in terms of a limited number of three-term relationships between one person, one act-description, and one other person. For example, a writer has a tripartite relationship with the act/description of publishing, and with the publisher. The exact nature of the relationships is unimportant for this article, but the central point that Hohfeld is making is that property rights (and hence property) involve a 'stack' of socially defined tripartite relationships between holders of the rights (A_1, A_2, … A_n), a vector of persons (Z_1, Z_2, … Z_m), and various act/descriptions concerned with property. These relationships specify what the individuals may or may not do in relation to property. Property is therefore not so much a thing (as real property is characterised at law) as a bundle of relationships between people and various acts/descriptions connected with the 'thing'.
7. Ownership of property is primarily based on the principle of exclusion—i.e. person *A*, the owner, may exclude person *Z* from certain act descriptions

connected with the property. For convenience this characteristic of property may be called *exclusivity*.

8. From an economic viewpoint the purpose of exclusivity is to ensure that the costs and benefits associated with property are clearly assigned. Those who incur costs in relation to property should pay those costs and reap the benefits. Conversely those who do not incur the costs should not pay the costs and should not reap the benefits. Demsetz describes this process by saying that 'the essence of property is that costs are to be borne'.[26] The usufruct idea that lies behind exclusivity needs to be treated with caution. Costs, in economic terms, do not include supra-normal profits, and the barriers which create exclusivity must be high enough to allow recovery of the marginal cost of production if the property is transferred, but not so high as to create monopoly rents. In Demsetzian parlance the barriers that create exclusivity must have the characteristic of *efficient scale*.
9. All rights must be enforceable, if the concept of a right is to have any practical application. This is the characteristic of *enforceability*. In Hohfeldian terms, *enforceability* is based on a claim right to enforce a claim right and a corresponding duty to accept that claim right. From an economic perspective, voluntary and unanimous acceptance of the principle of enforceability is to be preferred to imposed enforceability on the grounds that voluntary contracting is to be preferred to compulsion. Such voluntary acceptance, combined with voluntary acceptance of the initial disposition of rights and the nature of rights would give the rights the characteristic of *acceptability*.
10. In addition to the rights which are based on characteristics of exclusivity, enforceability, and acceptability, other property rights, some very detailed and specific, may attach themselves to property. From an economic viewpoint, specification of the relationships so as to allow the transfer of property from one person to another creates the important economic characteristic of *transferability*.[27]
11. The different rights may coexist and even overlap for the same piece of property and may best be thought of as a 'stack' or bundle of rights. From an economic, but not necessarily from a legal perspective, it is this stack or bundle of rights which is traded in the market place. In theory it should be possible to define a complete set of relationships between all people for all possible act descriptions in relation to all property. Such a full set of stacks of rights would have the characteristic of *universality*, and, provided that the initial assignment of all rights was acceptable to all parties and provided that the various rights were tradable, the characteristic of universality would lead to an absence of externalities (defined as unassigned costs and benefits). In real life the marginal cost of attaining universality would far exceed the marginal benefit for most resources. Consequently in real life universality is absent and external costs and benefits may exist in relation to any particular piece of property.
12. Within the stack of rights, the forms of each relationship are specified by society. However the choice of which relationships to use or enforce can often be the prerogative of the owner. For instance, an owner who has a claim right to exclude another person from their land, might grant an easement (a different relationship) across their land. Effectively this means that owners can, in some cases, change the number and type of relationships in the stack, thereby altering the characteristics of the property. They cannot, however, change the basic nature of any particular right. From the point of view of economic efficiency,

changes which assist in defining property rights (i.e. adding to the stack or clarifying existing relationships) and changes which are made voluntarily are to be preferred to changes which confuse the relationships or involve compulsion. This matter is particularly important where there are multiple owners, and multiple people affected, since the ideal of unanimous voluntary change may be too costly to attain and some form of externality might be impossible to avoid.

