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Sale of Goods and Intellectual Property: Problems with Ownership

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Sale of goods and intellectual property are necessarily connected. Intellectual property rights (IPRs), such as copyright, patents, trade marks and design rights, can be discussed and analysed as a coherent whole. However, the impact of the connection between sales of goods and IPRs has been somewhat ignored from both sides (sales, and intellectual property). In the digital era, questions concerning the interrelationship of sale of goods law and intellectual property law have become particularly problematic. There are difficulties in determining the rights of purchasers of goods, due to the structure of the law on sale and doctrinal complexity in intellectual property law. In this article, the effect of potential growth in embedded and nano-technologies, as well as the impact of IPR pirates (those who take without authority), trolls (those who acquire IPRs purely for their financial re-disposition value), and tyrants (those who misuse the considerable strength of IPRs to prevent usage) will be analysed. It will be suggested that a reliance on the usual, pragmatic methods of solving the identified problems will be insufficient to deal with the growth of integrated goods.

Introduction

We are living in a digital age. Unsurprisingly, this has an impact on the role of intellectual property rights (IPRs) in society.¹ Yet, access to digital information is conditional on some sort of physical conduit. Goods enable us to access digital information. Moreover, technological development is resulting in considerable advances in integrated goods, i.e. goods which have a high level of integration between the physical functionality of the goods and the software enabling the functionality. A typical example is goods with embedded software. Integrated goods may also reach another level of integration, achievable at a nano-technological level: integration with organic matter. These examples of integrated goods will be considered later in this article, along with a third development: three dimensional (3-D) printing. With regard to 3-D printing, the integration between goods and digital information occurs during the manufacturing process, rather than resulting in the finished product. These three examples illustrate modern developments in the interconnection between people (the users), ideas (the information integrated in the goods), and goods. They necessitate the development of understanding of the jurisprudential interaction between goods, and intellectual property (IP).² The aim of this article is to provide an outline of this interaction.³

The thread that runs through this analysis is the role of ownership in transactions involving integrated goods. Specifically, this article will consider the issues that arise concerning the ownership of goods and IP in instances where both have become intertwined in such a way as

to make it difficult to conceptualise the finished product without the IP element. The types of integrated goods mentioned above are just such products. As this article considers ownership, it is necessary then to discuss the impact of the various nefarious characters involved in IP transactions and dispositions: pirates (those who take, and sometimes dispose of, IP without authorisation); trolls (those who obtain IP rights in an attempt to obtain rent from users of IP); and tyrants (those who unduly restrict IPRs under their control). It will be argued that the current doctrinal structure fails to provide a coherent mechanism for dealing with current and potential ownership disputes between owners of integrated goods and IPR holders. Furthermore, it will be argued that the current structure fails to prevent potential IP tyranny.

The Current Position

The development of information societies has had a profound impact on our current understanding of IPRs, in the context of their doctrinal structure, as well as in terms of the broader ethical and philosophical disputes which help to identify, crystallise, modify and remove the boundaries of debating intellectual property.⁴ Some considerable problems can be identified with the current position in IP law:⁵

- (1) The phenomenon of the redefinition of intellectual property is that it entails a change in the relationship between the public and private spheres ... [i.e.] which goods can be legitimately treated as commodities”.
- (2) The exclusive or monopolistic nature of IPRs where they harm “a legitimate public interest in broad access” to the things covered by such IPRs.⁶
- (3) The homogeneity of IPRs protection “independent of the area of application”.

Ultimately, “[w]e simply do not know how a society which privatises and commercialises all spheres of its cultural productivity develops”.⁷ The questions and problems are amplified when it is recognised that IPRs are “essentially negative: they are rights to stop others doing certain things”, i.e. using or copying or expressing ideas or inventions or expressions that are controlled by IPR holders.⁸

These questions also raise issues concerning goods, particularly where goods have attached IP, or there are embedded aspects of goods which are covered by IP. In an information society, with the development of an internet of things,⁹ the monopolistic power of IPRs combined with the homogenous protection provided by IP law can lead to complexities, especially when the incoherence and variability of IP protection is taken into account. These factors make it difficult to determine with certainty the validity of sales of goods, particularly (though not necessarily) in cross-border transactions. Because most IPRs are domestic in reach,¹⁰ “products may legitimately be produced in a country where no relevant rights exist, but as soon as they are exported to a jurisdiction where those rights do exist there will, in principle, be an infringement”.¹¹

A common feature of the digital age is the immense difficulty of encapsulating digital information within jurisdictional boundaries, which means that “infringement issues can potentially be brought before different national courts on a grand scale”.¹² As a consequence, what follows casts a deliberately broad jurisdictional net. What is apparent is that the limited protection provided by IP law for dealings with goods covered by IP – implied licences and

exhaustion doctrines – cannot be justified as a valid structure for the development of laws sufficient for the future technological development of integrated goods.

Rights of Purchaser

The recent “patent wars” between various manufacturers has revealed the immense complexity surrounding ownership of various IPRs which are utilised in modern technology.¹³ One of the potentially problematic consequences of the patent wars are the instances of injunctions being granted in various jurisdictions prohibiting the sale of certain products which have components or software which has infringed on IPRs.¹⁴ Such developments are not limited to the smartphone patent wars.

Thus, in *BASF SE v Sipcam (UK) Ltd*,¹⁵ BASF applied and obtained an interim injunction preventing Sipcam from selling a herbicide in the UK which BASF argued infringed its IPRs. This occurred even though the two companies had enjoyed cordial relations, which involved the claimant selling a core element of the herbicide to the defendant. The importance of the impact of such injunctions or similar legal actions which could restrict commercial activity is clearly evidenced by the presidential vetoing of the decision of the US International Trade Commission prohibiting sales of certain Apple products that infringed a Samsung patent,¹⁶ on the basis of “the various policy considerations ... as they relate to the effect on competitive conditions in the U.S. economy and the effect on U.S. consumers”.¹⁷

These developments beg two simple questions: what can a purchaser do if he has obtained goods which infringe IPRs,¹⁸ and what can a seller do if his goods are deemed to infringe IPRs? The answers to these questions are unclear. It has been suggested that, at least for English sales law, there is very little indeed that such buyers or sellers can do in order to protect their interests in the goods.¹⁹ What is needed is a radical reform of English sales law in order to take into account these modern developments, and provide purchasers with a measure of security for their acquisitions which in turn will protect and enhance the free flow of goods.²⁰

The problems associated with determining the ownership of goods which have embedded software demonstrate the presence of considerable doctrinal complexity, at least under the English legal system. This complexity is partially the consequence of the absence of a coherent policy of effective combining of sales law and IP law. This lack of combined thinking can be illustrated by a variety of factors. What follows is a brief analysis of how mechanisms developed in the IP law context to deal with the issue of IPR holders extending their control of IPRs down a chain of transactions raise more questions than they resolve.

Doctrinal Complexity

Exhaustion and First Sale

The doctrine of exhaustion deals with the question of when in the process of production and distribution of goods is it no longer necessary to obtain a licence from an IPR holder where the goods have IP attached. Generally speaking, the doctrine holds that IPRs are exhausted following the first sale by the IPR holder or with his consent. Yet, this exhaustion doctrine is often territorially limited: it is a “principle of domestic, rather than international, exhaustion. Accordingly, national rights that are subject to such limitation can still be used to prevent the

importation of goods sold abroad by the national right-owner or goods which come from an associated enterprise”.²¹

Furthermore, the British approach has depended on the subject matter, and the lack of a general concept of exhaustion enabled to the creation of a position in British patent law which was contrary to the usual position in legal systems: i.e. the patent holder was entitled to request licences beyond a first sale.

Thus, it is to the US system that we must look for a clear outline of the doctrine of exhaustion. In *Quanta Computer Inc v LG Electronics*,²² a case before the US Supreme Court on exhaustion of a method patent, Thomas J (giving the judgment of the Court), held that the doctrine of exhaustion was applicable. In doing so, he stated that “[t]he longstanding doctrine of patent exhaustion provides that the initial authorised sale of a patented item terminates all patent rights to that item”.²³

Furthermore, the Judge followed the decision of the Supreme Court in *US v Unis Lens Co*,²⁴ and noted that “the traditional bar on patent restrictions following the sale of an item applies when the item sufficiently embodies the patent – even if it does not completely practise the patent – such that its only and intended use is to be finished under the terms of the patent”.²⁵ It should also be noted though that the weight of authority indicates that the US doctrine of exhaustion is territorially bound; the sales must be in the US to exhaust the patent right.²⁶

Eagles and Longdin have noted that “[e]xhaustion of rights makes sense only when the intellectual property right in question is embodied in a physical object, property in which at some stage passes out of the hands of the right holder”.²⁷ They further argue that the shift away from tangibility caused by digitisation makes exhaustion less relevant than ever. Yet, it is still worth considering developments concerning transfers of IP in a purely intangible sense, i.e. those situations where the IPRs are not transferred by virtue of being embedded within goods. A particular problem concerns the resale of digital content,²⁸ and the very recent New York decision *Capitol Records LLC v ReDigi Inc*,²⁹ exemplifies this.

ReDigi Inc operated an online market for users to sell and buy (legitimately acquired) digital music files at a cheaper rate than what was being charged by iTunes. The process of selling such files involved an uploading of the digital file to a cloud server, which had the simultaneous effect of deleting the file from the seller’s device. The seller would retain access (so as to be able to stream the file) until it was sold, at which point the seller’s access rights would end.³⁰ ReDigi was sued by Capitol Records, which owned the copyright to the music. Under the US *Copyright Act 17 USC, §109*, a lawful purchaser of copyrighted material is able to resell that material, without having to obtain permission from the copyright holder: this is the first sale doctrine. The US District Court for the Southern District of New York determined that the first sale doctrine was inapplicable, because there had been an unauthorised copying of the music when it had been uploaded to ReDigi’s servers.³¹ This copying meant that the first sale doctrine was inapplicable, because:

*the first sale defence is limited to material items, like records, that the copyright owner put into the stream of commerce. Here, ReDigi is not distributing such material items; rather, it is distributing reproductions of the copyrighted code embedded in new material objects, namely, the ReDigi server in Arizona and its users’ hard drives. The first sale defence does not cover this any more than it covered the sale of cassette recordings of vinyl records in a bygone era.*³²

ReDigi's arguments that this analysis was incompatible with the modern digital environment were dismissed on the grounds that the US Copyright Office "rejected extension of the first sale doctrine to the distribution of digital works, noting that the justifications for the first sale doctrine in the physical world could not be imported into the digital domain".³³ The District Court appeared to follow and approve of the US Copyright Office's analysis,³⁴ so it is worth repeating here:

*Physical copies of works degrade with time and use, making used copies less desirable than new ones. Digital information does not degrade, and can be reproduced perfectly on a recipient's computer. The "used" copy is just as desirable as (in fact, is indistinguishable from) a new copy of the same work. Time, space, effort and cost no longer act as barriers to the movement of copies, since digital copies can be transmitted nearly instantaneously anywhere in the world with minimal effort and negligible cost. The need to transport physical copies of works, which acts as a natural brake on the effect of resales on the copyright owner's market, no longer exists in the realm of digital transmissions. The ability of such "used" copies to compete for market share with new copies is thus far greater in the digital world.*³⁵

Where the first sale doctrine would apply would be in sales of the specific tangible location of the digital file, such as an MP3 player or a computer hard disk: "While this limitation clearly presents obstacles to resale that are different from, and perhaps even more onerous than, those involved in the resale of CDs and cassettes, the limitation is hardly absurd – the first sale doctrine was enacted in a world where the ease and speed of data transfer could not have been imagined".³⁶

