The Legal Landscape of E-commerce: Redefining Contract Law in an Information Era

* Raymond T Nimmer†

Introduction

So, we wake up one morning and discover that a question we have been asking for the last decade or two is the wrong one. We were not wrong to ask it at first, but the world has a way of changing while academics, policy-makers and lawyers ruminate about it. That is so with respect to issues about electronic commercial practices and the challenge of technology. This article begins by asking what are the challenges that technology poses for contract law. But perhaps the better way of asking this is to turn the question around. What is contract law now that technology has altered the subject matter and methodology of much of commercial contract practice?

This article deals with a fact of life of modern commerce and the law related to it. The term ‘electronic commerce’ refers to the use of digital systems to create transactions, to perform commercial transactions, or to establish and enforce rights in informational property. Under this definition, the term covers a wide variety of commercial practices. They have in common this fact: the processing power and interactive features of modern digital systems have changed commerce, both in subject matter and in methodology. The focus of this article concerns how the law relates and reacts to their transformative impact.

Karl Llewellyn, the father of the Uniform Commercial Code (UCC) in the United States, in 1939 commented on technology and change in the economy and the law:

Mercantile capitalism [yielded] to industrial capitalism [which yielded] again to financial capitalism: and the dye-woods, cloves . . . and simple textiles . . . are pushed out of dominance by chemicals . . . ; you follow iron . . . ; you meet sewing machines sold to householders on the installment plan, you meet locomotives sold on the ‘same’ plan to an equipment trust . . . ; you find ‘chooses-in-action’, which means here stocks and bonds, excluded from the Uniform Sales Act. You wake up then to the fact that the throne your subject matter once occupied is overshadowed.

Following that same path over the 60 years since this quote was published, you will meet mainframe computers that are pushed out by desktop computers that are then dominated by digital networks, which then shift to hand-held

† Dean and Leonard Childs Professor of Law, University of Houston Law Center.
access devices. The primary subject matter of commerce moves inexorably from hard goods to digital information. We still make and sell sewing machines, but they are smart machines and the primary place where commercial action lies is somewhere else — in the area of digital products and information. The throne of goods has been overshadowed.

This article examines some of the fundamental ways in which the electronic commercial era has changed how we look at contract law and practice. Contract law is a practical discipline and has and should always be responsive to changes in method and subject matter. We do not know where the information age will take us. But we have a different transactional framework (licensing), a different (new) subject matter (digital information), and a different way of doing business (automated, electronic interactions). There has also been a heightened concern about the privacy and security of personal data created or exchanged in a commercial deal. This concern and all of the other changes have created a different contract law and practice environment than existed a short time ago. It would take a multi-volume book to even survey all of the effects and the responses to them. Our goal here is necessarily more modest. In Part A, we will briefly identify some core changes in the global economy and how they affect modern commercial relationships. The basic theme is that the nature of contractual and other relationships has changed, not just its mechanics. Part B takes that theme and briefly explores two threads through which it winds and that present unique challenges to contract law and practice.

Part A

Economic Transformation and Law

One writer in the late 1980s described the effect on law of changes in information and communication systems:

[A] new system of communication does more than make us more knowledgeable or our institutions more efficient. It also leads to the creation of new relationships and, most importantly, changes our attitudes, expectations, and ways of thinking about law.

New relationships. New attitudes. New expectations. These are the grist for the mill that consists of contract law and practice. And, indeed, we have seen very basic changes in this area of law tied directly to these changed expectations.

This quotation also signals something that is often not understood in discussing modern contract law and electronic commerce. It is not simply that

---

4 DMCA Section 104 Report, at 76 (29 August 2001) (copy available 2001 http://www.loc.gov/copyright/reports/sec-104-report-vol-1.pdf) (‘... the overwhelming majority of computer programs sold in the United States are [transferred] pursuant to a license ...’). See generally Raymond Nimmer and Jeff Dodd, Modern Licensing Law, Thomson-West, St Paul, Minn, 2006, Ch 1.
5 See generally Raymond T Nimmer and Holly K Towle, above, n 1.
new technologies created new methods for implementing transactions. Rather, these technologies have fundamentally changed the character of many commercial and other relationships.

The fact that expectations and relationships have changed can be seen everywhere. Email and text-messaging have supplant letters and simple telephone calls. As Dean of a Law School, I send and receive four times as many emails as I do letters. Young and old people constantly check hand-held devices and place cell phone calls to their friends. A person walking along a shopping mall corridor talking loudly even though no-one is near him would a decade ago be qualified for a mental hospital, but today is most likely simply another person with a handleless cell phone. Google, a virtual company with few tangible assets, is one of the internationally most powerful and aggressive commercial entities in modern commerce. The changes have not been slow or laboured, but have been fast and exponential.7

Where does that leave contract law?

One answer might be that contracts remain contracts even though their subject matter has changed. While true at some level of generality, that response would be misleading.8 Contract law is a body of law that imposes (or denies) legal obligations associated with voluntary transactional interactions in commerce and otherwise. When the nature of many of the interactions and their subject matter change as fundamentally as they have in our era, while contract law will serve the same function as it did in the past, its tools and outcomes will be very different than in the past.

In a complex legal and political world it is seldom the case that significant change flows smoothly in one direction. While many embrace change, some will resist it. The resistance is due in part to what Llewellyn explained many years ago: ‘You wake up then to the fact that the throne your subject matter once occupied is overshadowed’,9 and that is a fearful situation for many.10 The costs this imposes on modern commerce are extravagant. But the disagreement between those who embrace change and seek to adapt law to accommodate it, and those who resist it and seek to prevent or conform the change to the comfort of existing law, is historically common. Karl Llewellyn fought the same battle when he sought adoption of the UCC in the United States. The UCC replaced previous laws that had grown out of legal notions based not on industrial goods, but on real estate, animals, and farm products. Llewellyn described the need to ‘unhorse’ the law that was based on

---

9 Karl N Llewellyn, above, n 2.
10 For a more detailed discussion of this phenomenon and the role of academics in it, see Holly K Towle, ‘The Politics of Licensing Law’ (1999) 36 *Houston L Rev* 121; see also Lorin Brennan, ‘Through the Telescope: Article 2B and the Future of E-Commerce’ (1999) 20 *Miss Com L Rev* 45 (likening the reaction of some academic commentators to debates regarding adaptation of ‘goods’ laws for an information economy, as similar to the reaction in 1633 to Galileo’s heretical attempt to teach the Copernican theory that the Earth revolved around the sun and refusing to accept Galileo’s urging to ‘See what I have seen; look through the telescope’).
economies existing before the mercantile or industrial ages. But before we move ahead, consider what it was like in a world in which news or instructions from Europe took weeks to reach the United States. Visualise the newspapers and politics of that world, and the business relationships possible in such a world. Then remember that the world you are visualising existed less than 100 years ago. The world that Walter Cronkite used to convey images of Vietnam in the 1960s did not exist in any commercial sense until the late 1950s. Today, broadcast television is fighting for survival against new technologies and means of communication. Further new technologies undoubtedly await the next turn of the page.