13. If a particular set of rights/attributes is to contribute to economic efficiency, then the rights must have the characteristics of *exclusivity, enforceability, acceptability, transferability* and *universality* and they must be of *efficient scale.*[28]

To summarise, from an economic perspective property rights are bundles or stacks of socially sanctioned and enforceable relationships specifying the rights and obligations of various people in relation to the holding, use and transfer of what any society chooses to call 'property'. Without them, costs and benefits could not be assigned (there would be market failure). Moreover, if they were ill defined or non-existent, or capable of change by compulsion, externalities might result, again creating market failure. These rights must be well defined, exclusive, enforceable, acceptable, transferable, and of efficient scale.

It should be noted however that, despite their importance to economic efficiency, in real life the rights do not always have the characteristics required for economic efficiency, since the rights are created in political markets, where conflicting objectives, lack of unanimity, bounded rationality, and guile may all contribute to the creation or change of rights in ways that impair economic efficiency. Particular problems are caused by the use of liability rules and inalienability rather than property rules, by the existence of multiple owners with conflicting objectives, by the use of majority voting to change rules, and by the existence of real life public goods from which it is difficult or costly to exclude people. Since most intellectual property is intrinsically a public good (even though it is sometimes changed into a private good by devising an exclusionary technology[29]), we need to consider next the issue of public goods.

Intellectual Property Rights: the Public Good Problem

Some societies have chosen to define and defend as legal property various manifestations of the intellect, such as written works, trademarks, paintings, designs, computer programmes, inventions and so on. There appear to be two broad rationales for this protection. The first is economic and is based on the notion that without protection there would be free-riders who used their work without paying. As a result, authors and inventors would be unable to derive an income from their work sufficient to cover their costs of production; and they would therefore tend to under-produce such works. The second is a 'Moral Right', an alternative but allied concept, allowing original authors to obtain social recognition for their work. This second rationale is not dissimilar to the first in that it allows the author/inventor to aspire to income through social recognition.

The fact that there is an economic rationale for both concepts does not mean that it should be accepted uncritically as a justification for intellectual property rights, particularly in the light of Demsetz's arguments about efficient scale,[30] and particularly in the light of the intrinsic 'public good' nature of intellectual property. An analysis of the public good nature of intellectual property shows why.

The products of the intellect intrinsically have the characteristics of public goods.[31] They are not depletable: the amount available is the same for all consumers: exclusion of consumers is potentially difficult or costly: the marginal cost of producing the work is positive, but once produced the marginal cost of adding an extra 'consumer' is close to zero, whilst the marginal benefits are greater than zero.

These characteristics mean that the market is likely to fail to produce the desired quantity of intellectual property unless steps are taken to finance the good in ways that will ensure an 'adequate' return to the authors/inventors. Unfortunately none of the known ways in which this can be done is economically efficient. Consider for instance, the four main options for financing public goods such as the products of the intellect.

1. *The provision of the goods is left to the market.* In these circumstances free riding is assumed to create under-supply. However as Posner points out,[32] absence of copyright, or of Moral Right, whilst perhaps leading to under-supply of original works, would also increase the supply of derivative works. In addition, works which were in fact protected by their uniqueness (great paintings) would still be supplied. Similar arguments might be applied to patents.[33] Overall the net losses due to an absence of rights might not be as large as theory first suggests.
2. *The products could be funded by society or by a group out of a levy or taxation and then distributed without direct charge.* In these circumstances, although the products would not be under-supplied, the product mix is not necessarily the one desired by consumers. There would be a loss of allocative efficiency and in extreme cases a loss of freedom of thought where all intellect was centrally controlled.
3. *A device for exclusion could be created, and users would then pay for the product.* This is the intellectual property right option whereby a legal barrier is erected and potential users of the product must either buy the product outright under a property rule or pay for its use under a liability rule. The option looks attractive in that it prevents under-supply and links product to consumer, but it creates economic inefficiency in that additional consumers who could be added at almost zero cost and greater than zero benefit are excluded. Thus, there is an overall welfare loss to the community which is made worse if the barriers for exclusion are too high (thereby creating monopoly rents) and if administration and monitoring costs are too high. Administration and monitoring costs are particularly high where the costs of copying are low (as they are today) and the costs of detecting and preventing copying are high.
4. *Various methods of financing the product without reference to the consumers can be used, e.g. patronage, sponsorship, advertising.* This method ensures the creation of the products, but produces a product mix determined by the sponsor not the consumer. Again allocative efficiency is impaired.