Clearly then, there are problems applying the exhaustion doctrine to digital sales, and these problems exist in other jurisdictions. The EU Information Society Directive³⁷ provides that:

*Copyright protection under this Directive includes the exclusive right to control distribution of the work incorporated in a tangible article. The first sale in the Community of the original of a work or copies thereof by the rightholder or with his consent exhausts the right to control resale of that object in the Community. This right should not be exhausted in respect of the original or of copies thereof sold by the rightholder or with his consent outside the Community.*³⁸

However, exhaustion "does not arise in the cases of ... on-line services in particular. ... Unlike CD-ROM or CD-I, where the intellectual property is incorporated in a material medium, namely an item of goods, every on-line service is in fact an act which should be subject to authorisation where the copyright or related right so provides".³⁹

This raises particular problems for integrated goods, particularly for goods which are part of the internet of things. Such integrated goods may be constantly sending and receiving data, which would of course be supplied in an entirely digital format. In such cases, it may be difficult demonstrate the level of disposal necessary to bring into bearing the EU exhaustion doctrine on the IPR over the software, because of Article 4(2) of the Directive: "The distribution right shall not be exhausted within the Community in respect of the original or copies of the work", except where there is an exhausting first sale by the IPR holder or with his consent. The exhausting first sale must have occurred within the EU; extra-EU sales will require licensing.⁴⁰

The effect of this, and the interaction between IP law and sales law, is illustrated by *Independiente Ltd v Music Trading On-line (HK) Ltd*.⁴¹ There, the defendant operated an online retail business whereby customers could order CDs or DVDs, which were sold out of Hong Kong. The claimant argued that the defendant was in contempt of an earlier undertaking not to supply non-EEA CDs or DVDs to UK purchasers.

Evans-Lombe J held that there was a breach of, *inter alia*, s.18 of the *Copyright, Designs and Patents Act 1988*. However, the defendant argued that the property in the goods passed to the customer prior to export from Hong Kong, and thus the goods were put into circulation in the UK by the customer “who would not have been guilty of infringement because he did so for the purpose of his private use”.⁴² This argument was dismissed;⁴³ the effect of s.32(4) of the *Sale of Goods Act 1979* meant that the delivery of the goods to the carrier was not a delivery to the consumer buyer.⁴⁴ As such, it was the defendant (and not the consumer) who put the goods into circulation in the UK, and thus was liable for copyright infringement.

Thus, “rightholders remain in principle entitled to control the digital uses of their works”.⁴⁵

The effect of this reasoning can be seen in with the decision of the Court of Justice of the European Union, in *UsedSoft v Oracle*.⁴⁶ There, it was held that a software licence was actually a contract of sale, and that the downloading of software meant that the “purchaser” could resell his “licence” as the downloading exhausted Oracle’s distribution rights over the copy that the “purchaser” acquired. This particular decision has been criticised: Moon for example compares the CJEU’s approach unfavourably with that taken by the New York court.⁴⁷ The CJEU took the approach that the provision under Article 4(2) of the Software Directive 2009/24,⁴⁸ of the possibility of exhaustion of a distribution right in a copy of a program upon first sale of *that* object,⁴⁹ meant that the:

*... use of the word “object” seems to indicate art.4(2) only applies to works in the form of physical things or on physical media. A digital file delivered online is neither. That alone would mean the rightholder’s distribution right for intangible digital files would not be exhausted under art.4(2). Also the use of the words “that object”, assuming for a moment that intangible “objects” can exist, must mean that it is in respect of the exact object that the rightholder has sold that exhaustion occurs – not the subsequent copy of that object which the technology actually creates when downloading a digital file.*⁵⁰

For Moon, “the question nobody in either the United States or Europe seems to be asking is whether it is indisputably correct to assert that exhaustion of the distribution right should apply irrespective of whether works are delivered online or on physical media? ... [T]here is still the critical legal issue of whether the contract between the copyright owner and the first acquirer of a digital copy is a sale or a licence.”⁵¹ For the purposes of this article, what these developments in technology (and lack thereof in doctrine) illustrate is the failure of the conceptual areas of IP law and sales law to correspond with each other. There is considerable tension between protecting IPRs and protecting the rights of sellers and buyers to dispose of and acquire goods and IPRs (whether embedded or otherwise), which will remain at the heart of commercial jurisprudence (in practice and in theory), and will continue to be unresolved unless and until it is acknowledged that the division between IP and sales needs to be tackled head-on.

In *British Leyland Motor Corp v Armstrong Patents Co Ltd*,⁵² the House of Lords had to contend with a claim for copyright infringement. The alleged infringer produced spare parts, but had refused to take a licence from the claimants (who designed the cars and produced and/or licensed sub-production of spare parts). The House held that, whilst there was ordinarily and infringement of the claimant's copyright (in the designs for the spare parts), the defendant was not liable. Lord Bridge noted that it would be "unnecessary and may be misleading to introduce [into copyright] the concept of an implied licence". Instead, the Court would recognise that the owner of a car:

*.....must be entitled to do whatever is necessary to keep it in running order and to effect whatever repairs may be necessary in the most economical way possible. To derive this entitlement from an implied licence granted by the original manufacturer seems to me quite artificial. It is a right inherent in the ownership of the car itself. To curtail or restrict the owner's right to repair in any way may diminish the value of the car. In the field of patent law it may be right to start from the patentee's express monopoly and see how far it is limited by exceptions. In the field of law applied to machinery which enjoys no patent protection, it seems to me appropriate to start from a consideration of the rights of the owner of the machinery and then to see how far the law will permit some conflicting legal claim to impinge upon those rights.*⁵³

Lord Bridge then provided a very intriguing statement on the power of the courts to deal with attempts by IPR holders to control downstream transactions:

*It seems to me within the capacity of the common law to adapt to changing social and economic conditions to counter the belated emergence of the car manufacturer's attempt to monopolise the spare parts market in reliance on copyright in technical drawings by invoking the necessity to safeguard the position of the car owner.*⁵⁴

Here, the importance of socio-economic change comes to the fore. The extent to which the socio-economic changes wrought both so far and potentially, by integrated goods, necessitate a new vision of the role of IP and its connection with sales law, is something that needs assessment by commentators and application by the courts. It is this particular aspect which provides the only substantive possibility for further application of the general principle identified by Lord Bridge (which is broader than merely being a "spare-parts" rule), in light of the effective statutory curtailment of the specific application of *British Leyland*.⁵⁵

Licences of IPRs

Related to the dual concepts of exhaustion and first sale is that of licensing. In the leading case of *Betts v Wilmott*,⁵⁶ the Court of Appeal in Chancery held that where a (British) patent holder marketed patented products abroad such action implied a license to use the products in the home market. The extent of such a licence is restricted: where the owner of a patent in Belgium and England assigned the Belgian patent, such assignment did not imply any permission to sell the protected product in England.⁵⁷ These distinctions rest on the fundamental distinction between a sale and a licence.

Thus, where goods are sold, the purchaser acquires all rights over the thing purchased unless they were reserved. However, with a patent licence, the licensee only acquired those rights expressly or necessarily granted. This distinguishes the implied licence doctrine from the exhaustion doctrine.⁵⁸ Thus, in *HTC Corp v Nokia Corp*,⁵⁹ where HTC had acquired goods

from a company (Qualcomm), who had manufactured the chips under licence from Nokia, all that HTC acquired was the rights that Qualcomm had. However, the impact of the implied licence doctrine has been severely curtailed, not least by EU rules on free movement of goods,⁶⁰ and absent a valid and sufficiently extensive licence the downstream use of patented goods is limited to the extent of an exhaustion doctrine,⁶¹ which as noted, has not so far been adopted into English law.

It may be possible to argue that the IPR holder should be compelled to license the IP. Although this approach appears to be subject to a strong trend of restriction on the power to so compel,⁶² it is still the case that certain IP regimes allow for the possibility of a compulsory licence. Thus, under the s.48 of the *Patents Act 1977*, the Comptroller may grant a compulsory licence after three years of the patent period has elapsed. Although a *prima facie* broad, discretionary power, it must be acknowledged that the impact of European jurisprudence and the provisions of TRIPs has resulted in the development of relatively stringent requirements on granting such a licence.⁶³

Refusal to license is a concept often utilised in competition law.⁶⁴ In essence, it involves a dominant market player refusing to allow another organisation utilise something which the dominant party controls.⁶⁵ It is possible to have different types of refusal to licence, such as constructive refusals (where a licence is theoretically available, but the product is substandard or the cost of the licences is disproportionate, or “if there is a denial of access to information that could potentially effect full technical interoperability between technological products or systems”), or conditional refusals (such as where access to product A is conditional on accepting product B).⁶⁶

IPRs can be the subject of refusals to licence;⁶⁷ indeed, the leading European case on this matter concerned just that. In *Radio Telefis Eireann and Independent Television Publications Limited v Commission (Magill TV Guide intervening)*,⁶⁸ RTE, the Irish broadcasting corporation, refused to license television schedules (which were covered by copyright) to Magill. The European Court of Justice held that this refusal was abusive conduct, on the grounds that:

*The exercise of an exclusive intellectual property right may, in exceptional circumstances, involve abusive conduct within the meaning of [Article 102 TEU, ex Article 82]. This is the case where (a) the owner is the only source of the indispensable raw material for a new product ... and refuses to provide that raw material by relying on national copyright law, thus preventing the appearance of the new product, for which there is a potential consumer demand and no actual or potential substitute, (b) there is no justification for that refusal ... and (c) by its conduct, it reserves to itself the secondary product market ... by excluding all competition on that market.*⁶⁹

The presence of these elements is sufficient to give rise to a potential abuse of power, and it appears likely that the elements are to be considered cumulatively.⁷⁰ Whilst there may be considerable arguments raised against the application of a refusal to license doctrine, it is not the point of this article to engage with that debate, not least because the doctrine is extant.⁷¹ Instead the purpose here is to identify the connection between refusals to license and the control of IP tyranny. The rules on competition, regardless really of jurisdiction, are focused on just that point: market competition.

This article, though, is not concerned with competition, which focuses on the market rather than the individual commercial actors that make up the market.⁷² Instead, the aim is to demonstrate how complexities in doctrine (broadly conceived) create potential problems for individual commercial actors in terms of accurately determining the ownership structures of integrated goods. Taking this broader perspective is essential though; if the analysis of refusal to license was restricted to the field of competition law then we would have difficulty dealing with those situations where the specific behaviour concerned did not, for whatever reason, meet the relevant standard (such as that set out in *Magill*).

As Eagles and Longdin note, IPR holders “who step outside the boundaries of their right should not, from that fact alone, be presumed to be acting anti-competitively. Conversely, staying religiously within those confines cannot be assumed to confer immunity from regulatory intervention.”⁷³ There is thus the possibility of market control below the level of unfair or abusive conduct. This sort of behaviour is the purview of the IP tyrant, who is described further below. What we can draw from the field of competition law is this: “Digital monopolies can be created by prolonged use, by law, or by contract and may be defeated through principles that are external to [IP law], namely by anti-trust and competition law.”⁷⁴ This is a valuable approach, but the limitations inherent in EU competition law solutions necessitate consideration of alternative mechanisms for resolving the potential tyranny of IPR holders.