Support or Regulation?

In my view, the role of contract law should be to establish and evolve a continually responsive body of rules that support change and that limit regulation to cases where clear abuse would otherwise exist. There should be a minimalist approach to regulation. Law should provide a supportive structure for the new relationships and enterprises engendered by e-commerce, but avoid regulation of content and practice. This has been the tradition of American commercial legislation. Commercial law has been described as ‘legislation which is designed to clarify the law about business transactions rather than to change the habits of the business community’ and the principal objective of the drafters of commercial legislation is ‘to be accurate and not to be original’. This approach has served the United States well and has created the flexibility needed for the United States economy.

This has not consistently been the way in which law related to electronic commercial transactions has evolved. Instead, we have seen an explosion of new law, often regulatory in nature. While a pro-commerce approach should dominate, in many situations a contrasting set of principles yields a position that seems to find increasing favour among some who view the proper role of law as being to regulate commerce, rather than to support it. The conflicting premises stem in part from a belief that pre-existing regulations inadequately safeguard consumer or other protected interests and that the transition to a new commerce provides an opportunity to impose more extensive regulations, even if those same regulations were rejected in prior contexts. In addition, some believe that there are enhanced risks of abuse in e-commerce that require immediate, proactive regulation even before significant abuse actually occurs.

But when a regulatory or reactionary approach is taken in a period of rapid social change, the result is an enormous expansion of new law. We have seen that in e-commerce. Its short-term effect lies in the creation of an often-bewildering array of new rules and regulations with which commercial entities must deal, which often are conflicting, or which seem more to represent a grab for control than sound legal or social policy.

Transactional Formats and Subject Matter

It is quite clear that digital systems have altered how modern commerce is done and have added a potent, new subject matter to the mainstream of commercial and consumer practice. Digital electronic environments are capable of more rapid processing and communication of data across long distances than prior systems. One by-product is that services and information transactions have grown increasingly important in commerce. The automation enabled by digital systems, however, also transforms what we mean when we refer to services or to the services industries. Once, the term 'services' referred primarily to physical or mental conduct of individuals pursuant to a contract, but today the term is as likely to refer to automated systems, such as communications services, online auctions and the like. The law relating to contracts for automated services may or may not be the same as that appropriate to personal services agreements. The relationship between the service provider and the customer or user is not the same as the relationship between a consultant and his or her client. As I have said, technological change changes relationships and, often, expectations.

Digital media have enabled a wide range of new ways of doing business and new commercial subject matter.13 There are numerous instances in which the balance between technological capability to engage in new transactions, and legal infrastructure that permits or impedes implementing aspects of the new technologies is being drawn, and while the issues deal with contract law and practice, they do so on topics much different from those with which traditional contract law scholars are familiar. One illustration involves the capability of technology to tailor online experiences, commercial advertising, and other electronic events based on information about the current or past uses of a system by the end user customer. Technologies such as cookies and software monitoring programs can enhance both the efficiency of commercial interactions and the quality of the experience of the person using an electronic system. But these same technologies can also be seen as presenting challenges or threats to other interests of the end user or third parties. Thus, in the United States, extensive legislative activity and litigation action has developed around the practice of automated, pop-up advertising. Some of this raises questions about to what extent the system operator can use trade names or website addresses owned by others to tailor the appearance of advertisements and to have them appear overlapping or intruding on a site designed by a third party.14 These practices, when they use software placed into an end user’s computer may also be seen as threatening the end user’s privacy interests or


14 See eg I-800 Contacts, Inc v WhenU.com, 414 F3d 400 (2nd Cir 2005) (use of names in directory not shown to user but used to flash ads on screen at appropriate times was not use of a trademark in commerce; no liability). Compare Playboy Enters, Inc v Netscape Communications Corp 354 F3d 1020 at 1024 (9th Cir 2004) (infringement could be based on defendant's insertion of banner ads on user's search results page); Government Employees Ins Co v Google, Inc 330 F Supp 2d 700, 73 USPQ2d 1212 (ED Va 2004) (sale of keyword advertising was commercial use of trademark).
its interest in controlling access to and use of its own computer.\(^\text{15}\)

The message is a simple one, found in other areas of law: the design and adoption of a business or transactional model that optimises use of digital technologies for transactional frameworks is not simply a technological or a business issue, it is also a legal issue and the contours of the legal inputs on design and business choices will change over time.

Part B. Three Illustrative Areas

Now let's change from the general to the more specific. We will discuss three themes: (1) the change in subject matter and its effect on what issues are relevant, (2) formation issues and the problem of attribution, and (3) totally new issues in contract, including privacy and data security.

New Subject Matter and New Doctrines

Information constitutes a valuable asset. And digital information is even more valuable. Virtually every company of size in the modern global economy has learned this fact. But what does this fact mean for contract law and practice?

One thing that this development means is that there are an increasing number of businesses whose primary commercial model entails making available, collecting, analysing, or otherwise dealing primarily in informational assets and products. If a person in the United States today were to ask what are the dominant and most successful companies, would not the answer include Microsoft, Google, Disney, AOL and IBM? But these are not companies that primarily sell or license traditional goods. They deal in information. They and their contractual arrangements and subject matter are far different from the dominant companies of the 1950s — General Electric, General Motors, US Steel, etc.

Online Information and conduits

Online digital information, freely available, is a new thing. It reverberates throughout e-commerce and is a focus for many forms of modern contractual and non-contractual relationships.

But much of it is worthless, wrong or obnoxious.

The ease of creating and maintaining Internet information sites expands the availability of pure information: ‘pure’ in the sense that it is often unfiltered. Much of the social support for free Internet information lies in a Gramercy Park concept that digital technology brings into the global Internet. That concept assumes that anyone can say anything any time. If he or she says it, and you read or hear it, then a transaction occurred involving an exchange of information. This states the most simplistic model of the Internet as a ‘free’ information system. The particular transactions are cost-free, given the assumption that access to the Internet exists and has otherwise been paid for. Of course, in addition to the myriad of individuals who exploit this to state their own views, there are a perhaps even larger number of companies who

\(^{15}\) See also Re DoubleClick, Inc, Privacy Litig 154 F Supp 2d 497 (SDNY 2001); Re Intuit Privacy Litig 138 F Supp 2d 1272 (CD Cal 2001). See Nimmer and Towle, above, n 1, ¶12.13.
advertise or explain their products and business through the same devices. Consider, for example, what company of any size does not maintain at least one website.

