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The Emerging Law of Electronic Commerce

Amelia H. Boss

Jane Kaufman Winn
University of Washington School of Law

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*By Amelia H. Boss and Jane Kaufman Winn**

The emergence of the Internet as a mass-media phenomenon with a growing number of commercial uses has brought the subject of electronic commerce to the attention of a wide audience for the first time.[1] While the current popularity of Internet electronic commerce may or may not be sustainable, electronic commerce is here to stay.[2] The overall benefits accruing to businesses from the increased speed and efficiency of electronic technologies, as well as the ability to communicate virtually instantaneously with trading partners throughout the world, has made electronic commerce indispensable in today's marketplace. Indeed, the use of electronic technologies already has had three major effects on commercial relationships: (i) commercial parties have begun to restructure their business practices using such technologies to communicate internally as well as externally; (ii) new industries have emerged to provide needed services to companies engaging in electronic commerce; and (iii) new types of property with commercial value have become the subject of trade domestically and internationally.[3]

As the world of electronic commerce expands, there is an increasing

*Ms. Boss is a professor of law at Temple University School of Law, Philadelphia, Pennsylvania. Professor Boss, a former chair of the Uniform Commercial Code Committee of the Section of Business Law, serves as a member of the Permanent Editorial Board of the Uniform Commercial Code and as a member of the drafting committees for Articles 1, 2, and 2B. She also serves as the United States delegate to the United Nations Commission on International Trade Law and its Working Group on Electronic Commerce.

Ms. Winn is an associate professor at Southern Methodist University School of Law, Dallas, Texas. Professor Winn is co-author, with Benjamin Wright, of THE LAW OF ELECTRONIC COMMERCE, 3rd ed. (forthcoming 1997).

1. A good source for current information regarding cyberspace legal issues is the website of the Committee on the Law of Commerce in Cyberspace, ABA Section of Business Law (visited July 24, 1997) <http://www.abanet.org/buslaw/cyber/>.

2. Although it is impossible to foresee all the implications electronic technologies may have for the political, cultural, and business climates of the future, some, nonetheless, have tried. *See generally* MARSHALL MCLUHAN & BRUCE R. POWERS, THE GLOBAL VILLAGE: TRANSFORMATIONS IN WORLD LIFE AND MEDIA IN THE TWENTY-FIRST CENTURY (1989).

3. *See generally* Amelia H. Boss, *The Emerging Law of International Electronic Commerce*, 6 TEMPLE INT'L & COMP. L.J. 293 (1992).

demand for clarity in the rules which apply to the participants and their transactions. Uncertainty exists on such matters as whether agreements entered into electronically are enforceable, how the operative terms of online contracts will be determined by courts, what rights parties have to online information, and what electronic self-help remedies they may exercise. The increased costs of dealing with these new legal uncertainties may offset any reduction in costs achieved through the use of new technologies and, as a result, may slow needlessly the rate at which businesses are willing to implement new technologies.

It is imperative that the law remain current with technological and commercial developments and establish a stable, uniform framework of rules that will provide the needed certainty and predictability for commerce. The need for such a framework has been emphasized in a White House paper calling for a "Uniform Commercial Code" for cyberspace: a "domestic and global uniform commercial legal framework that recognizes, facilitates, and enforces electronic commercial transactions worldwide."[4] Legislatures throughout the country hear demands for legislation to resolve the thorny problems arising from business transactions on the Internet.[5]

Much of the demand for the development of a legal framework has come from those who use electronic commerce and want assurances that electronic transactions will be valid and binding, as well as certainty about the rules and remedies that apply to their transactions. Demands have also come from providers of support services for electronic commerce who seek legislation to clarify their responsibilities and their potential liability to users of their services or to third parties. The public has also been heard, expressing concerns about issues ranging from privacy[6] and pornography[7] to protection against online purveyors of services.[8] While much of the

4. *See A Framework for Global Electronic Commerce*, Draft #9 (July 1, 1997) at <http://www.iitf.nist.gov/eleccomm/ecomm.htm>.

5. A frequently updated survey of states with enacted or pending electronic commerce legislation appears at the McBride, Baker & Coles website, (visited July 24, 1997) <http://mbc.com/ds_sum.html>.

6. *See, e.g.*, Nina Bernstein, *Lives on File: The Erosion of Privacy*, N.Y. TIMES, June 12, 1997, at A1. Public outcries about privacy have had an impact. The Social Security Administration suspended previously announced plans to offer online services in response to privacy and security concerns raised in the popular press. Robert Pear, *Social Security Closes On-Line Site, Citing Risks to Privacy*, N.Y. TIMES, Apr. 10, 1997, at A15. *See also* Social Security Ruling 96-10p, 61 Fed. Reg. 68,808 (1996) (allowing customers to communicate electronically with Social Security Administration online); Meeting Notice, 62 Fed. Reg. 23,525 (1997) (suspending online service).

7. Communications Decency Act of 1996 (CDA), Pub.L. No. 104-104, § 501, 110 Stat. 56, 133-36 (1996), *struck down in part by* ACLU v. Reno, 929 F. Supp. 824, 857 (E.D. Pa. 1996), *aff'd*, 117 S. Ct. 2329 (1997) (invalidating portions of the CDA as violating free speech and due process).