From the point of view of economics it is interesting to note that method 3 is often advocated as 'least inefficient', apparently on the grounds that it turns public goods into tradable private goods and hence encourages the voluntary exchanges of private goods that are one of the keystones of the basic model. However, as Minasian[34] points out in criticising Samuelson,[35] there is no economically efficient way of producing public goods—only a least inefficient way, given whatever constraints the society wishes to impose. A society which believes in the provision of

public goods as a moral duty would opt for methods 2 or 4; a society more inclined to the market, to methods 1 or 3. Neither can be said to be more efficient than the other since each would produce a different product and a different product mix.

Intellectual Property Rights: Public Goods and the Current System

There are four main types of intellectual property—trade secrets, patents (including petit patents), copyright, and trademarks. Virtually all other products of the intellect are unprotected in the public domain and hence without the main economic characteristics needed to qualify for classification as property (exclusivity, enforceability, transferability, universality).

It is immediately apparent that, if we consider IP as a public good, two of these categories (patents and copyright) are financed by method 3—i.e. by creating a legal barrier that excludes those who do not pay. Thus they are public goods converted into private goods. From the point of view of economic efficiency this procedure, as we have noted above, has the merit of ensuring that the incentives to produce IP exist, and that costs of development can be recovered. However it has the demerit that if the exclusionary barriers are too high, there will be restricted production and monopoly pricing (inefficiencies due to monopoly) and that, even if the barriers are of efficient scale for a private good, there will still be inefficiencies due to the exclusion of infra marginal consumers who could be included at almost zero cost. We return to this theme later, with some suggestions of how these demerits may be ameliorated.

The other two types of property do not involve the creation of legal barriers. Instead trade secrets are made exclusive under contract and equity, and trademarks under tort. These 'rights' are not therefore rights *in rem*—they are *in personam*. From the perspective of public goods they therefore represent something of a puzzle. Are contract, equity and tort being used as a barrier to entry to create a kind of de facto monopoly property. Or is something else happening? In the case of trademarks, some writers[36] assert that large sunk expenditures on advertising and branding do indeed create barriers to entry, and hence that trademarks are devices for creating and defending (economically inefficient) monopoly rents. Certainly the spatial models indicate that price will be above marginal cost if large product 'spaces' are monopolised,[37] and empirically the FTC even went as far as to suggest compulsory licensing of trademarks.[38] However other writers[39] disagree, asserting that trademarks are part of real life information markets that allow product characteristics to be identified easily and quickly, thereby reducing the costs of exchange in the presence of real life transaction costs. Empirically it is difficult to demonstrate that either view is correct,[40] and largely on the grounds of Reder's article the (pro-competitive) information markets explanation is preferred in this article, and trademarks are viewed as a 'least inefficient' solution to real life transaction costs. The tendency to try to capture the law by defending trademarks on dubious grounds[41] is, however, noted. Trademarks are, in general, consistent with economic efficiency although there needs to be continuous monitoring of the empirical process of awarding and defending the marks.

The question of whether trade secrets are economically efficient, is again difficult to resolve. Essentially the problem posed by trade secrets is the problem, referred to by Demsetz,[42] of determining the relationship between a property right of efficient scale and a monopoly property right. Since the problem is one which involves more than economic values (how for instance might one lower barriers to

trade secrets without interfering with human rights), it cannot readily be solved: it can only be noted, together with the observation that from the point of view of businesses trade secrets, backed by contractual and fiduciary obligations, are often a cost efficient way of protecting IP.