This entire system is supported not only by a sophisticated technology, but also by a network of contractual relationships. The e-commerce issue concerns what should be the default of generic expectations encompassed in these contracts and to what extent should they be changeable by choice of the parties. The most ‘traditionally’ obvious question here would be: how or whether the online contract is formed and its terms established. But I will defer that question until a later section of this paper. I am more concerned here with the substance of the law defining the protected expectations of the contracting parties when the primary focus of their relationship is to transfer or acquire information.16

To illustrate, consider the following hypothetical:

Company A contracts with B, C and others to allow them to use A’s resources to access the Internet. Company X contracts with B to host B’s weblog (Blog) which posts content from B and from other people. C accesses B’s site, agreeing to an access contract as required by B.17 C posts some material to the site. Later, B allows to be posted content supplied by D that is harmful to C, or otherwise violates C’s rights. C sues A, B and X.

There are a host of issues embedded in this hypothetical, with the range of issues depending in part on why the posted information might violate C’s rights. Many of these issues have been discussed under the doctrines of tort law (for example, defamation, threats) or intellectual property law (for example, copyright infringement). But our focus is on contract law. C, the injured party, has contractual relations with A and B. Assuming that there are no contractual terms that expressly address this matter, what responsibility if any should A or B have for this harmful content? What, in effect, is an appropriate default rule for this type of contractual relationship?

There are a number of potential analogies under which we might seek an answer. For example, if I acquire a television set from B’s department store, B will have a contractual obligation to provide a satisfactory television even though the goods were manufactured by a third party. Perhaps, then, B should be held to have a contractual obligation to not provide harmful content, even when it was placed on the system by a third party. The effect of such a rule would be to place B in the position of either monitoring and preventing harmful content of a particular type on its site, or disclaiming the obligation to do so in its contracts, thereby giving notice to users of the site that the site, in effect, operates ‘as is’ for purposes of contractual commitments.

On the other hand, one could analogue A’s situation to that of a common carrier (for example, a telephone company providing ordinary service). A telephone company may have some contractual obligations regarding quality

16 Note that, at least in the US, this is not an issue caught up in common carrier or communications regulation law. See Federal Trade Commission v Verity International, Ltd 443 F3d 48 (2nd Cir 2006).
17 UCITA § 102(b) states: ‘(1) “Access contract” means a contract to obtain by electronic means access to, or information from, an information processing system of another person, or the equivalent of such access’.
and availability of service, but typically has no responsibility for third party content. In effect, this rule would treat B (the site operator) as merely providing a resource for others to post information, but as having no obligation otherwise unless it expressly undertakes that obligation by contract, or the content was its own content.

In an early case in the United States involving an Internet service provider, Stratton Oakmont, Inc v Prodigy Services Co, the court held that an online provider was potentially liable for defamatory content on a bulletin board because it had reserved a right to screen content. This suggested that any effort to control defamatory publications would expose the person making the effort to potential liability if it was not totally successful.

In 1996, in the United States, the Communications Act reversed that result and opted for a default liability model that protects the person making access to content available in cases where the harmful content was provided by a third party. Section 230 provides:

No provider or user of an interactive computer service shall be treated as the publisher or speaker of any information provided by another information content provider. No provider or user of an interactive computer service shall be held liable on account of:

1. any action voluntarily taken in good faith to restrict access to or availability of material that the provider or user considers to be objectionable, whether or not such material is constitutionally protected; or
2. any action taken to enable or make available to information content providers or others the technical means to restrict access to material described in paragraph (1).

This section pre-empts contrary state laws but does not apply to intellectual property infringement claims. It has been held to apply not only to tort claims, but to claims grounded in implied or presumed rights created under contract law, but does not seem to cut off contract claims brought under express contract terms.

The insulation from presumptive or implied contractual and other liability for a conduit or intermediary reflects a far different policy judgment than the judgment made in reference to downstream sellers in a goods-based commercial distribution system. There are, of course, a number of differences that can be detailed between who should take responsibility and what expectations exist in reference to new goods and to information online. But that is precisely the point. The type of interactive services made available through the Internet and other digital media present a new framework with

---

19 47 USC § 230(c). Section 230 has become an increasingly significant factor in litigation about responsibility online for wrong or harmful information. See, eg Batzel v Smith 333 F3d 1018 (9th Cir 2003). See Nimmer and Towl, above, n 1, ¶¶ 10.05[6]; 10.09[3].
20 But see 17 USC § 512, which provides safe harbour protections for various online access providers in reference to infringement claims grounded in the actions of third parties. Compare Metro Goldwyn Mayer Studios, Inc v Grokster, Ltd 125 S.Ct 2764 (2005) (software provider was liable for indirect infringement by virtue of inducement); ALS Scan, Inc v RemarQ Communities, Inc 239 F3d 619 (4th Cir 2001).
21 See Nimmer and Towl, above, n 1, ¶ 10.05[6]; 10.09[3].
different contractual and other expectations. Defining that framework in law is precisely one of the challenges presented by electronic commerce.

In the United States, contract and related law rules have been consistently reluctant to imply obligations for defects (inaccuracies) in information provided in a contractual relationship without the presence of some fault causing the defect or an express undertaking guaranteeing accuracy, while liability without fault for delivering a defective product is routinely presumed unless disclaimed. This is grounded in part in a concern about Free Speech and about the role that providers of information play in a society that emphasises broad exchange of information. For example, s 552 of the Restatement, a leading expression of when an information content provider has liability to its client/customer, states:22

One who, in the course of his business, profession or employment, or in any other transaction in which he has a pecuniary interest, supplies false information for the guidance of others in their business transactions, is subject to liability for pecuniary loss caused to them by their justifiable reliance upon the information, if he fails to exercise reasonable care or competence in obtaining or communicating the information . . .

The transaction obligation focuses not simply on whether the information is inaccurate (false), but on whether that occurred because of a failure to exercise reasonable care. In contrast to this, in the United States at least, the seller of goods has an obligation to supply merchantable goods unless that absolute obligation is disclaimed.23

To risk belabouring the obvious: the point here is that, as the subject matter of the transaction changes, the enforceable obligations change and in some respects become unclear until or unless defined by law or by agreement. A change in subject matter (or at least the creation of a newly important subject) by the digital era forces this shift in analysis, which then becomes a critical part of the challenge that electronic commerce creates for contract law.