The Current Reform Agenda

The future of consumer protection has been the subject of proposed legislation in the UK. In 2013, the Government set forth a *Consumer Rights Bill*,⁷⁵ which, according to Jo Swinson MP, Parliamentary Under-Secretary of State for Employment Relations and Consumer Affairs at the time, would “bring in a number of changes to improve consumer confidence and make sure the law is fit for the 21st century”.⁷⁶ According to the Department of Business, Innovation & Skills, one of the core rights encapsulated in the Bill will be that “goods and digital content are fit for purpose and services are provided with reasonable care and skill”.⁷⁷

This was a necessary development, because, amongst other things, “[c]onsumer rights are unclear in the rapidly expanding market of digital products such as phone apps or e-books”.⁷⁸ Although focused on consumer rights (and thus the Bill does not provide proposals to govern business to business transactions), it arguably still evidences a peculiar absence of integrated thinking about the real nature of goods and software, of the nascent but exponentially increasing interconnection between sales of goods and IPRs. In particular, the Government Response to the Consultation on Consumer Rights states that:

The reforms will modernise the legal framework to ensure that consumer law keeps pace with technological developments.

The suite of reforms will modernise the consumer law framework by introducing a new regime relating to digital content (such as ebooks and software), and aligning this as far as appropriate with the law covering goods and services.

The reforms will introduce clear quality rights for digital content and appropriate remedies when these rights are breached. They will also clarify that the short-term right to reject a faulty product applies only to digital content on a tangible media (e.g. on a disk), and not digital content provided in other ways (e.g. over the internet, such as a music download). This

should provide clarity in an area where it is currently confusing which laws apply. The draft Bill will also make clear that a trader must take care that digital content does not harm other digital content on a consumer's device.⁷⁹

These statements reveal that the Government's perspective remains wedded to the idea of a distinction between digital content, and the things that the digital content is relayed on or to. There is no acknowledgement of the notion of embedded software: instead we get a distinction between software transmitted digitally or via a physical medium. More exotic but technologically feasible developments, such as 3-D printing or nano-technologies, do not appear to have been considered. To some degree, this may have been expected: there were no questions on such issues during the consultations held during the development of the Bill. The acceptance of a definition of goods as "tangible movable items",⁸⁰ neither deals with nor excludes the potential issues concerning either embedded software or 3-D printing. Furthermore, it is interesting to note that, whilst the consultation questions did not directly address the issue of IPRs and goods (i.e. the problem of third party holders of IPRs having a controlling relationship with buyers and sellers of goods), this issue was expressly covered in the Government's response to the consultation. There, it was stated that there would be measures introducing "new quality rights for digital content", which would include the following:

*That the trader has the right to provide the digital content. This right will not affect intellectual property rights and will not give consumer a right to use the digital content if the trader has no right to provide it; rather it will ensure that the consumer has a right to a remedy if provided with digital content that they then have no right to use.*⁸¹

This is, of course, no different from the current position under s.12 of the *Sale of Goods Act 1979*, because the definitions of goods ("tangible moveable items") and digital content ("data which are produced and supplied in digital form") given in the proposed clauses 2(7) and (8) of the *Consumer Rights Bill 2013* do not appear to allow for the possibility of integration. Instead, it appears that any embedded software in goods would be treated as a distinct legal concept from the goods themselves. The closest the Bill gets to dealing with integration of goods and software is clause 15, which provides:

- (1) *Goods (whether or not they conform otherwise to a contract for the supply of goods) do not conform to [to a contract] if*
 - (a) *the goods are an item that includes digital content, and*
 - (b) *the digital content does not conform to the contract to provide that content (for which see s.44(2)).*

Since clause 44(2) merely provides what rights consumers have in the event of such non-conformity, clause 15 is all we have to go on with regard to integrated goods. Helpfully though, the Explanatory Notes to the Bill provide further evidence.⁸² In explaining clause 15, the Notes state that the clause "applies irrespective of the nature of the relationship between the digital content and the rest of the goods. For example, for a washing machine to function properly it would be necessary for the programme (i.e. the digital content) to be functional and this clause would apply if that were not the case."⁸³ However, this is the extent of the analysis of the matter available in the various documents relating to these provisions.⁸⁴

The problem with this limited analysis is that there will invariably come a time where considerable further work is necessary to set out the jurisprudence on integrated goods with greater comprehensiveness than has so far been the case.⁸⁵ So, although the Bill will institute protection for purchasers of digital content, through provisions which will mirror those available for purchasers of goods,⁸⁶ there is a reliance on the contract provisions themselves providing the structure of the analysis, as evidenced by clause 15(1)(b). In other words, how the digital content related to the goods will depend on the wording of the contract.

IPR Pirates, Trolls and Tyrants

A third issue that requires considerable analysis is the manner in which doctrine will be able to deal with the more nefarious characters of the IP world. Three particular types of “bad men” can be identified: the pirate, the troll, and the tyrant. The IP pirate is perhaps the most well-known “bad man” of IP law. The pirate acquires IP by some means other than by authorised appropriation.⁸⁷ Thus, someone who copies a computer program, or builds goods which infringe a patent, or misrepresent the brand of a product, is a pirate.⁸⁸ The IP pirate may engage in such activity in order to obtain property, whether in the form of money or further IP. However, it is important not to be overly concerned with the purpose of the piracy; it is the act of piracy which is important because it is the unauthorised acquisition or retention of IP from an IPR holder which differentiates the pirate from trolls and tyrants. Of course, the problem with digital information is that the mechanism of transmitting such information necessarily involves a copying, and as such there is considerable potential for piracy, whether intentional or otherwise. The ease with which this can occur has profound effects on the levels of IP piracy.⁸⁹

The IP troll is a character who, though not a recent development,⁹⁰ has become more well-known in recent times.⁹¹ The troll obtains an IPR and then threatens to block usage of such IPR.⁹² This may be in order to extort income from those whose activities cross the IPR,⁹³ or it may be merely to prevent use of the IPR. The key here is recognising that it is the purpose of the act of trolling which is most important, i.e. the purpose of obtaining a rental income (or excluding others based on a putative rental income) from the IPR: trolls “do not provide end products or services themselves, but [they] do demand royalties as a price for authorising the work of others”.⁹⁴ However, it is also worth noting that the manner of acquisition may enable a valuable differentiation between types of troll. A troll may acquire an IPR by purchase; they may intend purely to acquire the potential of an IPR, in order to cover similar expressions of the idea(s) behind the IPR.⁹⁵ Alternatively, a troll may have obtained the IPR in order to protect their own invention. In such a case, what makes the IPR holder a troll is the attempt to expand the reach of the IPR, either by claiming the offending article infringes the IPR due to the poor design of the offending article (i.e. the other party went too far), or by claiming an IPR which is intrinsically so wide as to prevent the development of other things (e.g. claiming an IPR over an optical scanning device, and then claiming that every use of a digital camera infringes the IPR).

The IP tyrant owns or controls IPRs (and thus can be distinguished from the pirate), and utilises its IPRs in a normal manner, but (and this is the aspect distinguishing the tyrant from the troll) they act aggressively against mis-usage of such IPRs but for reputational reasons. The troll “has little to worry about in terms of the reputational consequences of going after defendants indiscriminately and of suing parties who to traditional copyright owners constitute their customers.”⁹⁶ However, tyrants fear the negation of normal utilisation of their IPRs; the normal utilisation involving the creation of market reputation in addition to

exploiting the exchange value of the IPRs. Here, the use of “tyrant” is grounded in the unconventional, as opposed to illegitimate, acquisition of power. IPR tyrants acquire power through the development of market attachments to brands.⁹⁷ This contrasts with the IPR pirate who engages in avoiding the exercise of power (by the IPRs holder) and the IPR troll who acquires power legitimately and conventionally.

A good example of an IP tyrant would be a pharmaceutical company actively preventing the development and disposition of generic versions of its patented products in less-developed countries. Another example would be a technology company refusing to allow software developers access to its copyrighted software in order to develop products for such software. A third example would be a manufacturer refusing to allow certain types of distribution of its goods (e.g. grey market Levi jeans sold in supermarkets). A fourth example might be the utilisation by IPRs holders of legal powers to prevent the development of technologies, even including those that meet the spirit and the letter of the law.⁹⁸ One such instance of this may be the putative attempt by Microsoft to control sub-ownership of computer games software. It was suggested that sub-users of computer games operating on the new Xbox One games console would be required to pay a fee,⁹⁹ or such games would only be tradable through certain approved markets,¹⁰⁰ thus having the impact of attempting to control disposition of ownership of the games far down the chain of transactions. Another example might be the abuse of standard-essential patents, such as Motorola Mobility’s obtaining an injunction against Apple for infringement of patents concerning data transmission, following the breakdown of negotiations over an appropriate licence fee. In that instance, the European Commission issued a Statement of Objection against this action, on the grounds that such action by Motorola Mobility would harm competition and reduce consumer choice.¹⁰¹

Though it is possible to distinguish between a troll and a tyrant,¹⁰² ultimately, what both characters create is gridlock; it is an example of the tragedy of the anticommons.¹⁰³ This situation arises when there are too many right holders, and by exercising their rights over a resource they prevent others from using or creating that resource. This peculiar aspect of private property is problematic enough, but its negative consequences are exacerbated by the effect of IP trolling and tyranny.

As Balganesch notes: “[b]eing a complete outsider to the market for creative works – in that it is not a producer, distributor, consumer, or indeed user of such works – the troll operates on a fundamentally different calculus of when to enforce the copyright claim from that of the original copyright owners.”¹⁰⁴ The “different calculus” of the troll means they take advantage of the general under-enforcement of private law claims, which can eradicate the equilibrium between actionable and enforced claims and actionable but unenforced claims.¹⁰⁵ This is due to the delegation by IP law, as a system of private law, the choice between enforcing actionable claims to IPRs holders.¹⁰⁶

Furthermore, “brands are subject to ongoing interaction and definition. The company and its product may initiate the relationship, but power diffuses after that moment”.¹⁰⁷ There is a multi-directional relationship between brand-holder and consumer (here, the consumer may well be a business as well as a private consumer). The brand-holder may not actually be the producer, but by putting their brand onto goods the goods are transformed, not in the sense that they change function, but in the sense that the IPR holder has a greater power to connect with the consumer (and vice versa),¹⁰⁸ which is expressed by “generating and controlling consumer identity”.¹⁰⁹ This is particularly problematic when the potential reach of IPRs is recognised.

Thus, in the 2011 Report of the International Intellectual Property Alliance,¹¹⁰ copyright industries are defined with such liberty as to make a mockery of the whole enterprise. These “copyright industries” include fabric, jewellery, furniture, toys and games, transportation services, telecommunications, wholesale and retail trade, and makers and distributors of CD players, TV sets, VCRs, computers, blank recording material, and paper. It defies any notion of common sense to include these categories in the “copyright industry.”¹¹¹

Whilst Carrier may have been right in questioning the extent to which this broad definition of “copyright industries” can really be applied to manufacturers of paper and fabric, the extent to which he is right depends entirely on the nature of the debate. For Carrier, the debate concerned music, and in that sense he rightly identifies the absurdity of the attempts to latch music on to other industries in an attempt to over-inflate the costs of music piracy. However, those industries mentioned by the International Intellectual Property Alliance would be concerned not just with copyright but with a whole range of IPRs.

