

Digitisation and society

As we saw in Chapter 1 the move from atoms to bits represents a challenge to the traditional economics of bricks and mortar industries as well as to established legal models. Both law and economics have traditionally assumed value and control may be achieved through rivalrousness and exclusivity, both of which are side effects of the atomic model. As also outlined in that chapter, the information society did not emerge fully formed in the 1980s; it had been slowly developing as the post-industrial society which grew at the end of the second world war slowly moved the bulk of the GDP of post-industrial states such as the UK from primary industries such as mining and quarrying and secondary industries such as shipbuilding and car manufacture into the tertiary sector of banking and insurance, and later to the quaternary sector of information broking.

Given this slow economic and social development of the information society it is amazing that traditional economic and legal models have found it so difficult to adapt to the challenges of digitisation. Commentators will cite that the speed of growth of information technologies from the 1960s to the present day as one of the reasons we have been caught out,¹ but in truth it is simpler than that: it is simply the disruptive effect of the process of digitisation. As we touched upon in Chapter 1 a bit can be used as the building block of all types of digital information. It is the informational equal of the atom and can be used to represent, send, and store, text, images, or sound. The bit is the natural way to store textual data such as books or academic papers, music, images such as holiday snaps, or even movies. What has driven the adoption of digital technologies over recent years is threefold. Firstly the cost of storing bits has fallen dramatically over the last fifty years,² secondly the cost and speed of transmitting bits across computer networks has equally fallen,³ and thirdly consumers have fuelled a demand for the incorporation of greater storage capacity and multi-platform support

¹ See, e.g. N. Negroponte, *Being Digital* (1995), 5–6; F. Webster, *Theories of the Information Society* (2002), 9–11.

² In 1956 it cost \$50,000 to buy the world's first hard drive which stored 5MB of data. This is \$10,000 per MB of storage. By 1980 a 26MB HDD was down to \$5,000 (or \$193 per MB). In 1987 a 40MB Iomega HDD was \$1,799 (or \$45 per MB). By 1995 the price had dropped all the way to 85¢ per MB with the release of the 2.9GB, \$2,899 dollar Seagate HDD. Remarkably the price per MB of HDD storage currently stands at 0.02¢ per MB. Data supplied from *Historical Notes about the Cost of Hard Drive Storage Space*: <http://www.altis.net/ns1625/winchest.html>.

³ In the late 1990s a connection speed of 28.8K (or 28 KBs) would cost about £30 per month (in addition to the cost of the modem). By the turn of the millennium 56.6K dialup cost about £25 per month. Now 8MB broadband is available for as little as £5.89 per month.

in all digital devices by continually demanding more from device manufacturers.⁴ These three effects have brought about a massive change in the way we use, store, and transmit information. It has freed information from the restrictions of atomic carrier media such as CDs, DVDs, and bound texts and has at the same time made information more valuable and more malleable. These developments will form the focus of this chapter.

3.1 The digitisation of information

Before the widespread adoption of digital information management information was held in discrete and often poorly catalogued packets.⁵ If we take as our example your NHS medical records we see the difference digitisation makes to the value and accessibility of informational products. Traditionally NHS medical records were held on a variety of manual filing systems. Your GP and each specialist medical provider you visited would each keep their own discrete set of patient records. Thus if you regularly attended three different hospitals for different treatments you would have at least four sets of medical records, one at each hospital and one held by your GP, meaning no one set was complete or definitive. In addition, as all the data on these records was manually recorded and indexed, searching your file was a time-consuming exercise, and as indexing was a skilled job, and therefore expensive, only key information would be indexed in any event. The development of information technology⁶ allows for a single record which can be accessed by all carers contemporaneously and which may, instantly, be searched by any keyword.⁷ This example, and the example of the iPod given in footnote five, illustrates the power of digital informational management and retrieval. This is developed further by Professor Fred Cate, in his book *Privacy in the Information Age*.⁸

⁴ Look in your pocket, bag, whatever. Do you have a mobile phone? Does it play music? What about movies? Does it take pictures? What about videos? Can you access the internet on it? What about your email? Can you edit documents? Finally can you use it to call people? If you answered yes to most of these think what would you have been able to do with your mobile phone in 1999.

⁵ Think for a moment about the difference between your CD collection and your iPod. Your CD collection was made up of hundreds of individual plastic discs which were held discretely and which you would manually search. Your iPod can hold thousands of tracks and can be searched using titles, artists or genre. You can 'shuffle' your iPod to play music in an unexpected order which can throw up unusual combinations such as Jean-Michel Jarre followed by Iron Maiden in a way not possible when your music was held on discrete packets or discs.

⁶ The key aspect of IT or information technology is in its ability to harness the power of information. Too often commentators focus on what the technology can do, not what the information allows. This is a critique levelled by Richard Susskind in his book, *Transforming the Law: Essays on Technology, Justice and the Legal Marketplace* (2000).

⁷ This is the theory. In the interests of transparency it should be admitted that the NHS computer system described above is yet to be delivered in practice and recent reports have suggested that the current NHS computer programme will fail to deliver this level of delivery. See '£20bn NHS computer system "doomed to fail"', *The Daily Telegraph*, 13 February 2007: <http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/02/13/ncomputer13.xml>.

⁸ F.H. Cate, *Privacy in the Information Age* (1997), 14–15.



Highlight Cate's Four Reasons for Data Growth

1. Information is easier to generate, manipulate, transmit and store.
2. The cost of collecting, manipulating, storing, and transmitting data is lowered.
3. Electronic information has developed an intrinsic value not found in analogue information due to its very nature.
4. The operating parameters of computer systems and networks generate additional digital information through back-up copies and cache copies.