Property law and use references
With a change in subject matter, there are changed property law references and changed options in how transactions are structured. While the interaction between the law of personal property in goods and the law of traditional contracting is reasonably well settled, it is fair to say that there are some who would challenge commercial assumptions about how contracts should be allowed to interact with the property rights relevant to digital information and to what extent contracts should be allowed to control uses of the licensed information. I have discussed this extensively elsewhere, but it is an important challenge to contract law in electronic commerce and needs to be recognised.

Basically, the law in reference to the property-contract interaction in reference to goods (and to real estate) is largely settled and has been stable for some time. Essentially, in reference to goods, the terms of contracts dominate and there are two types of transactions that predominate — sales and leases. A sale transfers title, while a lease does not. In the United States at least, any effort for the seller to retain title in a sale is ineffectual and the retained title

22 Restatement (Second) of Torts § 552(1).
23 UCC § 2-314.
is treated as a mere security interest, with the title passing to the buyer. Typically, any retained limitations on a buyer’s use of the goods it buys are also ineffectual under personal property law relating to goods and as to the goods themselves.

When digital information (for example, digital software, databases) becomes the subject matter of a transaction, the property rights reference point changes, as do the variety of options or alternatives available to the parties to structure a transaction (whether it is a commercial or a consumer transaction). The relevant, primary property rights regimes are intellectual property and the burgeoning body of law that defines a person’s right to control access to computing resources that it controls. The most relevant contractual issues (beyond price) concern the quality of the content (information) and the rights or permissions to use, copy or distribute the information that the contract creates.

This shift in property rights base has at least two broad effects.

The first is that it places contract law for this subject matter squarely in the sights of an influential group of academics and other lawyers who would strongly prefer to restrict the scope of intellectual property and online rights. The group has been described as ‘rights restrictors’. Most importantly for this discussion, this group advocates a truncation of contractual flexibility, treating contracts as essentially an illustration of an undesired body of law that might be used by intellectual property rights owners to expand their control of intellectual property beyond the scope set out in the property rights laws. This group has been spectacularly unsuccessful in courts and legislatures, but this has not diminished its efforts. The positions it takes present a challenge to contract law relevant to e-commerce. The proper answer to this challenge, as a series of courts have concluded, is that contract and property law are separate regimes and that consensual relationships created by contract are not dictated by the terms of property rights law.

The second broad effect is that the property-rights reference for information

---

24 UCC § 2-401.
25 Payday; DSC.
26 See Nimmer and Towle, above, n 1. See also EF Cultural Travel v Explorica, Inc 274 F3d 577 (1st Cir 2001) (Unauthorised access by use of scraper program violates Computer Fraud and Abuse Act); EF Cultural Travel BV v Zefer Corp 318 F3d 58 (1st Cir 2003) (Reasonable expectations test not the proper basis for determining lack of authorisation for CFAA rule on fraud accessing computer).
27 See discussion of the nature of a licence in Raymond Nimmer and Jeff Dodd, Modern Licensing Law, Thomson-West, St Paul, Minn, 2006, Ch 1.
30 See, eg Bowers v Baystate Technologies, Inc 320 F3d 1317 (Fed Cir 2003) (No reverse engineering clause was not pre-empted by copyright law); Davidson & Assoc v Jung 2005 WL 2095970 (8th Cir 2005) (shrinkwrap licence enforceable; no pre-emption of no reverse engineering clause contained in the licence — licensee waive fair use privilege).
law issues creates an environment in which contractual terms dealing with what rights a transferee receives and does not receive focus primarily on the information and not the tangible manifestations or copies of it. Copyright law and patent law make an explicit distinction between disposition of the physical copy (and the very limited rights in information this creates) and treatment of rights in the information. Modern technology makes it increasingly likely that information is conveyed without any tangible copy existing. So what we have is a more diverse transactional environment and a greater need — by contract — to delineate what rights of use are and are not created. There are at least six different types of transaction that occur frequently in commercial and consumer commerce:

- **Assignment of rights**: It is possible to sell intellectual property rights in an informational asset; intellectual property tradition typically describes this as an assignment. An assignment of rights does not occur merely by selling a copy of the information. To be effective in the United States, an assignment of a patent, copyright, or trademark must conform to statutory formalities.

- **Work for hire**: Copyright law recognises the idea that an employee and some contractors who do the creative work are in a position where the copyright should vest directly and immediately in the employer.\(^{31}\)

- **Licences**: A licence is a promise by the information owner that it will not sue the licensee if it uses the licensed information in ways permitted by the terms of the licence and the licensee promises to use the information solely within those agreed limitations.\(^{32}\)
  - **Licensee does not own a copy**: In most licences, the licensee does not obtain ownership of the copy (if any) on which the information was transferred.\(^{33}\)

---


32 See *Spindelfabrik Suessen-Schurr v Schubert & Salzer* 829 F2d 1075 at 1081 (FedCir 1987), cert denied, 484 US 1063 (1988). See also *General Talking Pictures Corp v Western Electric Co* 304 US 175 at 181 (1938) (patent licence ’a mere waiver of the right to sue’); *Cohen v Paramount Pictures Corp* 845 F2d 851 (9th Cir 1988). Compare the UCITA definition: “‘License’ means a contract that authorises access to, or use, distribution, performance, modification, or reproduction of, information or informational rights, but expressly limits the access or uses authorised or expressly grants fewer than all rights in the information, whether or not the transferee has title to a licensed copy. The term includes an access contract, a lease of a computer program, and a consignment of a copy’. UCITA §§ 102(a)(41) (2000 Official Text); Nimmer and Dodd, above, n 32, § 1:2 (‘A license is an agreement that deals with, and grants or restricts, a licensee’s contractual right, power privilege or immunity with respect to uses (including allowing access to) information or rights in information made available by a licensor. The agreement includes a focus on what rights, immunities, or uses are given or withheld in reference to use of the information as well as what the licensee has agreed to do or not to do with respect to the information.’).

33 See, eg *DSC Communications Corp v Pulse Communications, Inc* 170 F3d 1354 (Fed Cir 1999) (federal law concepts govern ownership of the copy); *MAI Sys Corp v Peak Computers, Inc* 991 F2d 511 (9th Cir 1993) (‘Since MAI licensed its software, the Peak customers do not qualify as “owners” of the software and are not eligible for protection under 17 USC §117’);
Licensee owns the copy: In a few licences, the licensee receives ownership of a copy. While this does not change the enforceability of licence use terms under contract law, it gives the copy owner limited privileges and freedom from an infringement claim under intellectual property doctrines of ‘first sale’ or ‘exhaustion’.  