It is perhaps necessary to take the International Intellectual Property Alliance’s analysis with a pinch of salt, as it is, essentially, a lobbying organisation for IPR holders.¹¹² Nevertheless, it reveals first, that IPRs have an enormous range; all sort of physical things can have some sort of IPR attached to it, and secondly, that IPRs holders can engage in a sort of intellectual imperialism, i.e. IP tyranny. Yes, the jewellery industry (for example) is a “copyright” industry, in that it may well involve copyright issues (notwithstanding any other IPRs). But surely the more rational perspective would be to consider the jewellery industry as a “sale of goods” industry: its purpose is not to hold IPRs, but to sell goods: the jewellery. The purpose of the IPRs in such a case will be to prevent copies of their goods from being passed off as the original. In this case, IPRs operate as a protection for sellers which are the converse of the rules against mis-descriptions which exists for the benefit of purchasers.¹¹³

Future Developments

As Cornish, Llewellyn and Aplin make clear: “[IPRs] are constantly destabilised by technological advance”.¹¹⁴ Society is shifting into a new industrial revolution, which “will see manufacturing going ‘digital’ and ‘personal’”. It is also expected to be disruptive: the question is whether this disruptive technology will prove to be more advantageous than disadvantageous.”¹¹⁵

3-D Printers

In May 2013, media reports arose suggesting that the first 3-D printed handgun had been successfully fired.¹¹⁶ This naturally generated some considerable debate both about the validity of the product and the ethics surrounding the potential for home manufacture of guns.¹¹⁷ There are potential further issues arising from 3-D printing, such as its utility for space travel,¹¹⁸ and the potential of moving from plastic printing (the mainstay of current technology) to printing metallic or organic things.¹¹⁹ In its description of an exhibition running from October 2013 until June 2014 entitled “3D: printing the future”, the Science Museum, London stated that visitors can “discover how innovators are using 3D printers to turn computer data into physical objects that could change your life”.¹²⁰

It is this process – turning data into things – that raises interesting questions about the role of ownership, of goods and of IPRs, in the development and production of 3-D printed objects. Two issues come out of this: (1) the extent to which current commercial entities may suffer

due to a failure to appreciate the potentially revolutionary nature of effective 3-D printing;¹²¹ and (2) the extent to which individuals can recapture the manufacturing process away from larger organisations.¹²² As Engstrom writes: “3-D printers ... have arrived. Home 3-D printers are already affordable (some are less than \$1000), and, though these printers make mostly straightforward products, that’s apt to change.”¹²³ Yet, as Engstrom also notes, legal scholars (amongst others) need to “consider how the innovation meshes with – or poses challenges to – our existing laws and system of governance”.¹²⁴ She goes on to briefly outline the potential problems arising from the application of product liability law to defective home-printed objects.

One potential problem that Engstrom highlights is the lack of coverage of US product liability law for situations involving a victim of a bad design for a 3-D printed object. The designer of the code or plan which is used by the printer would not be liable as under US law, only those who sell “tangible personal property” are covered.¹²⁵ Although the case law seems to fall down against the victim, in that the code would not be a qualifying “product”, Engstrom suggests that there is the potential for doctrinal development though we must “recognise that this tangible-intangible distinction might end up being a significant barrier”.¹²⁶ The biggest problem though is that “3-D printing *democratizes* product creation ... [and] *severs* the long-established identity between manufacturers and sellers, on the one hand, and enterprises, on the other”.¹²⁷

Mendis has recently provided a powerful analysis of the impact of 3-D printing on IP law.¹²⁸ She argued that the IP implications of 3-D printing needs “serious consideration”; that the borderline between infringements and non-infringements is malleable and needs close attention in light of the potential for sharing digital designs.¹²⁹ Although Mendis identified a number of avenues for IP law to control 3-D printing, in doctrinal areas concerning the distinction between making and repairing in patent cases,¹³⁰ she also noted that putative attempts by IPR holders to protect their interests via digital rights management (DRM) would fail in the same way that DRM failed for the entertainment industry.¹³¹

Mendis further suggests that the nature of 3-D printing of spare parts would not infringe a registered design,¹³² although potential problems arise in the context of unregistered design rights, specifically in the context of secondary infringement on the part of hosts of the digital design rights.¹³³ Although *Lucasfilm v Ainsworth*,¹³⁴ suggests that a measure of protection may be available for the creators of objects using 3-D printing, problems will arise due to the nature of mass sharing of digital information.¹³⁵ She concludes that the IP implications are “unclear”, not least because some actions may avoid liability under one area of IP law but not under another area.¹³⁶ As such, she recommends that changes in business methods would be the most effective way of dealing with this area of technological developments.¹³⁷

Three dimensional printing gives rise to some intriguing problems in terms of piracy. The nature of three dimensional printing requires information, in crude terms the blueprints, of the object of production. This information will inevitably be in digital form, and thus, for the purposes of English law at least, would be protected by copyright. Additional IPRs are potentially possible. Unauthorised acquisition of the digital information by a pirate would enable them to produce tangible goods. If such goods are resold, there is arguably an infringement of s.12 of the *Sale of Goods Act 1979*, the problems of which have been discussed above. However, it is the problem of democratised production which may give rise to more complex problems, particularly if IP tyrants become involved.

Embedded and Nano-Technologies

Embedded technologies are those which are integrated into other technologies, whereby without the embedded technology the broader technology becomes either useless or limited in its usability. One particular example is embedded software.¹³⁸ There are a considerable variety of goods that have embedded software. This connection between goods and software is particularly evident in certain obvious cases, such as smartphones. Embedded software is also present in a number of other types of goods, from a car through to a fridge. The embedded software may be necessary for sound functioning of the material thing to which it is attached, although its benevolence or malevolence may be identifiable only with an advanced level of technological know-how. Nevertheless, in either case, the embedded software may lead to problems with the goods themselves. This is problematic in light of the likely massive increase in usage of integrated goods.

A recent intriguing phenomena is the growth in wearable technology. First, it must be recognised that the general concept of wearable technology is neither modern nor novel; clothes are possibly the simplest wearable technology. The passive nature of such technology can be contrast with active wearable technologies, such as a watch. Of course, technological development means that integration is more likely. Wearable technologies may be enhanced by nanotechnologies. At a passive and simple level, this may involve the utilisation of particular types of fabrics and materials to obtain a specific result: a good example is the proliferation of breathable man-made fabrics, i.e. fabrics which enable sweat to evaporate whilst repelling rain. Future developments are likely to see the embedding of nanotechnologies in wearable technology, particularly with the development of an internet of things.¹³⁹

A recent development of this nature is Google Glass,¹⁴⁰ a technology involving a specially designed single lens, to be worn as if like a pair of glasses. This lens is connected to the internet and is able to display information in a head-up style display to the wearer, either automatically or upon command.¹⁴¹ The possibility of wide-spread use of such a product gives rise to multiple potential legal questions,¹⁴² but for the purposes of this article, it is worth noting that currently Google appears to be imposing considerable restrictions on the rights and capacity of those acquiring Google Glass to dispose of such goods.¹⁴³

A logical step (even if it gives rise to hard ethical questions) is the combination of embedded technologies that are worn, and personal embedding of software and hardware in the human body. This may take the form of methods of communication,¹⁴⁴ or it may involve the creation of “super-ability” (in correspondence to disability and ability) whereby a person’s abilities are amplified by the addition of technologies.¹⁴⁵ One current state-of-the art nanotechnology is nano-tattoos, an “intradermally embedded array of biosensors, functionalised to emit visible colour changes”; they are often used to monitor glucose levels in people with diabetes.¹⁴⁶

Bennett and Naranja suggest that patents covering nano-tattoos need to be “narrowly tailored”, and there is a danger of “patent thickets” developing as “it is not unusual for a single nano-enabled invention to be covered by multiply overlapping patents”.¹⁴⁷ Another form of nano-tattoo would be devices that help connections with other devices. For instance, Motorola has filed a patent for a device that would couple a tattoo to a mobile communication device.¹⁴⁸ The development of nano-technologies could be restricted by IPR claims (even if such claims are merely an apparent threat). Furthermore, it can be recognised that objections

may be raised to the manner in which IPR management of technology which is embedded in humans, whether at a nano-technological level or otherwise, may lead to (a) unwelcome commodification,¹⁴⁹ and (b) “arrogant and naïve” belief that “commercial interests” can solve the problems of these bionic developments.¹⁵⁰

Solutions to Potential Problems

The drawing out of consumer law from the general law of sale in the UK, via the *Consumer Rights Bill*, provided the opportunity to set out new and distinct protection for consumers of digital content. However, and regardless of the fact that this approach does not provide for embedded software as it rests on a distinction between digital and tangible, a corresponding legal development has not been provided in what would be a (*Commercial*) *Sale of Goods Act*. It thus remains for contracting commercial parties to determine the governing regulations for their transaction. They may be able to construct sui generis rules for transactions involving embedded software, and transactions involving digital content *per se*.

There is, of course, a very strong argument in favour of this maintenance of a principle of party autonomy. Problems relating to, say, copyright infringement may be soluble through technological changes, and in such an event, legal machinery will be required primarily to underpin the e-contracts of the management system. Copyright will not even be needed to define the material in which there is a property right to be licensed. The contract can relate to material that is outside any copyright “[i]t can require payment even where copyright law creates an exception ... [and] [t]hat obligation will be enforceable unless the law debars it”.¹⁵¹

Because the state is generally only willing to use its nuclear weapon, criminal sanctions, following action by an IP industry body, IPR holders “are obliged to balance the profits on their own investments against the costs of privately enforcing their rights”.¹⁵² Yet, if we bear in mind Balganesch’s analysis of copyright trolls, we must recognise that the deviant behaviour of trolls and tyrants is possible due to the way that private law allows the owners of rights to determine whether to enforce those rights. We can distinguish between a structure which allows for enforcement choices and a structure which not only allows for enforcement choices but also allows for the determination of what constitutes an actionable infringement. The lack of provisions on sales of goods with embedded software, and the potential difficulties in characterising three dimensional printing and nanotechnologies, necessitates the creation of structures of governance by private parties. This exacerbates the potential for trolls and tyrants to control the usage of IPRs, and thus consequently, control the usage of goods. This, in turn, has serious negative implications for parties attempting to plan their relations and transactions,¹⁵³ as well as potentially causing “democratic degradation”.¹⁵⁴

Yet is it the case, as Cornish suggests, that “it would probably be an even uglier world if the taxpayer became the guardian of this form of property, to the same extent that the police and local authorities are the protectors of land, houses and goods”?¹⁵⁵ Certainly, the urgency of developing legal mechanisms which would prevent or limit IPR holders from controlling the exploitation and alienation of their IP must have only increased, in light of technological developments, in the decade since Cornish argued that “there must be a case for giving judges some more general power to excuse at the edges”.¹⁵⁶ It may be that the problem lies in the fact that there is a choice between governance of IPRs based on “a simple ‘property rights’ approach: whenever a reasonably efficient system of payment can be established for specific uses, it should be given legal support in pursuit of optimal efficiency”,¹⁵⁷ and a system which

limits the power of IPR holders from reaching down chains of transactions and exploiting the freedom provided by legal systems, unwilling or unable to control such actions through criminal sanction, for private ordering of rights and obligations.

Mendis argued that a potential route around the problems of IP law for 3-D printing would be changes in business methods. Whilst Mendis' suggestion has practical value, it may be subject to critique. For one, it is difficult to ascertain whether these changes in business methods would actually occur. Since the protection for IPR holders is considerable, and they can control the usage of their IP downstream by means of contract – the approach that is at the heart of the proposed consumer law reforms in the UK – it may be that IPR holders would not voluntarily alter their business methods in order to adopt a position which provides them with potentially less control over the usage of their IPR.