Professor Cate describes four generic reasons for the growth of digital information and digital information management. The first, which may be clearly seen from the example above, is that it is easier to generate, manipulate, transmit, and store information. Individuals with simple database programs such as Microsoft Access can manage and manipulate more data on a simple home PC than a medium sized organisation such as a school or small business could do in the analogue era. Secondly, the cost of collecting, manipulating, storing, and transmitting data is lowered. Cheap storage media such as external hard disk drives and flash media, the advent of cheap internet access and the development of file sharing systems such as BitTorrent mean that for a few pence thousands of pages of data may be uploaded, downloaded, or stored. Thirdly, electronic information has developed an intrinsic value not found in analogue information due to its very nature. As digital information is cheaply processed and stored it attracts a premium in the marketplace. This market advantage encourages gatherers of information to favour collection of digital information over analogue information, leading to vast increases in the volume of digital information available. Finally, Cate notes that the operating parameters of computer systems and networks generate additional digital information through back-up copies and cache copies. Due to these four factors Cate records that 'we are witnessing an explosion in digital data.'⁹ The effects of such an explosion are more apparent in 2010 than they were when Professor Cate made that observation in 1997. The economies of scale that digital information offers are now significantly enhanced with both the previously observed collapse in the cost of digital storage media and with increased processing capability including keyword cataloguing and the promise in the near future of a semantic web.¹⁰

⁹ *ibid*, 16.

¹⁰ The semantic web is one where content information is understandable by computers, allowing them to perform more of the tedious work involved in finding, sharing and combining information on the web. It was described by Sir Tim Berners-Lee as '[a] Web [in which computers] become capable of analyzing all the data on the Web—the content, links, and transactions between people and computers. A "Semantic Web", which should make this possible, has yet to emerge, but when it does, the day-to-day mechanisms of trade, bureaucracy and our daily lives will be handled by machines talking to machines. The "intelligent agents" people have touted for ages will finally materialize'. See T. Berners-Lee & M. Fischetti, *Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web* (2000), 169. A more detailed analysis of the semantic web may be found in L. Yu, *Introduction to Semantic Web and Semantic Web Services* (2007).

3.1.1 Information collection, aggregation and exploitation

As we observed in Chapter 1, the modern economies of leading industrialised nations are now built upon the processing, storage, and transmission of data. A massive data processing industry has grown up, with Google the prime example of how to turn information into profit. We all know Google and we all use Google. According to reports Google is variously the world's most valuable and profitable brand¹¹ and the largest advertiser in the UK.¹² How did Google achieve this in only 12 years? It has done so by the aggregation of vast amounts of data including search data, data held in Gmail accounts, and data held in the Google shared storage system.¹³ This data is then searched for keywords which are then use to make targeted advertisements, or in Google parlance, sponsored links. This type of advertising is much more efficient than television or radio broadcasting which most of the time reaches the wrong audience: it is an advertising cruise missile compared to the old fashioned technique of pattern bombing.

Other companies have caught on: BT have considered the introduction of a service known as Phorm. Phorm allows ISPs to anonymously survey their customers surfing habits and then, in the words of the Phorm website: 'Phorm's proprietary ad serving technology uses anonymised ISP data to deliver the right ad to the right person at the right time—the right number of times'.¹⁴ Of course not everyone believes Phorm is as anonymous as it is claimed and several pressure groups have sprung up including Bad Phorm and Dephormation.¹⁵ These pressure groups focus upon the issue of individual online privacy and advocate campaigning against the gathering of individual data. They achieved a major success in July 2009 when BT chose not to implement Phorm technology in its new Webwise software.¹⁶

This is the rub of the business model which makes profits from informational processing. To make money you have to either charge for your service, which means you will be undercut by free services, or you have to offer advertisers a better return on their investment than your competitors, this means gathering data about your customers, a process which may generate bad publicity. There is nothing new with this approach; offline supermarkets have done it for years through loyalty cards as have airlines and hotels. Loyalty cards bring two returns: the obvious that the customer is more likely to use your service if he gets something in return, but also less obviously they aggregate and then sell on the data collected via your loyalty account to third parties, as well as using

¹¹ See Millward Brown, The Top 100 most powerful brands, 08, <http://www.brandz.com/upload/BrandZ-2008-RankingReport.pdf>.

¹² D. Sabbagh 'Internet outshines ITV in ads war', *The Times*, 30 October 2007: http://business.timesonline.co.uk/tol/business/industry_sectors/media/article2767086.ece.

¹³ See <http://www.google.co.uk/support/accounts/bin/topic.py?topic=14145>. See also R. Blakely, 'Google aims to become world's biggest holder of digital data', *The Times*, 28 November 2007: http://business.timesonline.co.uk/tol/business/industry_sectors/technology/article2957326.ece.

¹⁴ Taken from <http://www.phorm.com/>.

¹⁵ You can find out about these groups at respectively <http://www.badphorm.co.uk/> and <http://www.dephormation.org.uk/>.

¹⁶ R. Wray, 'BT drops plan to use Phorm targeted ad service after outcry over privacy', *The Guardian*, 6 July 2009: <http://www.guardian.co.uk/business/2009/jul/06/btgroup-privacy-and-the-net>.

it themselves.¹⁷ The problem with these schemes, if there is a problem, is the informational asymmetry involved. We as customers are willing to give away vast amounts of personal data to get a Gmail or Yahoo! Mail account or in return for a 1% discount on our weekly shop. We are not aware of the potential value of this data on the secondary market and as a result, arguably, data protection laws have not yet caught up with the benefits that modern information processing brings. We will examine in detail much of these effects in Part VI—Privacy in the Information Society.