• Sale of a copy without contract restrictions: A sale of a copy of information covered by intellectual property rights is a conditional transfer, like that under an explicit licence, even if nothing in the contract restricts use of information. It does not give the buyer all rights in the copy, but only the limited rights outlined under first sale and exhaustion doctrine.  

• Access contracts: In an access contract a central element of the relationship consists of the grant by one party of access to or use of electronic resources, systems, or locations that would otherwise not be available because they are controlled or owned by the access provider. The Uniform Computer Information Transactions Act (UCITA) defines an access contract as: ‘a contract to obtain by electronic means access to, or information from, an information processing system of another person, or the equivalent of such access’.  

All of these transactional options are in common use in today’s commerce, including in consumer transactions. They hinge on a background of informational property law that does not parallel personal property law for goods, but that does require contractual attention in all cases to what rights are and are not conveyed and, frequently, express grants and limitations on those rights in the contract.  

There are many illustrations of how the tension and resulting challenge for contract law play out. From the perspective of rights restrictors, most of the early case law has dealt with arguments grounded in the idea that property law trumps contract terms. That argument has routinely been rejected, but the further question is how do contractual terms and obligations interact with property rights claims. This is an issue not faced in the old world of goods, but an important one in the modern world of digital information transactions. Let’s look at one manifestation of the issue.

Monsanto Co v McFarling 302 F3d 1291 (Fed Cir 2002) (patent not exhausted since no sale). See also State of New Hampshire v Nelson 842 A2d 83 (NH 2004).

34 See 17 USC § 117; 109. See also Krause v Titleserv, Inc 2005 WL 639420, 402 F3d 119 (2nd Cir 2005) (client as owner of a copy entitled under copyright law to make various changes in software; no contractual restrictions on making changes were present); Monsanto Co v McFarling 302 F3d 1291 (Fed Cir 2002) (patent not exhausted since no sale).

35 See 17 USC § 117; 109. See also Krause v Titleserv, Inc 2005 WL 639420, 402 F3d 119 (2nd Cir 2005) (client as owner of a copy entitled under copyright law to make various changes in software; no contractual restrictions on making changes were present); Monsanto Co v McFarling 302 F3d 1291 (Fed Cir 2002) (patent not exhausted since no sale).

36 Nimmer and Towle, above, n 1, ¶8.01[1].


38 See DSC Communications Corp v Pulse Communications, Inc 170 F3d 1354 (Fed Cir 1999) (federal law concepts govern ownership of the copy); Monsanto Co v McFarling 302 F3d 1291 (Fed Cir 2002) (patent not exhausted since no sale).
In both patent and copyright law in the United States, the sale of a copy embodying the information does not (without more) signify a sale of the intellectual property rights themselves. But a sale of a copy does give the buyer of that copy certain privileges to use that copy without risk of an infringement claim. In copyright law, the ordinary first sale doctrine essentially allows only the transfer of the copy that a person owns. The terms for computer programs in the United States are more complex. Section 117 provides in part:39

(a) Making of additional copy or adaptation by owner of copy . . . it is not an infringement for the owner of a copy of a computer program to make or authorise the making of another copy or adaptation of that computer program provided:

(1) that such a new copy or adaptation is created as an essential step in the utilisation of the computer program in conjunction with a machine and that it is used in no other manner, or

(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

(b) Lease, sale, or other transfer of additional copy or adaptation. — Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorisation of the copyright owner.

It is not a difficult leap to recognise this language as the statement (from a property rights perspective) of a default rule dealing with what privileges an owner of a copy receives as against the property rights of the copyright owner in a transaction that conveys ownership of a copy to the transferee. But, let’s look at this from the standpoint of contract law and practice. There are many issues here but, to take only two, consider the following.

First, the statute only applies to infringement claims (‘it is not an infringement . . .’). What relationship does or should this language have in reference to contract law and default rules regarding contractual relationships as to computer programs (the same issue arises under general first sale law as to other copyrighted information)? One answer is that the terms of this statute could be treated as setting out a default contract rule for transactions where the preconditions for the rule (for example, an ‘owner’ of a copy) and the contract does not expressly indicate otherwise. But, where the agreement40 creates obligations or limitations different from the infringement privileges set in the copyright statute, as a contractual matter, those different promises control. Indeed, some would argue as one recent court in the United States commented — the defences of s 117, while relevant for defending an infringement claim, are irrelevant in reference to contract claims or obligations.41

39 17 USC § 117.
40 I am using the word ‘agreement’ here in its broadest legal sense, as defined in UCITA and in the Uniform Commercial Code: ‘Agreement is the bargain of the parties in fact as found in their language or inferred from other circumstances, including course of performance, course of dealing, or usage of trade . . . .’ UCC § 1-201(b)(3).
41 See DaimlerChrysler Services, NA, LLC v Summit National, Inc 2005 WL 1994321 (6th Cir
Second, the privileges associated with first sale, such as are set out in s 117, apply only if the particular defendant was the ‘owner’ of a copy. Typically, whether ownership passes is determined by the agreement of the parties. But what standards are to be used for determining when an authorised transfer of ownership of a copy has occurred? Some might argue that in the United States the issue should be governed by UCC law applicable to sales of goods. Section 2-401 of the UCC states: ‘. . . title passes to the buyer at the time and place at which the seller completes his performance with reference to the physical delivery of the goods . . . [reservation of title by the seller is limited to a reservation of a security interest]’. But this language presumes a transaction involving a buyer and seller, bringing with it the assumption that a sale is contemplated. It also assumes that the subject matter of the transaction is goods. What should be the result when the transaction is a licence (not a sale) and the subject matter is information? Not surprisingly, US courts have consistently declined to use Art 2 on this ownership issue — the policies relating to exemption from an infringement claim, the policies associated with informational subject matter, and the dynamics and expectations of the transaction in a licence, rather than a sale, are all very different from a simple sale of goods.

Two lines of appellate authority have evolved in the United States. One, exemplified by Ninth Circuit case law, holds simply that a licensee is not the owner of the copy it licensed. In effect, this approach views a licence as a type of transaction in which the licensor presumptively does not intend to give ownership to the licensed copy, a presumption that requires express contract terms to rebut it. Indeed, most licensors do not intend to transfer title. An alternative analysis looks to the terms of the licence — essentially, no transfer of ownership occurs if the terms of the licence impose materially greater restrictions on the licensee as to the information than would flow from a simple sale (for example, that are given under ‘first sale’ doctrine). Both of these approaches adopt the appropriate insight — the issue should be resolved by reference to the benchmarks of information law (here, copyright law) and should focus on issues about rights given or withheld in reference to the principal subject matter (the information).