To summarise, at least two of the main types of intellectual property (patents and copyright) are created by the privatisation of public goods by using a legal barrier. They will inevitably lead to some loss of welfare. Trademarks on the other hand are not so much property as devices for improving information markets, and provided they are kept as such, contribute to 'least inefficient practices'. Trade secrets are very difficult to categorise in terms of economic efficiency in that they involve non-economic values as well as economic values.

Intellectual Property Rights: Public Goods and Future Systems

If we use the above analysis and consider possible trends in IP, one thing immediately becomes apparent. Regardless of whether the goal of 'privatised' IP is economic efficiency or business profit, the development of electronic communications, reverse engineering, and scientific analysis in an increasingly global economy has undermined the concepts of patent and copyright. Costs of copying are very low for music, the printed word and even works of art: costs of monitoring and protecting rights are very high. Similarly, reverse engineering and simple copying in countries with low labour costs and no respect for IP barriers leads to erosion of rents for many goods and inventions. The growth in parallel importing, in delivery of information, films and music via the Internet, and legal decisions leading to rent erosions in the developing world, all confirm that these trends are likely to continue.

From an economic perspective, one of two possible outcomes is likely to eventuate. Either monopoly barriers will be strengthened and possibly extended to non-monopoly areas such as trademarks: or the marginal cost of protecting monopoly rights may in time exceed the marginal benefit, and the statutory barriers will wither. From the point of view of economic efficiency, neither of these outcomes would be wholly desirable since the first could extend the losses due to monopolies: the second could lead, at least in theory, to under-investment in technology development. Alternatives do, however, exist and are already in use, and perhaps we might today focus on some of these.

First, it might be possible to strengthen the monopoly barriers in order to increase the incentive to invest (this would require co-operative world policing of marks) but simultaneously weaken the marks (again on a world agreed basis) either through time or between countries by using two part pricing. Two part pricing or *price discrimination*, whereby markets are kept separate—i.e. no parallel importing—and whereby different prices are charged in different markets, has the merit of increasing economic welfare by increasing the amount of the product produced, but protecting investments by getting a higher price in some markets. Such a procedure already exists for agricultural technology such as hybrid seeds, where the seeds are sold in high priced markets first, then later in lower priced markets.

Second we might revert to a situation in which legal barriers are weakened and concepts of user-pays are replaced by other forms of funding. There could, for instance, be more public funding of research, and funding of creative effort through sponsorship or advertising. Note however that each of these methods produces a different product mix.

Third, it is just possible that, in the absence of strong statutory barriers, a shift to Moral Right concepts coupled with a move towards more unique (person specific) products protected by contract, might result in IP being produced in economically efficient quantities despite the absence of barriers. Elvis Presley, when asked about the 'uniqueness' of his voice, replied that 'it's not my voice: it's the way I use it'. This is the concept behind trademarks. Perhaps the concept needs to be extended to work now protected by copyright and patent, and backed up by increased rewards to innovation from sponsorship, advertising and general taxation. But then, I may just be advocating a return to where IP began.