3.1.2 Information disintermediation

While Professor Cate has caused us to stop and consider the possible downside of the digitisation of information as it effects individual privacy, there is, as far as the individual end user is concerned a very clear upside also. Freed from the restrictions of atomic carrier media informational products have forged a new distribution system through the internet. While the supply of informational products were traditionally tied to the standard distribution chain of manufacturer-carrier-shop (think of a CD which would be pressed, distributed then sold on the high street), the modern distribution system for informational products such as music, movies, and newspapers and magazines is by direct delivery from the producer of the product to the consumer by digital download. This is part of a process known as disintermediation where the middle-men in a supply chain are cut out and the financial benefits are split between the supplier and the purchaser. Now instead of buying your music at Virgin or HMV on a CD you are more likely to download it from iTunes or Napster. You may even take it one stage further and get your music direct from the band via their MySpace page, thus also disintermediating the record producer. Similarly whereas you once bought your copy of *The Guardian* at your local newsagent now you can read the paper online in full, and should you want to read the paper exactly as typeset you can subscribe to the digital edition of the paper. Again you have the option of bypassing the editors and publishers of the newspaper and going straight to the source of many news stories through the advent of so-called citizen journalism where individuals play an active role in the process of collecting, reporting, analysing, and disseminating news and information, usually through the blogosphere.¹⁸ In both these examples disintermediation of the distribution network may be imprecisely called Web 1.0 distribution. This is the traditional model of digital distribution in which content producers developed websites and download tools which were strictly one-way 'push' media. The second examples, which use social networking tools such as MySpace and blogging tools such as Blogger, are Web 2.0 systems where digital networks are harnessed to facilitate creativity, sharing of information, and collaboration among users.¹⁹ The challenge online collaborative endeavours brings to traditional informational products is already well-known among producers of such products.

¹⁷ To read about Tesco's Crucible database, operated by its marketing subsidiary 'Dunnhumby' see H. Tomlinson & R. Evans, 'Tesco stocks up on inside knowledge of shoppers' lives', *The Guardian*, 20 September 2005: <http://www.guardian.co.uk/business/2005/sep/20/freedomofinformation.supermarkets>.

¹⁸ S. Bowman & C. Willis, *We Media: How Audiences are Shaping the Future of News and Information*. (2003): http://www.hypergene.net/wemedia/download/we_media.pdf.

¹⁹ T. O'Reilly, What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software (2007) 1 *Communications & Strategies* 17. Web 2.0 will be discussed in depth in Chs 6 and 20.

In 1994 respected cyber-commentator John Perry Barlow wrote a prophetic paper about the effects of disintermediation and the economic impact it would come to have. This paper, entitled *The Economy of Ideas: Selling Wine Without Bottles on the Global Net*,²⁰ is widely available online²¹ and outlined many of the challenges disintermediation would bring to traditional informational entertainment industries such as the music industry. He defines the challenge as: '[as] digital technology is detaching information from the physical plane, where property law of all sorts has always found definition ... [this] property can be infinitely reproduced and instantaneously distributed all over the planet without cost, without our knowledge, without its even leaving our possession, how can we protect it? How are we going to get paid for the work we do with our minds? And, if we can't get paid, what will assure the continued creation and distribution of such work?''²²

Barlow, who has some experience of the creative industries having worked as a lyricist for the Grateful Dead, reminds us it is not the ideas that are protected by intellectual property laws, but rather the expression of the ideas.²³ Taken a step further Barlow reminds us it is how the expression of the ideas is recorded that is protected: thus patents are specified,²⁴ trademarks are registered,²⁵ and copyright material is fixed.²⁶ In Barlow's terms: 'throughout the history of copyrights and patents, the proprietary assertions of thinkers have been focussed not on their ideas but on the expression of those ideas. The ideas themselves, as well as facts about the phenomena of the world, were considered to be the collective property of humanity. One could claim franchise, in the case of copyright, on the precise turn of phrase used to convey a particular idea or the order in which facts were presented. The point at which this franchise was imposed was that moment when the 'word became flesh' by departing the mind of its originator and entering some physical object, whether book or widget. The subsequent arrival of other commercial media besides books didn't alter the legal importance of this moment. Law protected expression and, with few (and recent) exceptions, to express was to make physical ... For all practical purposes, the value was in the conveyance and not the thought conveyed.'²⁷ Barlow developed a useful shorthand for this process: 'the bottle was protected, not the wine'.²⁸ Of course the ability to send information as bits across the telecommunications network changes this. The wine can now be carried without the bottle and as such, Barlow argues that traditional models of property law, in particular traditional intellectual property laws, will be required to evolve if they are to remain useful.

²⁰ *Wired* 2.03, March 1994.

²¹ At many sources including: <http://homes.eff.org/~barlow/EconomyOfIdeas.html>; <http://www.virtualschool.edu/mon/ElectronicFrontier/WineWithoutBottles.html>; and http://www.selenasol.com/selena/extropia/idea_economy_article.html. ²² *ibid.*

²³ H. MacQueen, C. Waelde & G. Laurie, *Contemporary Intellectual Property: Law and Policy* (2007), Ch. 2. ²⁴ Patents Act 1977, s. 14(2)(b). ²⁵ TMA 1994, s. 32(2)(d).

²⁶ CDPA 1988, s. 3(2).

²⁷ Barlow, above n. 20.

²⁸ *ibid.*



Case Study Napster

Everyone knows at least part of the story of Napster. In June 1999 Shawn Fanning, a student at Boston's Northeastern University, released his 'Napster' protocol.