To restate the general point: the transition to electronic commerce as an included and important part of commercial practice alters relationships and transactional subject matter. The challenge, illustrated in only a small part by the first sale cases, is for contract law to re-examine many of the premises it came to rely on in the world of goods to adapt or reject them when dealing with digital information and transactions associated with it.

2005) (whether there was a copyright violation was not material to contract breach claim; licensee was not owner of a copy; 117 and contract obligations are different).
43 See Wall Data Inc v Los Angeles County Sheriff’s Department 447 F3d 769 (9th Cir 2006); MAI Sys Corp v Peak Computer, Inc 991 F2d 511 (9th Cir 1993) (licensees are not owners of copies; ‘Since MAI licensed its software, the Peak customers do not qualify as “owners” of the software and are not eligible for protection under § 117’).
44 See, eg DSC Communications v Pulse Communications 170 F3d 1354 (Fed Cir 1999) (licensee not owner if licence substantially restricts use of program).
Contract Formation and Attribution in an Automated World

The earliest years of writing and policy-making with respect to electronic commerce were dominated by concern over two issues: (1) are electronic (digital) media sufficient to satisfy the numerous places in law where traditional rules required use of writing and a traditional signature?; and (2) are contracts formed online or otherwise through automated methods such as clicking assent enforceable?

Today, however, we largely know the answers to these questions. In most countries, at least most developed countries, the equivalence between digital files and paper files has been established for most purposes associated with contract law and practice. In the United States, this result was accomplished by two statutes (one federal and one uniform state law) that have created more complexity than perhaps might have been desired, and by a series of cases based on law other than these statutes that subject digital media to basically the same tests that have been used for paper.45 There are some areas of commerce where paper is still required, but they are very few in number.

The contract formation issue in the United States has been resolved.46 The answer is predictably the one that UCITA first set out the parameters of in the late 1990s. Click and other online methods of assent create enforceable contractual obligations if the presentation of the method of assent and accessibility to the contract terms is sufficient to give a reasonable person reason to know that terms are being proposed.47 In the United States, at least, this is true even if the person using the software or online system never reads

45 See Cloud Corp v Hasbro, Inc 314 F3d 289 (7th Cir 2002). See also Shattuck v Klotzbach No 011109A, 2001 WL 1839720 (Mass Super, 11 Dec 2001); Rosenfeld v Zerneck 776 NYS2d 458, 2004 WL 963734 (NYSup 2004) (email signature was sufficient to meet NY statute of frauds for sale of real estate: ‘sender’s act of typing his name at the bottom of the email manifested his intention to authenticate this transmission . . . ’ No binding contract because email lacked vital terms); General Trading Int’l, Inc v Wal-Mart Stores, Inc 320 F3d 831 (8th Cir 2003) (Reply emails sent by vendor to retailer constituted an unequivocal objection to the retailer’s assertion that an agreement had been reached for $200,000 markdown on allegedly defective craft items, and thus retailer did not satisfy merchant’s exception to the Arkansas statute of frauds).

46 See generally Raymond T Nimmer and Holly K Towle, above, n 1, Ch 8.

47 See generally Raymond T Nimmer and Holly K Towle, above, n 31, § 14:26. See also ProCD, Inc v Zeidenberg 86 F3d 1447 (7th Cir 1996); Specht v Netscape Communications Corp 306 F3d 17 (2nd Cir 2002) (online agreement not enforceable in this case because terms and act held to be assent on this free site not presented in way to give reasonable person notice that they existed); Register.com v Verio, Inc 356 F3d 393 (2nd Cir 2004) (contract formed despite lack of click assent; notice of intent to impose terms was adequate and court affirms injunction on contract and trespass issues); Siedle v National Assn of Securities Dealers, Inc 248 FSupp2d 1140 (MD Fla 2003) (online agreement enforceable; prevents commercial use of data; contract interpretation issue); Caspi v Microsoft Network, LLC 323 NJ Super 116, 732 A2d 528 (App Div 1999) (click agreement enforced; choice of exclusive forum in online contract governs); Hotmail Corp v Van$ Money Pie Inc 47 USPQ2d 1020, 1998 WL 3883389 (ND Cal 1998) (online terms of service enforceable); Rudder v Microsoft Corp 1999 WL 33193960 (Ont SCJ 1999) (click agreement enforced); Jessup-Morgan v America Online, Inc 20 F Supp 2d 1105, 26 Media L Rep 2426 (ED Mich 1998) (enforces termination and disclosure provisions); Gross v America Online, Inc 1998 WL 307001 (RI Super Ct 1998) (user bound by contract selection of law in online licence).
the terms or would have preferred different terms. As Judge Learned Hand commented in 1911:

A contract has, strictly speaking, nothing to do with the personal or individual intent of the parties. A contract is an obligation attached by the mere force of law to certain acts of the parties . . . which accompany and represent a known intent. If, however, it were proved by twenty bishops that either party, when he used the words, intended something else than the usual meaning which the law imposes upon them, he would still be held [to the contract.]

The 'twenty bishops’ image is a classic in contract law about when a contract is formed; it reflects the 'objective theory' of contract law that is followed throughout US law and acknowledged under both the UCC and UCITA.

The formation of a contract does not require subjective intent to contract, or subjective agreement. Neither does it require use of any magic words nor, indeed, any words at all. Article 2, 2A and UCITA provide:

A contract may be formed in any manner sufficient to show agreement, including offer and acceptance or conduct of both parties or operations of electronic agents which recognise the existence of a contract.

Under this approach, actions taken electronically clearly can provide a sufficient basis to form a contract. That action does not have to be a click of agreement on a button, but can be through simply downloading information if the context gives reason to know that contractual obligations might be associated with this action.

**Electronic agents**

The language quoted above on conduct indicating assent contains language regarding ‘electronic agents’ that was promulgated in UCITA and then adopted in Art 2, Art 2A, and UETA. It confirms simply that, in a world in which contractual obligations flow from objective manifestations (behaviour), one type of behaviour that qualifies as a potential means of indicating that a contract should exist involves the use of digital, automated systems.