Notes and References

1. *Editorial note.* When my colleague, the economist C. W. (Bill) Maughan died in the autumn of 2001, he left an important paper. An early working title was 'De rerum natura: What is intellectual property?' (a witty reference to Lucretius' classic 'On the nature of things'). A later version was delivered in June 2001 at the Symposium 'A New Feudalism of Ideas?' at Bournemouth University, and I edited it for proceedings at http://www.cippm.org.uk. In my view, this paper contains perhaps the best synthesis of the economic conception of property. The first note of the original manuscript acknowledges 'helpful comments on earlier drafts' by Louise Duberg, Bournemouth Law School, and myself. This new note, and the abstract written by Prometheus editor Don Lamberton, are the only substantial changes to the last version of the manuscript approved by Bill in September 2001.
   Martin Kretschmer, Professor of Information Jurisprudence, Centre for Intellectual Property Policy & Management, Bournemouth University, UK.
2. Kevin Gray, *Elements of Land Law*, 2nd edition, Butterworths, 1993, at p. 5.
3. K. Gray and S. F. Gray, 'The idea of property in land', in S. Bright and J. Dewar (eds), *Land Law, Themes and Perspectives*, Cambridge University Press, 1998, at p. 16.
4. This section draws material from Michael Bridge, *Personal Property Law*, Blackstone Press, 1996.
5. The inclusion of property rights *in rem* in personal property demonstrates the tendency for property to be reified in order to ensure that everyone will have a duty to respect the right.
6. Cf. Wesley Newcombe Hohfeld, *Fundamental Legal Conceptions*, 4th edition, Yale University Press, 1966.
7. See C. W. Maughan, 'I'll have a Duff Unauthorised(please)', *New Zealand Law Journal*, September 1996, at p. 327.
8. See C. W. Maughan and Tanira Kingi, 'Te Ture Whenua Maori: retention and development', *New Zealand Law Journal*, 1998, at p. 27. Also T. T. Kingi and C. W. Maughan, 'Legal devices to manage customary Maori land: overcoming the conflict between retention and development', *Journal of Malaysian and Comparative Law*, 25 (special issue), 1998, at p. 253.
9. In particular within each society and sometimes in relation to each different resource within a society there will be different methods of defining and allocating entitlements, different types of entitlement rules (e.g. property rules, liability rules or inalienability), different quanta of power and types of power exercised under any particular rule, and differences in degree of simultaneity of application of powers.
10. See Maughan and Kingi, *op. cit.*
11. The power of the Crown to cancel title is often not fully understood until it is empirically experienced.
12. See for instance Simon Deakin and Alan Hughes, 'Economics and company law reform: a fruitful partnership', *Company Lawyer*, 20, 1999, at p. 212.
13. See C. W. Maughan and S. Copp, 'The Law Commission and economic methodology', *Company Lawyer*, 20, 4, 1999, at p. 124; and C. W. Maughan and S. Copp, 'Company law reform and economic methodology revisited', *Company Lawyer*, 21, 1, 2000, at p. 4. The ideas are also set out in full in C. W. Maughan and S. F. Copp, 'Economic efficiency, the role of law, and the

Old Testament', paper presented at the Conference on Biblical Economics, Center for Rationality and Interactive Decision Making, Hebrew University of Jerusalem, 4–7 June 2000.