Fanning created Napster out of frustration: he, like many college students, was an avid music fan who was strapped for cash. He was frustrated for several reasons. Firstly, he wanted to search for digital music files but the only option available at the time was to use crude search engines which would search the entirety of a library with no specific ability to search for music files. Secondly he wanted to swap interesting pieces of music with like-minded individuals but didn't have the tools to do so, and thirdly he was frustrated by the quality of music available and the cost of replacing older collections on vinyl with newer collections on CD.

Fanning designed his Napster protocol to meet these needs. It was, in his mind at least, primarily a tool designed to create a community where people could meet and talk about music. He initially envisaged that any trading of music files would take place outside the Napster community by email or Internet Relay Chat but late in the development of Napster he added a revolutionary option: the ability to interface directly with the computer of another Napster user and to download from his or her PC music files in MP3 format.

Napster was an instant success. It rapidly gathered members from around the globe and Napster fundamentally altered the market structure for online music distribution with, at the peak of Napster's popularity, almost three billion music files being traded amongst members each month.

In design Napster was much like eBay: a consumer-to-consumer (C2C) trading community, but Napster was designed specifically around a single product: digital music files. This difference drove the early success of Napster, but was ultimately to lead to its downfall. As Barlow had pointed out five years earlier, creative goods are quite distinct from physical goods and whereas eBay is a valuable C2C reselling community which allows individuals to sell on items at the value the market attaches to them, members of the Napster community were engaged in something quite different. Napster was a C2C trading community, that much is true, but with Napster the trading was in copies of music files meaning the 'seller' never relinquished their original file: this in turn meant that there was no need to charge for files and so all music in the Napster community was available at no cost. The result was a market which was built on a clearly illegal activity and which fundamentally undermined the market model for paid-for digital music downloads: why pay Apple 99¢ per track when you could download it for free from Napster? The Napster market model was about to undermine the entire exercise of designing paid-for music download models: from the point of view of the media distribution industries it had to be closed down, and quickly.²⁹

The response from the music industry was exactly as has been predicted by Barlow; information had to be 'propertised' again. The music industry made a two-pronged

²⁹ Napster will be discussed in depth in Ch. 10 but a short discussion of the Napster case here is useful.

attack. Firstly they set out to close down the immediate threat of Napster. As the vast majority of music available on Napster was protected by copyright, a group of leading music studios, including A&M Records, Geffen Records, MCA, Motown, and Capitol Records raised a suit against Napster claiming contributory and vicarious copyright infringement.³⁰ Following a trial hearing the District Court found that the complainants had successfully established a *prima facie* case of direct copyright infringement on the part of Napster's users. According to the Court, 'virtually all Napster users engage in the unauthorised downloading or up-loading of copyrighted music'³¹ and 'Napster users get for free something they would ordinarily have to buy [which] suggests that they reap economic advantages from Napster use.'³² Further the Court held that the effect of the use upon the value of the work and potential markets for the work weighed against finding that use of Napster constituted fair use. As a result it rejected Napster's fair use defence, and distinguished the Supreme Court's decision in *Sony Corp of America v Universal City Studios*³³ In particular, the Trial Judge noted that unlike VCRs, in which users were initially invited to view the television broadcast for free, Napster users obtained permanent copies of songs that they would otherwise have had to purchase. Further, the majority of VCR users merely enjoyed the tapes at home, in contrast, 'a Napster user who downloads a copy of a song to her hard drive may make that song available to millions of other individuals ... facilitating unauthorized distribution at an exponential rate.'³⁴ The District Court, in short, concluded that the conduct of Napster users could not be considered fair use because it threatened the incentives created by copyright. With this finding, the music industry obtained judgements against Napster for both contributory infringement,³⁵ and vicarious infringement.³⁶ An appeal by Napster to the Ninth Circuit proved to be unsuccessful³⁷ and in February 2001 Napster was closed down.

³⁰ *A&M Records Inc v Napster Inc* 114 F Supp 2d 896 (N D Cal 2000), *affd in part and revd in part*, 239 F 3d 1004 (9th Cir 2001). ³¹ *ibid.*, 911. ³² *ibid.*

³³ 464 US 417 (1984). ³⁴ *A&M Records v Napster*, above n. 30, 913.

³⁵ Contributory infringement requires both knowledge of the infringing activity and a material contribution (actual assistance or inducement) to the alleged primary infringement. The Court interpreted the knowledge requirement as not merely that the Napster system allowed an infringing use, but that Napster had actual notice of the infringement and then failed to remove the offending material. The Court concluded that Napster knew or had reason to know of its users' infringement of plaintiffs' copyrights, that Napster failed to remove the material, and that Napster materially contributed to the infringing activity by providing the site and facilities for direct infringement.

³⁶ Vicarious infringement results when there has been a direct infringement and the vicarious infringer is in a position to control the direct infringer, fails to do so and benefits financially from the infringement. The Court held that Napster was vicariously liable as they failed to exercise their right and ability to prevent the exchange of copyrighted material. Further, Napster had a direct financial interest in the downloading activities since their revenue was dependent on user increase which was driven by the infringing activities of users.

³⁷ In fact Napster's appeal was partly successful. The Court of Appeal noted that: 'contributory liability may potentially be imposed only to the extent that Napster: (1) receives reasonable knowledge of specific infringing files with copyrighted musical compositions and sound recordings; (2) knows or should know that such files are available on the Napster system; and (3) fails to act to prevent viral distribution of the works. The mere existence of the Napster system, absent actual notice and Napster's demonstrated failure to remove the offending material, is insufficient to impose contributory liability' (1014). This meant the plaintiffs had to give Napster written notice of all infringing files.