Another potential problem with relying on novel business methods is that it fails to address the underlying doctrinal causes of the problems, i.e. the failure of sales and IP law to provide a coherent doctrinal structure for the management of ownership issues of integrated goods. This is problematic if we recognise that “even if a technology is used for infringement in the short-term, that can raise awareness of its potential for non-infringing uses in the long run”.¹⁵⁸ Yet, if the infringement can be strictly curtailed, which would be the case under current IP and sales doctrine and could occur regardless of calls to change business methods, then we may never know what would have been developed had early innovators not been threatened by IPR holders.¹⁵⁹

As noted above, compulsory licences may be imposed in order to prevent the otherwise monopolistic powers of patent holders from distorting use of a product. Ng has further argued that compulsory licences may provide a mechanism which would enable legal systems to get around the potential problems arising from a proliferation of patents growing out of the IT and biotechnology sectors, and specifically the potential of patent trolling in such sectors.¹⁶⁰

Compulsory licences would be appropriate if they are limited “to cases involving cumulative complex inventions where the conduct of the patent owner’s enforcement of the exclusionary patent rights results in serious impairment or significant disruption to society”. They would also be acceptable as trolling “cannot constitute “normal exploitation” of patent rights”. Thirdly, “patent owners cannot claim a ‘legitimate interest’ in the economic benefits that could be derived from ‘trolling’ activities”.¹⁶¹ Additionally, “any patent trolling activity that causes severe disruption to legitimate businesses and the normal and smooth functioning of society should be deemed to be inimical to public interest”.¹⁶² However, the concept of compulsory licences is very much an unorthodox solution, and is susceptible to lobbying efforts.¹⁶³ As such, it is questionable whether a sufficiently secure system of protection for downstream purchases of integrated goods based on compulsory licenses could be efficiently and consistently applied.

Conclusion

In a world of increasing interconnection and embedding of IPRs and goods, it remains necessary to consider the relationships between IP and goods, and between integrations of goods and IP and their human users.¹⁶⁴ As to the first point, the relationship between IP and goods, questions must be raised about the feasibility and value of the current doctrinal structure of both IP law and sale of goods law. As can be seen with the *Consumer Rights Bill*, it is not necessarily the case the modern legislative developments can fully reflect

technological change: the focus in that Bill on digital content appears to maintain (and potentially preserve) the unwelcome and unreal distinction between digital information and tangible things.¹⁶⁵ Goods with embedded software are not catered for. Furthermore, the failure (so far at least) to recognise that the necessary result of the *Consumer Rights Bill* will be a (*Commercial*) *Sale of Goods Act*, and the more pernicious consequence that there remains no coverage in that Act for integrated goods, renders the doctrine confused.

As to the point about the relationship between humans and the integrated goods they use, it is arguable that the attempts to control the rights of purchasers are evidence of an amoral (possibly immoral) grasping for exploitation rights on the part of IPR holders. As Cornish wrote: “[p]ersonal choice and privacy are individual values of a high order, both psychological and political. They are frequently dependent upon the possession of things, including, now, things configured by electrical impulses. The interconnection is a root reason why the property rights of individuals have some claim to be ranked as human rights.”¹⁶⁶ It is also potentially arguable that control over ownership rights downstream from the IPR holders could negatively affect an individual’s development, achievement and maintenance of personhood,¹⁶⁷ or that there could be implications for such an individual’s happiness.¹⁶⁸

Cornish, Llewellyn and Aplin warn us that, whilst IP law “protects some of the finer manifestations of human achievement, it also shields much that is trivial and ephemeral. The ultimate aim in the shaping of IP policy lies in securing outcomes that are proportionate to the aim of that protection”.¹⁶⁹ However, the shaping of IP policy alone cannot provide a sufficient basis for the development of appropriate legal provisions for the sale of integrated goods. The disintegration of the distinction between tangible and intangible elements of goods necessitates further analysis and critique of the value of distinguishing between the IP and non-IP elements of tangible goods. This is not a claim for the abolition of IP law. But neither is it a case of “keep calm and carry on”.

That phrase, notable in the UK for spawning imitations and parodies of what was once an unused World War II propaganda poster, was also the title of Professor Sir Robin Jacob’s inaugural lecture as the Sir Hugh Laddie Professor in Intellectual Property Law.¹⁷⁰ Jacob argued that “[w]e should keep calm about mistaken alarmists such as the abolitionists and over-zealous competition lawyers, but we should be vigilant about curbing the excessive growth of copyright and design law. As for trade mark law, we can only despair”.¹⁷¹

Be that as it may, this article has not set out to examine IP law on its own. It has considered the connection between IP and sales, with the focus on the issue of determining ownership. Whilst it is clear that under English sales law an IPR holder has considerable power (or, put another way, the purchaser of goods is subject to the potentially unknown and uncontrollable exercise of power by an IPR holder), it is also clear that there are various routes by which ownership-control by IPR holders can be limited or eradicated by IP law itself. The problem is that these IP approaches are not clearly connected with sales law. Furthermore, there is a serious lack of clarity and certainty about the extent of the IPR holder’s power over sub-purchasers, and this problem will continue and be exacerbated by the developments in integrated goods.

* The research for this article was completed during a period of Academic Study Leave granted by the University of Leicester. An early version was presented at the Cyberlaw Section of the Society of Legal Scholars Conference in September 2013.

¹ For the purposes of this article, I will take the approach to intellectual property set out in W Cornish, D Llewellyn and T Aplin, *Cornish, Llewellyn & Aplin: Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights* (8th edn Sweet & Maxwell, London 2013) (hereafter *Cornish, Llewellyn & Aplin*), paras 1-01: “Patents give temporary protection to technological inventions and design rights to the appearance of mass-produced goods; copyright gives longer-lasting rights in, for instance, literary, artistic and musical creations; trade marks are protected against imitation so long at least as they continue to be employed in trade. ... There is no single generic term that satisfactorily covers them all. “Intellectual property” is the expression used in this book for the whole field ... The abbreviations [IP and IPR] are convenient.”

² I Eagles and L Longdin, *Refusals to License Intellectual Property: Testing the Limits of Law and Economics* (Hart Publishing, Oxford 2011) (hereafter Eagles and Longdin, *Refusals to License*) 119: “The subject matter of intellectual property law may be intangible but that law itself has always been heavily dependent on dealings in tangibles to set the parameters of infringement”.

³ It is important to note that this article will not be engaging directly with the debates concerning the value of IPRs, for which see e.g. R Ghafele, “Of War and Peace: Analyzing the International Discourse on Intellectual Property Law’ [2010] *Intellectual Property Quarterly*, 237. Also, this article will not be providing an exhaustive exposition of the various rules concerning IP (or sales, for that matter); that is beyond the scope of this article and readers are directed to the standard text books on the subjects. Finally, it is worth noting that this article uses the term IP in a general and broad sense: thus, for example, this article is not concerned with the issues underlying Cornish’s statement that “Lawyers classify ... the registered trademark – as intellectual property, but it is at best a casual convenience to do so” (W Cornish, *Intellectual Property: Omnipresent, Distracting, Irrelevant?* (OUP, Oxford 2004) (hereafter Cornish, *Intellectual Property*), 75).

⁴ See, for example, C Lenk, N Hoppe, and R Andorno, *Ethics and Law of Intellectual Property: Current Problems in Politics, Science and Technology* (Aldershot, Ashgate, 2007), 1.

⁵ What follows is drawn from Lenk, Hoppe, and Andorno, *Ethics and Law of Intellectual Property*, above n 4, 1-2.

⁶ Cf *Cornish, Llewellyn & Aplin*, para 1-12: ‘the root issue is whether the balance achieved by this approach is broadly appropriate to the economic needs of the country and to the prevailing sense of what is just.’

⁷ Lenk, Hoppe, and Andorno, *Ethics and Law of Intellectual Property*, above n 4, 2.

⁸ *Cornish, Llewellyn & Aplin*, para 1-04.

⁹ The “internet of things” is a broad concept, but can briefly be explained as the consequence of the embedding of mechanisms in things so as to allow such things to connect to the internet (and thus to other things). See further, for example, M Chui, M Löffler, and R Roberts, “The Internet of Things” (March 2010). Available at http://www.mckinsey.com/insights/high_tech_telecoms_internet/the_internet_of_things; and <http://ec.europa.eu/digital-agenda/en/internet-things>; <http://www.wired.com/gadgetlab/2013/05/internet-of-things/all/>; <http://www.internet-of-things-research.eu/>.

¹⁰ There are some exceptions, such as European trade marks, designs and plant rights. However, the same logic expressed in the text accompanying this endnote would apply in terms of transactions involving goods and such IPRs to and from the EU.

¹¹ P S Atiyah, J N Adams, H McQueen, *Atiyah’s Sale of Goods* (Pearson, Harlow, 2010), 69.

¹² Cornish, *Intellectual Property* 54 fn 37.

¹³ The current locus classicus is probably the battle between Samsung and Apple, for which see, for example, *Samsung Electronics (UK) Limited v Apple Inc* [2012] EWHC 1882 (Pat); approved in *Samsung Electronics (UK) Ltd v Apple Inc* [2012] EWCA Civ 1339; [2013] ECDR 2. This particular incidence of litigation led to further amusing litigation concerning Apple’s failure to abide by the terms of the decision: *Samsung Electronics (UK) Ltd v Apple Inc* [2012] EWHC 2049 (Pat); *Samsung Electronics (UK) Ltd v Apple Inc* [2012] EWCA Civ 1339; *Samsung Electronics (UK) Ltd v Apple Inc*

(No.2) [2012] EWCA Civ 1430; [2013] EMLR 11. This is not the only battle though: see, for example, BBC News, ‘Patent wars: Tech giants sue Samsung and Google’ (1 November 2013) *BBC News*. Available at <http://www.bbc.co.uk/news/technology-24771421> (Rockstar, comprising Apple, Microsoft, Blackberry, Ericsson and Sony, are suing Google, Samsung, HTC and others over mobile phone patents). There are a huge number of disputes concerning IPRs relating to technology, with various different parties being both claimants and defendants: see, for example, http://en.wikipedia.org/wiki/Smartphone_wars. For a graphical representation of some elements of this war (from October 2011): see, for example, L Kelion, “Mobile phone makers wage war to protect their patents” (23 October 2011) *BBC News*. Available at <http://www.bbc.co.uk/news/business-15343549>. See generally S Graham and S Vishnubhakat, “Of Smart Phone Wars and Software Patents” (2013) 27 *Journal of Economic Perspectives*, 67.

¹⁴ See, for example, K J O’Brien, “German Courts at Epicenter of Global Patent Battles Among Tech Rivals” (8 April 2012) *The New York Times*. Available at http://www.nytimes.com/2012/04/09/technology/09iht-patent09.html?_r=3&pagewanted=all&_; BBC News, “Apple and Samsung patent cases dismissed” (2 March 2012) *BBC News*. Available at <http://www.bbc.co.uk/news/business-17234598> (reporting on the German litigation). In the US, in the Apple and Samsung, US District Court Judge Koh initially issued an injunction preventing sales of the Samsung goods: *Apple Inc v Samsung Electronics Co Ltd* 877 FSupp2d 838 (ND Cal 2012), but this was later quashed by the US Court of Appeals (Federal Circuit): *Apple Inc v Samsung Electronics Co Ltd* 695 F3d 1370 (CA Fed (Cal) 2012). It should be noted that whilst damages may usually be sufficient, sometimes only an injunction will suffice: *HTC Corp v Nokia Corp* [2013] EWHC 3778 (Pat).