14. The notion of individuality is controversial but underlies the influential article by R. H. Coase, 'The nature of the firm', *Economica*, New Series IV, 1937, at p. 386.
15. 'Enjoy' or 'utilise' may be better words for goods that are not depletable.
16. See C. W. Maughan and K. McGuinness, 'Towards an economic theory of the corporation', *Journal of Corporate Law Studies*, 1, 1, 2001, pp. 141–80.
17. The way in which both the basic and the extended models are used is a matter of personal choice. Following Reder (M. W. Reder, 'Chicago economics: permanence and change', *JEL*, XX, 1982, p. 1), I adopt the view that the basic model is the only model that leads to economic efficiency, but that the extended model leads to 'least inefficient' practices (see p. 11. Cf. quotation from Joan Robinson in Coase, *op. cit.*, at p. 386). I then assume that, purely in terms of utilitarian goals, economic efficiency is a first best normative welfare goal, while the 'least inefficient' practices of the extended model are a second to best goal. No other values are considered, although the existence of non–economic values is clearly acknowledged. The economic models are then used for positive analysis of real world legal phenomena-in this case IPRs–to determine what are the least inefficient procedures (purely in terms of economic efficiency) for attaining desired policy goals.
18. C. W. Maughan, 'The economics of property rights', *New Zealand Business Law Quarterly*, 1, 2, 1995, at p. 78.
19. K. Gray and S. F. Gray, *Elements of Land Law*, 3rd edition, Butterworths, 2000, at p. 95 note that, 'the law of property incorporates a series of critical value judgments reflecting the cultural norms, the social ethics and the political economy prevalent in any given society'.
20. As noted elsewhere monopoly rights are *in rem*; other personal property *in personam*.
21. See B. L. Benson, 'Emerging from the Hobbesian jungle: might takes and makes right', *Constitutional Political Economy*, 5, 2, 1994, p. 129.
22. Guido Calabresi and A. Douglas Melamed emphasise ('Property rights, liability rules, and inalienability: one view of the cathedral', *Harvard Law Review*, 85, 6, 1972, p. 1089) that in addition to deciding whom to entitle in relation to property, a society has to make a second order decision on how such entitlements are to be protected and whether an individual is to be allowed to sell or trade their entitlement.
23. The present attempt in the UK to abolish hunting with dogs is an example.
24. This process takes place when title is issued to Crown Land. Opposition to this process where crown land had originally been indigenous land, led to the passing of the Treaty of Waitangi (State Enterprises) Act in New Zealand in 1988.
25. Hohfeld, *op. cit.*
26. See H. Demsetz, 'Barriers to entry', *American Economic Review*, 72, 1, 1982, at p. 47.
27. Transferability, which is essentially the assignment of a property or liability rule to property, and hence a property right, may need to be distinguished from the process of transfer which is a matter of contract.
28. See Demsetz, *op. cit.*, and Maughan, 1995, *op. cit.*
29. It is important to realise that the characteristics of a good may be changed by using an exclusionary technology. Cable television produces an entirely different product mix from television financed from the public purse, or through advertising.
30. Demsetz, *op. cit.*
31. Very few goods are pure public goods. Many goods which have the characteristics of a public good–public lectures for instance–are limited in terms of the number of potential consumers by considerations of space. Such goods are sometimes referred to as *club goods*. The characteristics of club goods and the problem of financing them are essentially the same as for public goods. For a full discussion see J. M. Buchanan, 'An economic theory of clubs', *Economica*, 1965, pp. 1–14.
32. W. M. Landes and R. A. Posner, 'An economic analysis of copyright law', *Journal of Legal Studies*, XVIII, 1989, p. 325.

33. Many important historical technological advances occurred without the benefit of patents. The invention of the wheel and of gunpowder would be two obvious examples.
34. J. R. Minasian, 'Television pricing and the theory of public goods', *Journal of Law and Economics*, 7, 1964, pp. 71–80.
35. P. A. Samuelson, 'The pure theory of public expenditures', *Review of Economics and Statistics*, 36, 1954, p. 387.
36. See for instance R. Schmallensee, 'Entry deterrence in the ready-to-eat breakfast cereal industry', *Bell Journal of Economics*, 1978, at p. 305.
37. The spatial models are based on the work of H. Hotelling, 'Stability in competition', *Economic Journal*, 39, 1929, pp. 41–57; and S. C. Salop, 'Monopolistic competition with outside goods', *Bell Journal of Economics*, 10, 1979, pp. 141–56. They model a world in which products are differentiated solely by space. It is not possible to generalise from these models.
38. For a discussion see W. J. Lane, 'Compulsory trade mark licensing', *Southern Economic Journal*, 54, 1988, p. 643.
39. See W. M. Landes and R. A. Posner, 'Trademark law: an economic perspective', *Journal of Law and Economics*, 30, 2, 1987, p. 265 for the pro-competitive view.
40. See C. W. Maughan, *Trademarks and Trademark Litigation: A Test of the 50% Hypothesis*, University Microfilms Inc., Ann Arbor, MI, 1991.
41. See C. W. Maughan and Ruth Soetendorp, 'Systematic registration on the Internet: whose domain?', *New Zealand Law Journal*, 1998, p. 401. See also S. D. Kane, *Trademark Law*, 3rd edition, Practising Law Institute, New York City, 1987, at p. 140, for a discussion of the expansion of the concept of 'dilution'.
42. Demsetz, *op. cit.*