3.1.3 Information management

The music industry knew that litigation on its own was not going to deal with the problem of illegal trading in MP3 files. What was needed was to replace the 'bottle' which had been lost: the re-propertisation of digital content. The music industry had since the mid 1990s been developing cryptography tools such as Digital Rights Management (DRM) and Digital Watermarking. Again this had been predicted by Barlow. He had defined cryptography as 'the 'material' from which the walls, boundaries—and bottles—of Cyberspace will be fashioned.'³⁸ DRMs offer the media distribution industries the most tantalising opportunity: distribution of their products in a carrier medium which cannot be copied. As DRMs use an encryption key to control access to the media file, they prevent not only against illegal access but also copying—they are a bit like having a book printed on uncopyable paper where the text only becomes visible when the authorised owner of that book is reading it.³⁹

The problem with DRM encryption is that any digital technology which can be engineered can also be reverse engineered, in other words months or years spent designing your encryption protocol may be undone in minutes by a cracker.⁴⁰ To prevent widespread cracking of DRMs the entertainment industries sought to give legal support to DRM technology by propertising DRMs. This was achieved through Articles 11 and 12 of the World Intellectual Property Organization (WIPO) Copyright Treaty adopted in Geneva in December 1996.⁴¹ Article 11 requires all WIPO states to 'provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights', while Article 12 requires WIPO states to criminalise attempts to 'remove or alter any electronic rights management information without authority'; or to 'distribute, import for distribution, broadcast or communicate to the public, without authority, works or copies of works knowing that electronic rights management information has been removed or altered without authority.'

In Europe the 2001 Directive on Copyright and Related Rights in the Information Society⁴² gives effect to these provisions. This restricts all acts of circumvention,⁴³ bans the importation, sale, rental, or possession for commercial purposes of all tools designed to allow circumvention of encryption systems,⁴⁴ and the distribution of content from which a rights management system has been removed.⁴⁵ This would appear to be the end of this tale. Bottles have been recreated through the use of cryptography.

³⁸ Barlow, above n. 20.

³⁹ It should be noted that DRMs do not on the whole prevent the digital media file from being replicated, but what is replicated is the *encrypted* file not the plaintext file, meaning that simply copying the file is worthless unless you have a license from the copyright owner to access it.

⁴⁰ Software cracking is the modification of software to remove encoded copy prevention. Those who carry out this activity are crackers, not hackers. The resultant decrypted files are known as Warez and are widely distributed.

⁴¹ http://www.wipo.int/treaties/en/ip/wct/trtdocs_wo033.html.

⁴² Dir.2001/29/EC.

⁴³ Art. 6(1).

⁴⁴ Art. 6(2).

⁴⁵ Art. 7(1).

Any attempt to tamper with, remove, or damage such bottles is criminalised. The status quo, which was unbalanced by the disintermediation of content and carrier, is digitally restored. But, I am pleased to say that while the content industry may be thinking small: we, their customers are thinking big. Fed up of the iTunes/iPod technical symbiotic relationship,⁴⁶ customers continued to lobby for DRM free files from iTunes and eventually, on 2 April 2007 Apple announced it would make available DRM free content.⁴⁷ Since this announcement more and more music has become available DRM free including the distribution of DRM free music from Sony, Warner, and Universal on MySpace and with DRM free music now being distributed by among others Amazon and Tesco, the crypto-bottle appears to be shattered which is good news as we seek to carry our digital content on ever more intelligent devices which can multi-task.

3.2 Digital convergence⁴⁸

I have an iPhone: the iPhone is a truly remarkable device. On it you can (among other things): listen to music, phone people, text people, watch videos, send and receive email, surf the web, manage your calendar, take pictures, store pictures, write text, check your stocks, and plan your journeys using Google maps. Think back twenty years (if you are old enough). To do all these things I would have needed to carry a Walkman, a mobile phone, a laptop computer, a journal or diary, a camera, and a road atlas. Now I have a hand-held device that weighs 133g. This change has been brought about by the fifth generic reason for the growth of digital information and digital information management which we can add to Cate's original four: digital convergence.

Convergence can be seen as another side effect of the freeing of content from the carrier. Whereas previously all content had a different carrier medium: photographs used photographic film or paper, music used magnetic tape, optical discs (CD) or vinyl disks, while text used paper; now freed from these restrictions all content is carried equally, as 0s and 1s. The concept of convergence came to media and communications theory from the mathematical disciplines where it was used to refer to the coming together of physical things such as beams of light or non-parallel lines. Media and communications commentators began to apply the term to the coming together of media platforms in the late 1970s or early 1980s, it being extremely difficult to determine exactly when,

⁴⁶ Apple Encrypted AAC files as downloaded from iTunes will only play on Apple approved products such as iPods and some mobile phones.

⁴⁷ Originally DRM free content, called iTunes plus was more expensive than DRM encoded content, but from October 2007 all content supplied from iTunes is DRM free if allowed by the music publisher.