¹⁵ (Unreported, Ch D (Patents Ct), 12 September 2013).

¹⁶ http://www.usitc.gov/secretary/fed_reg_notices/337/337-794_notice06042013sgl.pdf.

¹⁷ http://www.ustr.gov/sites/default/files/08032013%20Letter_1.PDF. For similar events and actions in the European context, see n.101.

¹⁸ An awkward question also arises with the possibility of orphan works, i.e. works to which IPRs would normally attach but circumstances are such that the true owners of such IPRs cannot, for whatever reason, be ascertained. For reasons of economy, this article concentrates on situations where the IPRs are not orphaned. For an analysis of orphan works in the context of copyright, see, for example, M Borghi and S Karapapa, *Copyright and Mass Digitization: A Cross-Jurisdictional Perspective* (OUP, Oxford 2013) (hereafter Borghi and Karapapa, *Copyright and Mass Digitization*) ch 4.

¹⁹ S Thomas, “Goods with embedded software: obligations under Section 12 of the Sale of Goods Act 1979” (2012) 26 *International Review of Law, Computers & Technology*, 165-183.

²⁰ *ibid.*, 176-178 for one such proposal.

²¹ *Cornish, Llewellyn & Aplin*, para 1-50.

²² 553 US 617 (2008). For a comprehensive discussion of the effect of *Quanta*, see, for example, A C Server and W J Casey, “Contract-Based Post-Sale Restrictions on Patented Products Following *Quanta*” (2013) 64 *Hastings Law Journal*, 561.

²³ 553 US 617, 626.

²⁴ 316 US 241 (1942).

²⁵ 553 US 617, 628.

²⁶ See, for example, *HTC Corp v Nokia Corp* [2013] EWHC 3247 (Patents Court) (Arnold J) para 185, citing *Fujifilm Corp v Benun* 605 F3d 1366 (CA Fed 2010).

²⁷ *Eagles and Longdin, Refusals to License*, 120.

²⁸ See, for example, M C Humphrey, “Digital Domino Effect: The Erosion of First Sale Protection for Video Games and the Implications for Ownership of Copies and Phonorecords” (2013) 42 *Southwestern Law Review*, 441 (arguing that the effective abolition of the first sale doctrine vis-à-vis digital content necessitates a wholesale change in business practices, as (at 476): “[t]o expect copyright holders and large media companies to stand idly by and essentially give up the reproduction right is far too idealistic for at least the foreseeable future”).

²⁹ 934 FSupp2d 640 (USDC SD NY 2013).

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- ³⁰ Amusingly, this is similar to a patent obtained by Amazon, covering digital content generally: A Flood, “Ebook anxieties increase as publishing revolution rolls on’ (24 April 2013) *The Guardian*. Available at <http://www.theguardian.com/books/2013/apr/24/ebook-publishing-amazon>.
- ³¹ This is an extension from what the courts had previously considered, i.e. the unauthorised duplication of digital files (see, for example, *A & M Records Inc v Napster Inc* 239 F3d 1004 (US CA9 2001)): here the Court held (at 649) that the “unauthorised transfer of a digital music file over the internet – where only one file exists before and after the transfer – constitutes reproduction within the meaning of the *Copyright Act*.”
- ³² 934 FSupp2d 640, 655.
- ³³ *ibid.*, 655-56.
- ³⁴ Following *Cartoon Network LP v CSC Holdings Inc* 536 F3d 121, 128 (US CA2 2008).
- ³⁵ US Copyright Office, *Digital Millennium Copyright Act Section 104 Report* (Library of Congress 2001) 82-83, cited at 934 FSupp2d 640, 656.
- ³⁶ 934 FSupp2d 640, 656.
- ³⁷ Directive on the Harmonisation of Certain Aspects of Copyright and Related Rights in the Information Society, Directive 2001/29/EC.
- ³⁸ *ibid.*, Recital 28.
- ³⁹ *ibid.*, Recital 29.
- ⁴⁰ *Cornish, Llewellyn & Aplin*, para 12-27.
- ⁴¹ [2007] EWHC 533 (ChD); [2007] FSR 21.
- ⁴² *ibid.*, para 43.
- ⁴³ *ibid.*, para 51, following *KK Sony Computer Entertainment v Pacific Game Technology (Holding) Ltd* [2006] EWHC 2509 (Ch), and distinguishing *Sabaf SpA v MFI Furniture Centres Ltd* [2004] UKHL 45; [2005] RPC 10 (which did not involve a consumer and thus the *Sale of Goods Act* 1979, s.32(4) did not apply).
- ⁴⁴ Section 32(4) reverses the general rule, provided in ss.32(1)-(3), that delivery to the carrier is *prima facie* delivery to the buyer.
- ⁴⁵ Borghi and Karapapa, *Copyright and Mass Digitization*, 76.
- ⁴⁶ *UsedSoft GmbH v Oracle International Corp (C-128/11)* [2012] All ER (EC) 1220.
- ⁴⁷ K Moon, “Resale of Digital Content: *UsedSoft v ReDigi*” (2013) 24 *Entertainment Law Review*, 193.
- ⁴⁸ Directive 2009/24 on the legal protection of computer programs, [2009] OJ L111/16.
- ⁴⁹ The wording is: “The first sale in the Community of a copy of a program by the rightholder or with his consent shall exhaust the distribution right within the Community of that copy, with the exception of the right to control further rental of the program or a copy thereof.”
- ⁵⁰ K Moon, “Resale of Digital Content: *UsedSoft v ReDigi*” (2013) 24 *Entertainment Law Review*, 193, 194.
- ⁵¹ *ibid.*, 195.
- ⁵² [1986] AC 577.
- ⁵³ *ibid.*, 625.
- ⁵⁴ *ibid.*, 627.
- ⁵⁵ As noted in *Eagles and Longdin, Refusals to License*, 94 fn 71.
- ⁵⁶ (1870-71) LR 6 Ch App 239, 245 (Lord Hatherley LC).
- ⁵⁷ *Société Anonyme Des Manufactures De Glaces v Tilghman’s Patent Sand Blast Company* (1883) 25 ChD 1.
- ⁵⁸ *United Wire Ltd v Screen Repair Services (Scotland) Ltd* [2001] FSR 24 para 17 (Lord Hoffmann): “The difference in the two theories is that an implied licence may be excluded by express contrary agreement or made subject to conditions while the exhaustion doctrine leaves no patent rights to be enforced.”
- ⁵⁹ [2013] EWHC 3247 (Patents Court).
- ⁶⁰ *Cornish, Llewellyn & Aplin*, para 6-16.
- ⁶¹ *ibid.*, para 7-24.
- ⁶² See, for example, TRIPs, Article 31, restricting legal mandated unauthorised use of patent rights. *Cornish, Llewellyn & Aplin*, para 7-43: “The TRIPs Agreement signalled an important reversal of

direction. ... The hostility of the United States to the very idea of compulsory patent licensing lies beneath these provisions”.

⁶³ *Patents Act 1977*, ss.48A-54. See generally *Cornish, Llewellyn & Aplin*, paras 7-44 – 7-49.

⁶⁴ See generally Eagles and Longdin, *Refusals to License*.

⁶⁵ Borghi and Karapapa, *Copyright and Mass Digitization*, 111: “The law can oblige rightholders to license certain rights to other parties. This obligation arises from the doctrine of “essential facilities”, which describes a situation where a firm uses its market power to deny competitors access to a facility that is indispensable to entry into a market. This doctrine is strictly related to the ‘refusal to license doctrine’”.

⁶⁶ Eagles and Longdin, *Refusals to License*, 1 fn 2.

⁶⁷ *ibid.*, 8-9 (arguing that refusal to license IP should not be treated differently compared to other instances of refusal to license).

⁶⁸ Joined Cases C-241-242/91P, [1995] 4 CMLR 718.

⁶⁹ [1995] 4 CMLR 718, 719-20. See also the opinion of AG Gulmann at paras [50]-[56]. For application of this approach see, for example, *IMS Health GmbH v NDC Health GmbH* Case C-418/01, [2004] 4 CMLR 1543; *Microsoft v Commission* Case T-201/04, [2007] 5 CMLR (11) 846. *Magill* itself draws on the analysis in *Volvo AB v Erik Veng (UK) Ltd* Case 238/87, [1989] 4 CMLR 122.

⁷⁰ Compare *IMS Health GmbH v NDC Health GmbH* Case C-418/01, [2004] 4 CMLR 1543 para 38: “It is sufficient that three cumulative conditions be satisfied”.

⁷¹ See, for example, Eagles and Longdin, *Refusals to License*, 10-20 for an outline of the “rhetorical exaggeration[s] and distortion[s] ... punchy sound bites that glide easily over the complexity of the issues involved”.

⁷² *ibid.*, 77-78.

⁷³ *ibid.*, 41.

⁷⁴ Borghi and Karapapa, *Copyright and Mass Digitization*, 115. See also Cornish, *Intellectual Property*, 28: “Competition law acts as an ultimate restraint on the monopoly potential of intellectual property”.

⁷⁵ Available at <https://www.gov.uk/government/publications/draft-consumer-rights-bill>. For an overview, see for example, P Shears, “The Consumer Rights Bill 2013 and Other Stories” [2013] *EBLR* 437. This Bill will become law by 2014, as it is necessary for implementation of the Directive on Consumer Rights 2011/83/EC.

⁷⁶ N Watt, “Queen’s speech: consumer bill of rights to cover faulty apps or downloads” (6 May 2013) *The Guardian*. Available at <http://www.guardian.co.uk/money/2013/may/06/queens-speech-consumer-bill-of-rights>.

⁷⁷ <http://discuss.bis.gov.uk/consumerrightsbill/>.

⁷⁸ Department for Business, Innovation & Skills, *Draft Consumer Rights Bill: Government Response to Consultation on Consumer Rights* (June 2013), 4 (Jo Swinson MP). Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206373/bis-13-916-draft-consumer-rights-bill-governemnt-response-to-consultations-on-consumer-rights.pdf.

⁷⁹ *ibid.*, 13.

⁸⁰ Department for Business, Innovation & Skills, *Consumer Rights Bill: Table of Responses to Consultations* (June 2013), 5 fn 2. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206441/bis-13-927-consumer-rights-bill-table-of-consultation-analysis.pdf. This definition is provided in the Consumer Rights Bill 2013, clause 2(7).

⁸¹ Department for Business, Innovation & Skills, *Draft Consumer Rights Bill: Government Response to Consultation on Consumer Rights* (June 2013), 29.

⁸² Available at <https://www.gov.uk/government/publications/draft-consumer-rights-bill>.

⁸³ Consumer Rights Bill, Explanatory Notes, para 75.

⁸⁴ The documentation available at <https://www.gov.uk/government/publications/draft-consumer-rights-bill> focuses on the goods and digital content, with only a very limited level of recognition (such as that found in the Explanatory Notes) of integrated goods.

⁸⁵ Cf. T M Evans, “Reverse Engineering IP” (2013) 17 *Marquette Intellectual Property Law Review*, 61. Evans argues that the US copyright system can usefully borrow patent law doctrine. In the course of her well-reasoned argument, the author discusses (at 90-92) how reverse engineering of tangible goods and digital content can be distinguished, but in doing so she implies a dichotomy between the two.

⁸⁶ Digital content will have to match the contract description as well as being of satisfactory quality and fit for purpose: Consumer Rights Bill 2013, clauses 36-38.