UCITA defines 'electronic agent' as:

48 In retrospect, it seems that the reality of any resistance to online and other click assent formats had less to do with ideas of assent, and more to do with the objection of many scholars and attorneys to the idea that standard forms can create enforceable contracts. One aspect of the operation of electronic commerce systems is that at least one side is represented by a pre-formatted computer program and, at least for the first decade of commerce, a standard for stating terms of service. See Raymond T Nimmer and Holly K Towle, above, n 1, Ch 8. But most areas of commerce have long relied on standard forms and they are recognised as effective (if assented to) in most countries and throughout the US. See Restatement (Second) of Contracts § 211.

49 *Hotchkiss v National City Bank of New York* 200 F 287, 293 (SD NY 1911), ac’d, 201 F 664 (CCA 2d Cir 1912), aff’d, 231 US 50, 34 S Ct 20, 58 LEd 115 (1913) and ac’d, 231 US 60, 34 S Ct 22, 58 L Ed 121 (1913).


51 See *Register.com v Verio, Inc* 356 F3d 393 (2nd Cir 2004) (contract formed despite lack of click assent; notice of intent to impose terms was adequate).

52 UCITA § 102(a)(27). See also UETA § 2(6); E-Sign § 106(3)('The term “electronic agent” means a computer program or an electronic or other automated means used independently to
‘Electronic agent’ means a computer program, or electronic or other automated means, used independently to initiate an action, or to respond to electronic messages or performances, on the person’s behalf without review or action by an individual at the time of the action or response to the message or performance.

Modern commerce often uses automated systems. These systems range in sophistication from simple telephone answering systems to highly sophisticated and interactive computer programs. When used in forming a contract or its terms, these systems are most frequently referred to as ‘electronic agents’. Virtually all contracts formed online today entail at least one electronic agent.

In contract formation, automated systems present questions about whether the operations of electronic agents adequately establishes assent to a contract and, secondly, what are the terms of that contract. As we have seen, in the United States, law measures assent by objective manifestations, rather than subjective intent. This means simply that the person responding to an offer is held to intend ‘what appeared from his expression to be his intention’ unless circumstances indicate clearly to the contrary.53 Traditional contract law, however, is based on the assumption that the conduct, words or writings involved were those of a human being with authority to act.54

Given their efficiency and ubiquitous use in commerce, it is clear that operations of automated, electronic agents must be regarded as sufficient to establish contractual obligations at least in many cases. The challenge is to articulate this result in a way that does not over-reach and provides safeguards under contract law for both parties to an automated transaction.

One could reach the result of giving legal efficacy to electronic agents by focusing on the fact that the party represented by the automated system made an initial decision to use the electronic agent on its behalf. This could create a form of indirect assent. A company that creates or uses an entirely automated system creates objective indicia of an intent to be bound by the system.

An alternative would describe the actions of the electronic agent as the indicia of assent, treating the automated system as roughly equivalent to any other agent and attributing its effects to the user by agency theory.

The more direct approach recognises that responsibility exists for operations of an electronic agent, regardless of how traditional law would treat them. This approach was taken in UCITA and in UETA. The UETA rule, which derived from UCITA, reads as follows:55

(1) A contract may be formed by the interaction of electronic agents of the parties, even if no individual was aware of or reviewed the electronic agents’ actions or the resulting terms and agreements.

---

55 UETA § 14(1)(2) (Subsection 3 provides: ‘The terms of the contract are determined by the substantive law applicable to it.’).
(2) A contract may be formed by the interaction of an electronic agent and an individual, acting on the individual’s own behalf or for another person, including by an interaction in which the individual performs actions that the individual is free to refuse to perform and which the individual knows or has reason to know will cause the electronic agent to complete the transaction or performance.

This recognises that automated systems create contracts even if no human is aware of their specific activities and also recognises that a contract should be formed when the individual interacting with the electronic agent has reason to know that the individual’s conduct will cause the agent to complete the transaction.

UCITA provides some additional guidance. Under UCITA, a contract is formed if the operations of the electronic agents recognise the existence of a contract in the same manner that conduct of both parties would be treated as recognising a contract. In the case of an interaction between an electronic agent and a human being:

A contract may be formed by the interaction of an electronic agent and an individual . . . A contract is formed if the individual takes an action or makes a statement that the individual can refuse to take or say and that the individual has reason to know will:

1. cause the electronic agent to perform, provide benefits, or allow the use or access that is the subject of the contract, or send instructions to do so; or
2. indicate acceptance, regardless of other expressions or actions by the individual to which the individual has reason to know the electronic agent cannot react.

These standards avoid the fiction that the operations of an electronic agent must be found to express an intent subjectively to enter into a contract.

Not all actions of electronic agents should yield a contract. Some systems are used merely to record an order or other inquiry, rather than to accept its terms. Merely issuing a confirmation of receipt of the offer cannot create a contract, whether confirmation occurs automatically or by action of a human actor. That function cannot be cut off by an overly aggressive use of contract theory. In some cases, of course, differentiating a confirmation of an offer or an acceptance of it will present close issues. The distinction does not turn on whether the response was triggered automatically. The capability to create an automated acceptance system rests fully within the range of conduct that under general contract law constitutes a form of acceptance sufficient to create a contract.

Regardless of one’s preferred theory, courts are not having trouble in concluding that electronic agents can form contracts or that persons who use such agents can be bound by their actions. Cairo, Inc v Crossmedia Services,

---

56 UCITA § 206(b) (2000 Official Text).
57 See Corinthian Pharmaceutical Systems, Inc v Lederle Laboratories 724 F Supp 605, 11 UCC Rep Serv 2d 463 (SD Ind 1989) (‘When Corinthian placed its order, it merely received a tracking number from the Telgo computer. Such an automated, ministerial act cannot constitute an acceptance.’); Messing v Bank of America, NA 373 Md 672, 821 A2d 22 (2003) (mere fact that bank teller’s computer printed information on back of cheque did not amount by itself to an acceptance in a different context).
Inc is illustrative. There, CMS offered a shopping service allowing users to click on site information to obtain coupons for shopping at local retailers. The CMS site warned users that use of the site would constitute consent to the CMS Terms of Use, which terms prohibited spiders and deep-linking and contained a choice of Illinois forum. Cairo, a competing shopping service, sent robotic spiders to gather data from the CMS site that appeared as thumbnail images which, when clicked, deep-linked into the CMS site. After CMS sent Cairo a cease and desist letter, Cairo brought suit in California for a declaratory judgment claiming, among other things, that it (Cairo) had never consented to the CMS terms. Cairo’s argument was that its computer search programs could not read the posted terms and did not report their presence, let alone their content. Thus, Cairo had no actual knowledge of and never consented to them. Quoting the Second Circuit, the California court denied Cairo's motion and enforced the choice of forum clause, noting as follows:

It is standard contract doctrine that when a benefit is offered subject to stated conditions, and the offeree makes a decision to take the benefit with knowledge of the terms of the offer, the taking constitutes acceptance of the terms, which accordingly become binding on the offeree... Cairo's visits to CMS's web sites with knowledge of CMS's Terms of Use constituted acceptance of the terms, which accordingly are binding on Cairo.