⁴⁸ Digital Convergence or digital platform convergence or sometimes technological convergence should not be confused with the related but different phenomena of media convergence. Media convergence is an economic strategy in which communications companies seek financial benefit by making the various media properties they own work together. For a discussion of media convergence see H. Jenkins, *Convergence Culture: Where Old and New Media Collide* (2006).

and by whom, the term was first used in this context. What is clear though is that communications theorist Ithiel de Sola Pool adopted this contextual use of the term and popularised it among media and communications theorists. In his landmark 1983 book, *The Technologies of Freedom*,⁴⁹ Pool wrote of the 'convergence between historically separated modes of communication' and argued that 'electronic technology is bringing all modes of communications into one grand system'.⁵⁰

Despite writing in 1983 it took close to twenty-five years for Pool's vision to become reality, why did it take so long? One obvious reason was the delay in developing a fully digital informational distribution chain. For complete digital convergence to become a reality we require technological innovations in every stage of the information infrastructure. Information needs to be gathered digitally. This is now becoming quite commonplace with reporters filing stories by email and the use of digital cameras to record news events and television broadcasts. Then information needs to be stored and delivered in digital form. Again this is now becoming true. Most media outlets now store information in digital form and deliver it digitally, whether as digital television, digital radio, or as an online newspaper. Secondly it required a new generation of portable devices that would multi-task. The arrival of devices such as the Apple iPhone, the Nokia N95, and the RIM Blackberry signal that perhaps twenty-five years after Pool predicted it we stand on the threshold of the golden age of convergence.

What legal challenges will convergence bring? As we saw above digitisation challenged both privacy and property laws. As information and content became cheaper to gather, cheaper to process, and cheaper to distribute, the intellectual connection between information or data and concepts such as personhood, privacy, autonomy, and respect for private property were initially swept aside in a rush to experiment with new technologies and to profit from new data mining and data gathering techniques. In comparison with digitisation digital platform convergence is still in its infancy. The earliest platform convergence came about in 2000 with the release in Japan of the Sharp J-SH04 which was the world's first commercially available camera phone.⁵¹ Thus it is still too early to predict with certainty all of the issues that platform convergence will raise but some that we may predict will be vexing lawyers and judges in the next five to ten years.

The first which comes to mind is payments to authors and creators for multiple applications of content. Music phones allow you use an MP3 file or similar for use as a personalised ringtone. The iPhone takes it one step further by allowing you to tailor a piece of iTunes purchased music to be used as your ringtone. The issue for composers of music is that they want to ensure they are properly recompensed for their efforts. If I pay 79p to download a single music track to my music enabled phone the author will receive a payment of royalties. If I then decide to use that MP3 as my ringtone the author should receive a separate payment. With retail value of the UK's music ringtone

⁴⁹ I. de Sola Pool, *The Technologies of Freedom* (1983). ⁵⁰ *ibid*, 28.

⁵¹ The author acknowledges that General Purpose Computers could before this date do many things required of a convergent device such as play music, organise data, send and receive email, etc. but argues that as they were by name General Purpose machines they were as such not properly convergent devices.

market estimated at being worth between £100–120m, compared to £30m for full track mobile downloads, the value of this market to composers and music publishers is all too clear.⁵² The risk comes from so-called sideloading of content. This is where the user loads content to their music enabled phone, either from a download site or from a CD or other media and then converts that to be used as a ringtone or for some other use. Composers of music sold as downloaded ringtones have their royalties collected on their behalf by the Performing Rights Society, but they have recently admitted that with people sideloading content to music enabled phones they have been only been able to collect less than 5% of the royalty value in ringtones and in online music streaming.⁵³ As more and more devices become multi-platform this problem is set to increase.

The second problem is multiple file copies. When a music publisher sold a CD he sold, and therefore took a royalty for the composer, on the basis that this was one copy of the music sold. As the law currently stands if I take a CD and ‘rip’ it to my MP3 player this is an infringement of copyright.⁵⁴ There is currently in the UK no right to back-up a music file,⁵⁵ thus all of us, myself included, who transferred their CD collection to their iPod or other MP3 player did so in breach of the current law. This has recently been reviewed by the Gowers’ Review of Intellectual Property,⁵⁶ where it was recommended that the Government ‘introduce a limited private copying exception by 2008 for format shifting for works published after the date that the law comes into effect. There should be no accompanying levies for consumers.’⁵⁷ This recommendation has since been taken forward in the Triesman consultation,⁵⁸ where it has been recommended that ‘a new exception to copyright to allow consumers to make a copy of a work they legally own, so that they can make the work accessible in another format for playback on a device in their lawful possession’ be created.⁵⁹

You may note this says I may make **one** copy of the work in another format. What about multi-device homes? In our house we have a CD player, a desktop computer, a laptop, two iPods and two iPhones. That suggests we need to make six copies of the original. Triesman goes on to say ‘It would only permit format shifting, i.e. the copying of legitimately owned works to different formats for use on different devices. It would not include the broader range of private uses, such as multiple copying of all types of work or copying for friends and family.’⁶⁰ This confuses matters somewhat as it says devices, plural, but does not allow copying for friends and family, does this mean my wife can’t put my copy of *Employment by the Kaiser Chiefs* on her iPod? This is then further

⁵² Figures taken from A. Webb, ‘Hanging up on ringtones’, *The Guardian*, 28 June 2007: <http://www.guardian.co.uk/technology/2007/jun/28/mobilephones.guardianweeklytechnologysection>.

⁵³ K. Allen, ‘Boom in live music and video clips gives PRS license to print money’, *The Guardian*, 21 April 2008. Available at: <http://www.guardian.co.uk/business/2008/apr/21/mediabusiness.digitalmedia>. ⁵⁴ CDPA 1988, s. 17(2).

⁵⁵ Although s. 50A allows for backup copies to be made of computer software this is not permissible for other media.

⁵⁶ A. Gowers, *Review of Intellectual Property* (2006): http://www.hm-treasury.gov.uk/media/6/E/pbr06_gowers_report_755.pdf. ⁵⁷ Recommendation 8.