⁸⁷ This definition admittedly raises a question of line-drawing. Thus, in the debates on the changes to the law on designs in the 1840s, Salis Schwabe, a calico printer, said that the proposed register would give “pirates an opportunity, on payment of 5 s, to search for any design he pleases and try how near he could come to my patterns without being called a pirate”. (Cited in B Sherman and L Bently, *The Making of Modern Intellectual Property: The British Experience 1760-1911*, (CUP, Cambridge 1999), 70).

⁸⁸ Cf. Cornish, *Intellectual Property*, 74: “when ... copies bear famous brands ... they are labelled ‘counterfeit’, rather than just ‘piracy’”.

⁸⁹ Google removed over 200 million pirate links in 2013, with a likely final result of over 250 million by the end of 2013: S Gibbs, “Google removes record-breaking 200m piracy links so far in 2013” (13 November 2013) *The Guardian*. Available at <http://www.theguardian.com/technology/2013/nov/13/google-removed-200m-piracy-links-2013>.

⁹⁰ Cf. I Alexander, “Neither Bolt nor Chain, Iron Safe nor Private Watchman, Can Prevent the Theft of Words”: The Birth of the Performing Right in Britain’, in R Deazley, M Kretschmer and L Bently (eds.), *Privilege and Property: Essays on the History of Copyright* (Open Book Publishers, Cambridge 2010), 321, 339.

⁹¹ S Balganes, “The Uneasy Case Against Copyright Trolls” (2013) 86 *Southern California L Rev*, 723 (hereafter Balganes, “The Uneasy Case Against Copyright Trolls”), 725: “The ‘troll’ is becoming a familiar figure in the world of intellectual property law. As an idea, it made its first appearance in patent law, where a ‘patent troll’ today refers to a nonperforming patent owner who merely seeks to enjoin the use of an invention without itself using the invention or servicing the market for it ... For all the attention that the troll has received in patent law however, its presence in copyright law, together with the allied practice of copyright trolling, has been largely ignored”. For analyses of patent trolls, see for example, M A Lemley and A D Melamed, “Missing the Forest for the Trolls” (2013) *Columbia Law Review* (forthcoming), Available at <http://ssrn.com/abstract=2269087>; C V Chien, “‘Holding Up’ and ‘Holding Out’” (30 August 2013) *Santa Clara University Legal Studies Research Paper* No. 19-13, Available at <http://ssrn.com/abstract=2318648>; M Risch, “Patent Troll Myths” (2012) 42 *Seton Hall L Rev*, 457; T Sichelman, “Commercializing Patents” (2010) 62 *Stan L Rev*, 341; S K Shrestha, “Trolls or Market-Makers? An Empirical Analysis of Non-practicing Entities” (2010) 110 *Colum L Rev*, 114; M Morgan, “Comment, Stop Looking Under the Bridge for Imaginary Creatures: A Comment Examining Who Really Deserves the Title Patent Troll” (2008) 17 *Fed Cir BJ*, 165; J M Golden, “Patent Trolls” and Patent Remedies’ (2007) 85 *Tex L Rev*, 2111; G N Magliocca, “Blackberries and Barnyards: Patent Trolls and the Perils of Innovation” (2007) 82 *Notre Dame L Rev*, 1809; J F McDonough III, “Comment, The Myth of the Patent Troll: An Alternative View of the Function of Patent Dealers in an Idea Economy” (2006) 56 *Emory LJ*, 189; R J Mann, “Do Patents Facilitate Financing in the Software Industry?” (2005) 83 *Tex L Rev*, 961.

⁹² Cf Balganes, “The Uneasy Case Against Copyright Trolls”, 732: “A copyright troll refers to an entity whose business revolves around the systematic legal enforcement of copyrights in which it has acquired a limited ownership interest”.

⁹³ J Chan and M Fawcett, “Footsteps of the Patent Troll” (2005) 10 *Intellectual Property Law Bulletin*, 1: “Patent trolls ‘obtain patents, not to make, use, or sell new products and technologies, but solely to force third parties to purchase licences’”. “Trolls used to be thought to extort from manufacturers and suppliers, but contemporary evidences suggest that trolls are focusing on end users, because such parties are more susceptible to the extorting behaviour of trolls”: C V Chien and E Reines, “Why Technology Customers Are Being Sued En Masse for Patent Infringement & What Can Be Done” (30 August 2013) *Santa Clara University Legal Studies Research Paper* No. 20-13, Available at SSRN: <http://ssrn.com/abstract=2318666>.

⁹⁴ J M Golden, “‘Patent Trolls’ and Patent Remedies” (2007) 85 *Tex L Rev*, 2111, 2112.

⁹⁵ See, for example, Balganes, “The Uneasy Case Against Copyright Trolls”, 725-26: “The idea [of a copyright troll] began to get a great deal of attention just this past year, when a Nevada-based company by the name of Righthaven LLC (“Righthaven”) came to develop a business model that revolved around enforcing third party copyright claims against infringers, claims in which it had no more than an artificially tailored assignment of rights. In essence, Righthaven’s model was premised on buying one of the creator’s several rights to exclude from the bundle of exclusive rights that copyright law grants every creator and enforcing it efficiently, albeit in dogmatic fashion”. Balganes goes on to discuss this case at 738 et seq.

⁹⁶ Balganes, “The Uneasy Case Against Copyright Trolls”, 765.

⁹⁷ For a critique of brands, see for example, N Klein, *No Logo: No Space, No Choice, No Jobs. Taking Aim at the Brand Bullies* (Flamingo, London 2000). See also Cornish, *Intellectual Property*, 73: “‘Branding’ ... is the watchword of marketers; lawyers talk of ‘trade marks and associated get-up’. By these terms the two groups mean broadly the same phenomenon; but each inclines to a contemptuous view of what the other contributes to business functioning and general welfare”. See further, for example, D R Desai, “From Trademarks to Brands” (2012) 64 *Florida L Rev*, 981; D Gangee, “Property in Brands: The Commodification of Conversation” in H Howe and J Griffiths, *Concepts of Property in Intellectual Property Law* (CUP, Cambridge 2013), ch 2 (a longer version is available at <http://ssrn.com/abstract=2235721>).

⁹⁸ M A Carrier, “Copyright and Innovation: The Untold Story” [2012] *Wis L Rev*, 891, 908 (a service designed in accordance with the *Napster* ruling); 913 (a service designed in compliance with the US *Digital Millennium Copyright Act* 1998).

⁹⁹ D Lee, “Xbox One pre-owned games may require fee payment” (22 May 2013) *BBC News*. Available at <http://www.bbc.co.uk/news/technology-22623010>.

¹⁰⁰ BBC News, “Xbox One: Microsoft defends pre-owned games rules” (7 June 2013) *BBC News*. Available at <http://www.bbc.co.uk/news/technology-22812743>.

¹⁰¹ http://europa.eu/rapid/press-release_IP-13-406_en.htm. This is essentially the same justification for action against functionally similar behaviour (abuse of standard-essential patents) that was given in the US regarding the Samsung/Apple dispute: see above n 17.

¹⁰² One potential method of distinction may be the hold-up/hold-out model examined in C V Chien, “‘Holding Up’ and ‘Holding Out’” (30 August 2013) *Santa Clara University Legal Studies Research Paper No. 19-13*. Available at SSRN: <http://ssrn.com/abstract=2318648>. Chien argues that hold-up is the province of the troll, whilst the hold-out are those organisations which continue to infringe IPRs because they are able to financially out-muscle the IPR holder. Chien further argues that we cannot combat trolling without also considering hold-outs. The one difference here though is that IP tyrants are the IPR holders; they hold out against those who don’t yet have authority to use the IPR, but potentially could have.

¹⁰³ See, generally, M Heller, *The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovations, and Costs Lives* (Basic Books, New York 2008). See also M A Heller, “The Tragedy of the Anticommons: Property in the Transition from Marx to Markets” (1998) 111 *Harvard L Rev* 621; “The Boundaries of Private Property” (1999) 108 *Yale LJ*, 1163.

¹⁰⁴ Balganes, “The Uneasy Case Against Copyright Trolls”, 730.

¹⁰⁵ *ibid.*, 729-30.

¹⁰⁶ *ibid.*, 746 et seq.

¹⁰⁷ D R Desai, “From Trademarks to Brands” (2012) 64 *Florida L Rev*, 981, 1009.

¹⁰⁸ *ibid.*, 1015: “One may encounter a range of branded goods, but whether those goods are from the original source, whether the company manufactured the goods, and whether the goods have anything to do with a company’s core goods or services are open questions each time one encounters the brand”.

¹⁰⁹ *ibid.*, 1018. See also D Gangee, “Property in Brands: The Commodification of Conversation” in H Howe and J Griffiths, *Concepts of Property in Intellectual Property Law* (CUP, Cambridge 2013), ch 2 (a longer version is available at <http://ssrn.com/abstract=2235721>).

¹¹⁰ S E Siwek, *Copyright Industries in the US Economy: The 2011 Report* (2011). Available at <http://www.iipa.com/pdf/2011CopyrightIndustriesReport.PDF>.

¹¹¹ M A Carrier, “Copyright and Innovation: Responses to Marks, Masnick, and Picker” [2013] *Wis L Rev*, 46, 50.

¹¹² This is evident from its self-description, at <http://www.iipa.com/aboutiipa.html>.

¹¹³ Such as that found in the *Sale of Goods Act* 1979, s.13.

¹¹⁴ *Cornish, Llewellyn & Aplin*, para 1-38. See also Cornish, *Intellectual Property*, 41: “In contrast to patents, with copyright ‘for many people it is not the omniscience of this IP but its mummified shrivel, even to the point of irrelevance, which is to the fore. Most obviously this arises from the Internet, with its immense potential for the distribution of information The Net is bulldozing the ramshackle castles of the copyright industries’.

¹¹⁵ D Mendis, “‘The Clone Wars’: Episode 1 - The Rise of 3D Printing and its Implications for Intellectual Property Law: Learning Lessons from the Past?” [2013] 35(3) *European Intellectual Property Review* 155 (hereafter Mendis, “Clone Wars”), 157. See also D R Desai and G N Magliocca, ‘Patents, Meet Napster: 3D Printing and the Digitization of Things’ (9 October 2013) *Georgetown Law Journal* (forthcoming). Available at SSRN: <http://ssrn.com/abstract=2338067>. The author only became aware of this article at proof stage, and as such can only note that it provides a useful analysis of the potential effect of 3-D printing on US IP law.

¹¹⁶ For a clear and valuable introduction to the process of 3-D printing, see Mendis, “Clone Wars”, 156-57.

¹¹⁷ See for example, A Gabbatt, “Shots fired from world’s first 3D-printed handgun” (6 May 2013) *The Guardian*, available at <http://www.guardian.co.uk/world/2013/may/06/3-handgun-fired-cody-wilson?INTCMP=SRCH>; A Rayner, “3D-printable guns are just the start, says Cody Wilson” (6 May 2013) *The Guardian*, available at <http://www.guardian.co.uk/world/shortcuts/2013/may/06/3d-printable-guns-cody-wilson?INTCMP=SRCH>.

¹¹⁸ Associated Press, “Nasa prepares to launch 3D printer into space” (29 September 2013) *The Guardian*. Available at <http://www.theguardian.com/science/2013/sep/29/nasa-prepares-launch-3d-printer-space>.