Why did Cairo have such knowledge? It admitted to having it via CMS’s letter, but the court also found imputed knowledge from Cairo’s repeated and automated use of CMS’s web pages which, as noted, occurred through its electronic agent.

The challenge for contract law is to build a coherent concept of circumstances that do and do not reflect assent through automated means and to do so during a time when technology and systems will continue to evolve actively.

**Attribution: who is the other party?**

Who is the party that assented to the contract or at least is responsible for that assent as a matter of law?

The issue of who is bound by a contract involves a question of attribution. This entails deciding who is legally bound by the contractual obligations. While this issue was not created by electronic commerce, electronic transactions enhance the difficulty of resolving it. Indeed, there are many who regard this as the most significant of all contract issues in electronic commerce.

One way to approach this topic is by treating it as an evidentiary issue. For example, UETA § 9 provides simply:

An electronic record or electronic signature is attributable to a person if it was the act of the person. The act of the person may be shown in any manner, including a

---

58 Cairo, Inc v Crossmedia Services, Inc 2005 WL 756610 (ND CA 2005).
60 UETA § 9.
showing of the efficacy of any security procedure applied to determine the person to which the electronic record or electronic signature was attributable.

Attribution in this view deals with whether sufficient information exists to conclude that a particular person (or company) was responsible for the actions that establish a contractual obligation. Various indicia bear on this question and can be used to establish attribution when the other party contests the issue. As in other contexts, many relevant indicia are not technology based. Thus, for example, the fact that a tangible product was delivered to and accepted by a party supports an inference that this party contracted for it. Similarly, that a purchase was made using an individual’s credit card creates some inference that the person made the contract, while the further fact that a personal identifier number was also used enhances that inference.

While attribution issues are often resolvable by means other than use of technological devices, the issue of attribution in electronic commerce may become entwined with the policy question of whether use of certain technology should elevate the evidentiary inference to a rule that the person is responsible as a matter of law.

A person can agree to be bound by any use of its digital signature, identification code, or other identifier. In effect, such agreements assign the risk of fraud or mistake. In some contexts, however, regulations either preclude contractual allocation or make it difficult to achieve in consumer contexts. But outside those settings, the general rule is that risk can be allocated by contract, including by making a person responsible (or not) for use of identifying cards, numbers or the like.

In the absence of a contractual risk allocation, the issue becomes one of describing what conditions, technological or other, adequately establish attribution to a party when that person denies having been involved. In Federal Trade Commission v Verity International, Ltd, the lower court enforced an FTC ruling that the defendant’s billing practices involved an unfair and deceptive practice. The defendant provided bill collection services for various online pornographic sites. The bills were sent to the individuals that held the telephone number from which the access occurred. The District Court held that this was an unfair and deceptive trade practice because it assumed attribution to the person who owned the number, but that was not warranted in all cases. The deceptive practice involved the fact that the bills sent to the owner of the telephone number did not indicate that the customer would not be required to pay if it had not in fact used the site.

The Court of Appeals affirmed, agreeing with the District Court that the billing practice could not be justified based on common carrier rules associated with telecom systems that charge the owner of a telephone line with any calls made from it. That theory was limited to common carriers and, in this case, the defendant was providing an enhanced or information service. Equally important, the billing practice could not be justified on grounds of

agency law or, more specifically, the general concept of apparent authority.\textsuperscript{62}

In rejecting this argument, the court became the first court to begin to set outlines for how authority concepts might apply online. It commented:\textsuperscript{63}

Apparent authority, ‘[u]nlike express or implied authority . . . exists entirely apart from the principal’s manifestations of consent to the agent’. Rather, it would derive here either from manifestations of the principal (the line subscriber) to a third party (an entity involved in the billing system) or from the putative agent’s (the computer user’s) position, when justified by ordinary expectations and habits . . . [Here] the computer is a multipurpose tool that is not primarily understood as a payment mechanism, and in the ordinary habits of human behavior, one does not reasonably infer that because a person is authorised to use a computer, the subscriber to the telephone line connected to that computer has authorised the computer user to purchase online content on the subscriber’s account. Apparent authority does not exist on these facts.

In modern laws, some states and countries have enacted enhanced presumptions of attribution where a party uses a digital or other designated form of a secure system that authenticates the relevant record.\textsuperscript{64}

UCITA and UETA, however, treat any attribution procedure used as merely one element of the overall proof; the better the encryption technology, of course, the stronger the factual inference as to the source of the record. Beyond that there is no legal benefit attached to any particular system or technology.

Thus, we can state the challenge more fully: what does assent mean and who is responsible when automated systems interact?

\textbf{Part C}

\textbf{Conclusion}

This article can barely scratch the surface of the challenges that modern e-commerce presents for contract law. Thus, the most important messages lie in the overall framework, rather than the details of specific issues.

Those two important messages are as follows.

First, electronic commercial transactions cannot be addressed simply in terms of mechanical changes. Rather, they have engaged a fundamental change in relationships, expectations and subject matter, which challenge contract law and contract scholars to come to grips with the nature of their doctrines, practices, and presumptions as they are applied to fundamentally new and different relationships. The relationship between a licensor and licensee, an access provider and its clients, and other modern information-based transactional relationships does not flow from models of relationships between the buyer and seller of a toaster or television set. Understanding and adapting law to these new relationships and changing expectations is a true challenge for modern contract law.

\textsuperscript{62} Merrill Lynch Interfunding, Inc v Argenti 155 F3d 113, 122 (2d Cir 1998); Restatement (Second) of Agency § 140 (1958).

\textsuperscript{63} St Luke’s Cataract and Laser Institute v Sanderson 2006 WL 1320242 (MD Fla 2006) (insufficient authentication of Internet archives material to establish content of sites on particular days).

\textsuperscript{64} See Raymond T Nimmer and Holly K Towle, above, n 1, Ch 6.
Second, electronic commerce might once have been reasonably treated as a small sub-part of contract law and commercial practice. That is no longer true. Indeed, most of the active growth of modern commerce lies in areas dominated by the new relationships of electronic commercial relationships and the largest companies in the world all rely heavily on digital systems and commerce enabled by them. This is, indeed, modern commercial law.