⁵⁸ D. Triesman, ‘Taking Forward the Gowers Review of Intellectual Property Proposed Changes to Copyright Exceptions’ (2008): <http://www.ipo.gov.uk/consult-copyrightexceptions.pdf>.

⁵⁹ *ibid*, [85]. ⁶⁰ *ibid*, [86].

'clarified': 'While users will be allowed to make only one copy of a work for use on a different device, users will be able to copy a work sequentially without restriction to allow for developing technology, for example where formats and playback devices become obsolete and consumers replace an old player with a newer version. Currently, users might wish to copy from CDs to MP3 players, but in the future they are likely to need to copy from their MP3 onto another device. It is proposed that a consumer should be permitted to repeatedly shift content for use on different devices they own, provided they still retain possession of their original (and legitimate) copy.'⁶¹ So it appears I can only have a copy on my iPod if I don't have a copy on my iPhone (unless the iPod is obsolete).

This fudge is caused by a lack of appreciation of convergent technologies. As more and more devices offer multi-platform support individuals will store content in a variety of sources to make it easy to access wherever they are. They will have an MP3 jukebox in their car which is also their SatNav and when not on the move will be a digital TV receiver and MP4 player and it will function as their in-car mobile attaching to their mobile phone via Bluetooth. This will have one music library. They will have a DVR or PVR,⁶² connected to their TV, with a library of music and video. They will have a music phone such as the iPhone for music on the move. They will have old fashioned iTunes libraries and they will probably retain specialist devices such as the iPod nano or shuffle for when exercising. Thus the new law is out of date before even being written because people will have a plethora of devices which can all act as MP3 libraries and players.

These are just two of the challenges of platform convergence. These will be discussed more fully in chapters eight and ten. Others include a re-evaluation of the expectation one has to privacy as we are all turned into potential news reporters by our camera phones and as we are allowed to be news broadcasters through YouTube and others,⁶³ and the overwhelming production of obscene and indecent material which digital convergence has allowed, including the alarming rise of obscenity and child abuse images.⁶⁴ The latter of which is aided by the final palpable effect digitisation has had on society: the failure of laws to adequately cross borders.

3.3 The cross-border challenge of information law

The cross-border effects of digital information transfers were first identified by Professors David Post and David Johnson in their groundbreaking paper *Law and Borders—The Rise of Law in Cyberspace*.⁶⁵ Here they laid for the first time a legal interpretation,

⁶¹ *ibid*, [94].

⁶² A Digital Video Recorder (DVR) or Personal Video Recorder (PVR) is a device which records video in a digital format to a Hard Disk Drive. Early examples included TiVo. Most people in the UK know them as Sky+.

⁶³ Discussed in Chs. 18 and 19.

⁶⁴ Discussed in Ch. 14.

⁶⁵ 48 *Stanford Law Review* 1367 (1996): http://www.cli.org/X0025_LBFIN.html.

known as classical Cyberlibertarianism, which contends that regulation founded upon traditional state sovereignty, based as it is upon notions of physical borders, cannot function effectively in Cyberspace as individuals may move seamlessly between zones governed by differing regulatory regimes in accordance with their personal preferences.⁶⁶ Simply put, they claimed the internet was unregulable as laws were confined to the jurisdiction in which they were promulgated while content hosted and carried on the internet, including obscene content, flowed seamlessly over these borders.

The overwhelming problem that lawmakers face in dealing with online pornography is which standard to apply. In the UK we use the Obscene Publication Act 1959 to determine whether an item is obscene (and therefore illegal) or merely indecent. This states: 'For the purposes of this Act an article shall be deemed to be obscene if its effect or (where the article comprises two or more distinct items) the effect of any one of its items is, if taken as a whole, such as to tend to deprave and corrupt persons who are likely, having regard to all relevant circumstances, to read, see or hear the matter contained or embodied in it.'⁶⁷ This standard is specifically designed to be flexible and to change over time as community standards change and over the fifty years it has been in force the UK standard of obscenity has changed quite dramatically.⁶⁸

Internationally individual states are continually altering their obscenity standard to meet contemporary community standards. What is considered sexually explicit but not obscene in the UK may well be considered to be obscene in the Republic of Ireland, and almost certainly material considered obscene in the Islamic Republic of Iran or in the Kingdom of Saudi Arabia would not be felt to be noteworthy in the UK. Similarly material which would be considered to be obscene in the UK would probably not be censored in Germany, Spain, or Sweden where a more tolerant approach to erotica and pornographic material is taken. What we are seeing in these differences is a spectrum of community standards which range from extremely conservative to extremely liberal. In general this system has functioned quite effectively in the real world due to the existence of physical borders and border controls. The easiest way for a state to apply its legal standard of obscenity within its borders is to prevent the importation of materials which offend the standard of that state, while simultaneously criminalising the production of such materials within the state. In the UK, for example, it is an offence to import indecent or obscene prints, paintings, photographs, books, cards, lithographic or other engravings, or any other indecent or obscene articles under s. 42 of the Customs Consolidation Act 1876, while s. 2 of the Obscene Publications Act 1959 criminalises the publication, or possession with intent to publish, of an obscene article.

The Customs Consolidation Act allows the UK to apply effective border controls. It allows HM Revenue and Customs to seize obscene items, and where necessary to prosecute those involved in their importation. This control provision continues to apply

⁶⁶ The Cyberlibertarian School will be discussed in depth in Ch. 4.

⁶⁷ Obscene Publications Act 1959, s. 1(1).