¹¹⁹ See for example, J Morgan, “Amaze project aims to take 3D printing ‘into metal age’” (15 October 2013) *BBC News*, available at <http://www.bbc.co.uk/news/science-environment-24528306>; J Miller, “‘Body on a chip’ uses 3D printed organs to test vaccines” (17 September 2013) *BBC News*, available at <http://www.bbc.co.uk/news/technology-24125678>; C Torgan, “3-D Printing of Working Bionic Ears” (20 May 2013), National Institute of Health Research Matters, available at <http://nih.gov/researchmatters/may2013/05202013ears.htm>; M S Mannoor et al, “3D Printed Bionic Ears” (2013) 13 *Nano Letters*, 2634; “3D printing to rebuild patient’s face at Morriston Hospital” (13 November 2013) *BBC News*, available at <http://www.bbc.co.uk/news/uk-wales-south-west-wales-24926598>.

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http://www.sciencemuseum.org.uk/visitmuseum/plan_your_visit/exhibitions/3d_printing_the_future.a_spx.

¹²¹ This is based on Christensen’s theory that companies focus too much on current customers. As such, they fail to adapt novel technologies which reflect their customers (often unstated) needs. The novel technologies then overwhelm the market. See J L Bower and C M Christensen, “Disruptive Technologies: Catching the Wave” (1995) 73(1) *Harvard Business Review*, 43; C M Christensen, *The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail* (Harvard Business Press, Boston 1997).

¹²² See for example, P Day, “Imagine a world without shops or factories” (11 October 2013) *BBC News*, available at <http://www.bbc.co.uk/news/magazine-23990211>; J Naughton, “What corporate giants might be laid low by the 3D printer’s gun?” (12 May 2013) *The Guardian*, available at <http://www.guardian.co.uk/technology/2013/may/12/defense-distributed-3d-printer-gun>.

¹²³ N F Engstrom, “3-D Printing and Product Liability: Identifying the Obstacles” (2013) 162 *University of Pennsylvania Law Review Online*, 35. See also “3D printing: coming to a high street near you” (11 May 2013) *The Observer*, available at <http://www.theguardian.com/technology/2013/may/11/3d-printing-coming-high-street>; S Neville, “First 3D printer reaches high street” (8 July 2013) *The Guardian*, available at <http://www.theguardian.com/business/2013/jul/08/maplin-high-street-first-3d-printer>; V Thorpe, “3D

printing store set for Oxford Street as V&A displays printed gun” (15 September 2013) *The Observer*, available at <http://www.theguardian.com/technology/2013/sep/15/3d-printing-store-oxford-street>.

¹²⁴ N F Engstrom, “3-D Printing and Product Liability: Identifying the Obstacles” (2013) 162 *University of Pennsylvania Law Review Online*, 35, 36.

¹²⁵ *ibid.*, 38, citing *Restatement (Third) of Torts: Products Liability* §19.

¹²⁶ *ibid.*, 39.

¹²⁷ *ibid.*, 41.

¹²⁸ Mendis, “Clone Wars”.

¹²⁹ *ibid.*, 160.

¹³⁰ *United Wire Ltd v Scree Repair Services (Scotland) Ltd* [2001] FSR 24 (HL).

¹³¹ Mendis, “Clone Wars”, 161.

¹³² *ibid.*, 163.

¹³³ *ibid.*, 166.

¹³⁴ [2011] UKSC 39; [2012] 1 AC 208.

¹³⁵ Mendis, “Clone Wars”, 167.

¹³⁶ *ibid.*

¹³⁷ Mendis’ approach can be complemented by the suggestions in C V Chien and E Reines, “Why Technology Customers Are Being Sued En Masse for Patent Infringement & What Can Be Done” (30 August 2013) *Santa Clara University Legal Studies Research Paper No. 20-13*. Available at SSRN: <http://ssrn.com/abstract=2318666>.

¹³⁸ See S Thomas, “Goods with Embedded Software: Obligations under Section 12 of Sale of Goods Act 1979” (2012) 26 *International Review of Law, Computers and Technology*, 165, 166-170.

¹³⁹ Cf. B Meyer, “Ethical questions are looming for prosthetics” (30 August 2013) at <http://www.wired.co.uk/magazine/archive/2013/09/ideas-bank/now-we-need-to-talk-about-our-bionic-future>: “Augmented bodies that contain connected technology give the word hacking a new meaning. My i-limb connects to my iPhone, but my iPhone is connected to the internet. Technically, a part of my body has become hackable”.

¹⁴⁰ <http://www.google.co.uk/glass/start/>. Unsurprisingly, alternative technologies based on the same fundamental concept are being developed: BBC News, “Glasses that can translate text unveiled at Ceatec 2013” (30 September 2013) *BBC News*, available at <http://www.bbc.co.uk/news/technology-24332358>.

¹⁴¹ <http://www.google.co.uk/glass/start/what-it-does/>. See also, for example, J Rivington, “Google Glass: what you need to know” (8 August 2013) *TechRadar*, available at <http://www.techradar.com/news/video/google-glass-what-you-need-to-know-1078114>.

¹⁴² There are reports that wearing Google Glass constitutes a driving offence: BBC News, “Ticket issued to driver wearing Google Glass” (31 October 2013) *BBC News*. Available at <http://www.bbc.co.uk/news/technology-24757224>.

¹⁴³ <http://www.google.com/glass/terms/>, noting under the heading “Resale and Gifts”, that “[y]ou may not commercially resell any Device, but you may give the Device as a gift, unless otherwise set forth in the Device Specific Addendum”. The Device Specific Addendum, applicable if you “purchase a Glass Explorer Edition Device”, states that “[u]nless otherwise authorised by Google, you may only purchase one Device, and you may not resell, rent, or lease your Device to any other person. If you resell, rent, or lease your Device to any other person without Google’s authorisation, Google reserves the right to deactivate the Device, and neither you nor the unauthorised person using the Device will be entitled to any refund, product support, or product warranty”. For a discussion of this see, for example, D Kravets and R Baldwin, “Google Is Forbidding Users From Reselling, Loaning Glass Eyewear” (17 April 2013) *Wired.com*. Available at <http://www.wired.com/gadgetlab/2013/04/google-glass-resales/>.

¹⁴⁴ See for example, M Miller, “Are we close to making human “mind control” a reality?” (10 September 2013) *BBC News* Available at <http://www.bbc.co.uk/news/business-23994649>.

¹⁴⁵ See for example, D H Wilson, “Bionic Brains and Beyond” (1 June 2012) *The Wall Street Journal*. Available at <http://online.wsj.com/news/articles/SB10001424052702303640104577436601227923924>. See also

<http://eyeborg.wix.com/cyborg> (The Cyborg Foundation, which aims to help people “extend their senses by applying cybernetics to the organism”).

¹⁴⁶ M G Bennett and R J Naranja Jr, “Getting Nano Tattoos Right – A Checklist of Legal Ethical Hurdles for an Emerging Nanomedical Technology” (2013) 9 *Nanomedicine: Nanotechnology, Biology, and Medicine* 729.

¹⁴⁷ *ibid.*, 730. There are obviously other ethical issues.

¹⁴⁸ See for example, L Gannes, “Electronic Tattoos and Passwords You Can Swallow: Google’s Regina Dugan Is a Badass” (29 May 2013). Available at <http://allthingsd.com/20130529/electronic-tattoos-and-passwords-you-can-swallow-googles-regina-dugan-is-a-badass/>. The patent application is available at <http://tinyurl.com/nhyggde>.

¹⁴⁹ Cf. Cornish, *Intellectual Property*, 7: “Patents symbolise the selfish and gross commercialisation of basic scientific research, in some instances offending deep ethical and environmental beliefs. Many who would never speak in Marxian terms, nonetheless regard what is happening as a commodification too far”.

¹⁵⁰ V Thorpe, “‘Bionic man’ warns of ethical minefield” (29 September 2013) *The Observer*. Available at <http://www.theguardian.com/uk-news/2013/sep/29/bionic-man-ethical-debate-futurefest> (the reference to arrogance and naivety is a quotation from Bertolt Meyer, a social psychologist and user of a bionic prosthetic limb: see n139).

¹⁵¹ Cornish, *Intellectual Property*, 55.

¹⁵² *ibid.*, 60.

¹⁵³ Balganes, “The Uneasy Case Against Copyright Trolls”, 767-68.

¹⁵⁴ M J Radin, *Boilerplate: The Fine Print, Vanishing Rights, and the Rule of Law* (Princeton University Press, Princeton and Oxford 2013), 168.

¹⁵⁵ Cornish, *Intellectual Property*, 60.

¹⁵⁶ *ibid.*, 65.

¹⁵⁷ *ibid.*

¹⁵⁸ M A Carrier, “Copyright and Innovation: Responses to Marks, Masnick, and Picker” [2013] *Wis L Rev*, 46, 57.

¹⁵⁹ *ibid.*, 48, referring to his earlier qualitative research into industry perspectives on the relationship between technology and copyright: M A Carrier, “Copyright and Innovation: The Untold Story” [2012] *Wis L Rev*, 891.

¹⁶⁰ E S K Ng, “Patent Trolling: Innovation at Risk” [2009] *EIPR*, 593.

¹⁶¹ *ibid.*, 605.

¹⁶² *ibid.*, 606.

¹⁶³ Cornish, *Intellectual Property*, 27 fn 57: the *Patents Act* 1977 was, to some degree, a consequence of the refusal of Hoffmann-LaRoche to participate in a pharmaceutical price regulation scheme resting on patent licensing. Cornish, *Llewellyn & Aplin*, para 1-13: “The marked tendency under modern condition is to reach answers about the proper scope of protection by political decision expressed primarily in legislation. Partly this is because the interest groups concerned are expected to make out their case sufficiently to a responsible body; and partly because a complex set of rules is required which cannot satisfactorily be fashioned from the vagaries of litigation”.

¹⁶⁴ Not least if there is even a potential for developing personhood through our relationships with things: cf. M J Radin, “Property and Personhood” (1982) 34 *Stanford Law Review*, 957.

¹⁶⁵ It is accepted that there are strong arguments for distinct treatment of special markets, such as markets for digital products (compared to markets for mere tangible goods). High technology markets may focus more on product-function differentiation than price (negating the effect of substitutes), and may be subject to network effects on consumption and value (more users provides the product with higher value). However, the absence of any substantial empirical evidence one way or the other means that such markets should not necessarily be treated differently: see for example, Eagles and Longdin, *Refusals to License*, 47-50.

¹⁶⁶ Cornish, *Intellectual Property*, 61. Cornish wrote this in the context of noting Litman’s argument that IPR holders lose the moral high ground by asserting control over material already paid for: J Litman, “The Breadth of the Anti-trafficking Provisions and the High Moral Ground” in J C Ginsburg and J M Besek (eds.), *Adjuncts and Alternatives to Copyright* (ALAI, New York 2001), 456.

¹⁶⁷ M J Radin, “Property and Personhood” (1982) 34 *Stanford Law Review* 957.

¹⁶⁸ See further, for example, E Derclaye, “What Can Intellectual Property Law Learn from Happiness Research?” in G B Dinwoodie (ed.), *Methods and Perspectives in Intellectual Property* (Edward Elgar, 2013 forthcoming), ch 14. Draft available at <http://ssrn.com/abstract=2277160>.

¹⁶⁹ *Cornish, Llewellyn & Aplin*, para 1-01.

¹⁷⁰ R Jacob, “IP Law: Keep Calm and Carry On?” [2013] *Current Legal Problems*, 1.

¹⁷¹ *ibid.*, 21.