⁶⁸ For a discussion on the evolution of the obscenity standard see Ch. 14. Also see A. Murray, *The Regulation of Cyberspace: Control in the Online Environment* (2007), 205–209.

despite the UK's membership of the European Union, with it being held on several occasions that this power subsists in relation to material deemed obscene under the Obscene Publications Act despite the effects of Articles 28 and 30 of the EC Treaty.⁶⁹ But these traditional measures are predicated upon the assumption that the items in question will be fixed in a physical medium, and that they will require physical carriage to enter the state. With the advent of the digital age both these assumptions have been rendered null. The development of a global informational network has dismantled these traditional borders. The result of this is all too apparent, especially to parents trying to control what their children are exposed to. HM Revenue and Customs, along with the Police, have given up all attempts to apply the provisions of the Customs Consolidation Act or the Obscene Publications Acts to content found on the internet. Instead they have decided to focus their limited resources on narrow areas which produce a sound return on their investment. Thus despite surveys which show more than 10 million UK adults visit pornographic websites,⁷⁰ and that 57% of British 9-19 year olds who go online at least once a week have come into contact with online pornography,⁷¹ there have been no prosecutions in England and Wales under either the Customs Consolidation Act or the Obscene Publications Act 1959 for privately viewing obscene material using an internet connection.

The authorities have instead focussed their attention on the storing and distribution of child abuse images,⁷² and prosecuting those who run pornographic websites from overseas servers but who are resident in the UK and profit from this activity.⁷³ With the removal of the physical border between the UK and the rest of the world internet users were afforded the opportunity to access and view pornography held overseas in the blink of an eye and with little opportunity for the authorities to intercept the content *en route*. This caused a huge upsurge in consumption and left the authorities with a difficult decision to make. They could either invest large sums to attempt to enforce the law in the digital environment,⁷⁴ or they could *de facto* deregulate adult obscenity and focus their attentions on more pressing problems such as child abuse images. The UK authorities recognising the limits of the law in relation to this subject chose to focus their resources on only the most harmful content.

This case study, which will be developed further in Chapter 14, demonstrates the difficulty lawmakers find in applying geographically based legal rules in an environment

⁶⁹ *Conegate Ltd v HM Customs & Excise* [1987] QB 254 (ECJ); *R. v Forbes* [2002] 2 AC 512 (HL).

⁷⁰ A. Barnes & S. Goodchild, 'Porn UK', *The Independent on Sunday*, 28 May 2006: <http://www.independent.co.uk/news/uk/this-britain/porn-uk-480084.html>.

⁷¹ S. Livingstone & M. Bober, *UK Children Go Online* (LSE Department of Media & Communication, 2005): <http://www.lse.ac.uk/collections/children-go-online/UKCGOfinalReport.pdf>.

⁷² See *R. v Barry Philip Halloren* [2004] 2 Cr App R (S) 57; *R. v Snelleman* [2001] EWCA Crim 1530 and *R. v James* [2000] 2 Cr App R (S) 258.

⁷³ See *R. v Ross Andrew McKinnon* [2004] 2 Cr App R (S) 46 and *R. v Stephane Laurent Perrin* [2002] EWCA Crim 747.

⁷⁴ This could either be achieved by the investment of these funds into additional law enforcement personnel or by using the funds to design a technological solution to the problem such as a national firewall or filtering system which would in effect rebuild the natural border in Cyberspace. See R. Deibert & N. Villeneuve, 'Firewalls and Power: An Overview of Global State Censorship of the Internet' in M. Klang & A. Murray (eds), *Human Rights in the Digital Age* (2005).

which effectively floats over borders. That is not to say that law is ineffective in dealing with these issues. Throughout this book we will see the courts take effective jurisdiction over online defamation, pornography and child abuse images, computer hacking, computer fraud and data theft, copyright infringement, and a variety of other issues. The law is effective in cyberspace. The difficulty is in identifying which court has effective jurisdiction and in identifying who is the relevant person to pursue.⁷⁵

3.4 Digitisation and law

This chapter has outlined several of the challenges digitisation brings to lawmakers. By replacing old fashioned analogue data which was expensive to gather, expensive to store, and expensive to search, and which was subject to decay in quality over time and would decay each time it was copied,⁷⁶ with digital data which is cheap to gather, cheap to store and search and which is perfectly replicated every time we have unleashed a wave of data gathering and data mining which threatens to unbalance our expectation to privacy. In addition we have allowed an expectation to grow that one may share content and may obtain content for free or at little cost because we convince ourselves that no-one is harmed by this.

Digital convergence and multi-purpose 'smart' devices are leading us to expect media distinctions to become blurred and are allowing us to sideload content from one media to another without paying for the privilege. Also as media devices become more portable and multi-functional we will find once again barriers between the private and public space are broken down as 'citizen journalists' record events and post them to the web. Finally the internet has forced lawmakers and lawyers to accept that we are part of an international community and we can no longer expect that we can close our border to things we do not like. The response of the UK legal establishment to the problem of online obscenity is instructive in this. The law enforcement authorities accepted that the community had accepted that most 'mainstream' pornography was not damaging to society and chose not to prosecute those who viewed such material, while focussing on the more obscene material people found most offensive.⁷⁷ These challenges are just a few of the challenges of the process of digitisation and a move to the world of bits. The remainder of this book, starting with the next chapter, will outline how the law and lawmakers have responded to these challenges.

⁷⁵ This is discussed more fully in Ch. 15.

⁷⁶ This is analogue drop off, discussed in Ch. 1.

⁷⁷ In relation to this the UK Government has recently moved to outlaw the possession of 'extreme pornography' through s. 63 of the Criminal Justice and Immigration Act 2008. See A. Murray, 'The Reclassification of Extreme Pornographic Material' (2009) 72 *MLR* 73.

FURTHER READING**Books**

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