8. *See, e.g.*, CAL. BUS. & PROF. CODE § 17538 (West 1996) (extending state law regulating advertising for the sale or lease of goods or services by telephone, mail order, or catalogue to the Internet).

popular press has focused on issues such as privacy and freedom of speech, a number of important issues have been raised regarding the use of new technologies by businesses, and the commercial law framework needed to support business done via the Internet.[9]

Although often not apparent to the average business person or even the average lawyer, changes are currently underway, both domestically and internationally, to adapt existing commercial law doctrines to accommodate electronic transactions and the technologies that underlie them. The Uniform Commercial Code (Code) is undergoing substantial revision in order to respond to changes in business practice and the use of electronic communications technologies.[10] These revisions will provide many of the basic rules to support and facilitate electronic commerce, and, to the extent possible, are being coordinated with international efforts in the field.[11] While progress in the creation of uniform laws may not always be as visible to the business community and the business bar as are actions on Capitol Hill, efforts to expand uniform law efforts outside the Code to accommodate electronic trade in a manner harmonious with the Code are also underway. Members of the business law bar should become aware of these developments because the pressing issues raised by electronic commerce both on and off the Internet are being subjected to thoughtful debate by the drafters of these revisions.

What follows is a necessarily brief overview of the manner in which the Code is being revised and related legislation is being prepared to respond to the demands of an electronic age. While many of the revisions discussed below are not complete, a final product is anticipated within the next year. Contained in these various legislative efforts is a blueprint for the future of electronic commerce.

9. Indeed, that is the thrust of the White House paper calling for a framework for global electronic commerce. *See supra* note 4. For example, on July 24, 1997, the Department of Commerce held a public forum on certificate authorities and digital signatures. *See* Public Forum on Certificate Authorities and Digital Signatures: Enhancing Global Electronic Commerce, 62 Fed. Reg. 31,411 (1997).

10. The official website of the National Conference of Commissioners on Uniform State Laws (NCCUSL) has the current drafts of the UCC articles under revision at <http://www.law.upenn.edu/library/ulc/ulc.htm> (visited July 17, 1997).

11. Foremost in the area is the work of the United Nations Commission on International Trade Law (UNCITRAL) through its Working Group on Electronic Commerce. In 1996, UNCITRAL gave its final approval to a new Model Law on Electronic Commerce which contains many provisions adapting the formalities of the law to an electronic environment. *See Report of the United Nations Commission on International Trade Law on the work of its twenty-ninth session*, 28 May-14 June 1996, U.N. GAOR, 51st Sess., Supp. No. 17, U.N. Doc. A/51/17 Annex I (1996) *reprinted in* 36 I.L.M. 200 (1997) [hereinafter *UNCITRAL Model Law*]. Work is currently underway to examine the use of electronic and digital signatures in international trade. *See Report of the Working Group on Electronic Commerce on the Work of its thirty-first session*, U.N. Doc. A/CN.9/437 (1997). NCCUSL, one of the sponsors of the Code, has been working to coordinate its efforts with that of the U.S. Department of State to assure that the uniformity in laws is achieved internationally as well as domestically.

ELECTRONIC COMMERCE: MATTERS OF BOTH FORM AND SUBSTANCE

The term "electronic commerce" generally refers to the conduct of trade by means of electronic technologies in which computers play some integral role. Only a few years ago, the term electronic commerce encompassed little more than "electronic data interchange" (EDI), or the computer-to-computer exchange of information (e.g., purchase orders and/or invoices) in standardized formats.[12] Since then, however, the concept has expanded. The commercialization of the Internet has transformed the use of computers in business into a mass-media phenomenon. It is now clear that electronic commerce encompasses a wide range of activities. It includes not only the conduct of trade on a closed basis with known trading parties, but the conduct of business in an open environment like the Internet where transactions frequently occur between parties with no prior (or subsequent) contact. It includes not only transactions between large, established businesses, but also transactions involving small businesses and individual consumers. Electronic commerce includes not only trade in traditional items, such as goods and services, but also trade in new forms of property, such as software and ideas. It includes not only uses of technology in the contracting process, but also uses of technology in the performance of contractual obligations and the enforcement of rights and exercise of remedies online.

A closer look at electronic commerce reveals the convergence of two distinct, but important, trends in the current transformation of the American economy through the use of new information technologies. The first is the growing use of technology in conducting traditional business operations. In its initial stages, electronic commerce was interpreted by many to mean the conduct of traditional trade (i.e., buying and selling goods) using electronic technologies in negotiation, contract formation, and, to some degree, performance of the business transaction. As such, businesses that adopt electronic contracting practices no longer use paper purchase orders or invoices to enter into sales transactions; agreements are made electronically and business is conducted electronically. In important respects, electronic commerce is a matter of "form," the form of traditional business carried on and the form of the traditional business relationship.

The second trend reflects the nature of what is being traded. As the use of electronic technologies has expanded, the substance of commercial transactions has also changed. Information itself (rather than the medium in which it is found, such as a book) is frequently the subject matter of the transaction. Forms of information that once were not recognized as having

12. One of the leading sources of information on electronic data interchange was published in *The Business Lawyer*. *See* ABA Electronic Messaging Services Task Force, *The Commercial Use of Electronic Data Interchange—A Report and Model Trading Partner Agreement*, 45 BUS. LAW. 1645 (1990) [hereinafter *ABA Report*].

market value are now commonly the subject of transactions, and segments of the economy that once were thought to be outside the mainstream of commerce, such as the entertainment industry, are drawn into it by new technologies. Assets such as software have moved from the realm of craft production to mass-market commodities.[13]

In recent years, the American economy has been declared to be a post-industrial or information economy.[14] In an information economy, intangible resources such as intellectual property and databases play a pivotal role in economic success. Opportunities in an information economy are global, not national. Information and technology exports play an increasingly crucial role in the United States' balance of payments with its trading partners.[15] Commercial law principles established to regulate trade in goods can be adapted to trade in services and intellectual property only with difficulty; adapting them to the global information economy may be even more of a challenge.[16] Of necessity, the Code must address this rise in economic importance of intangible assets and the need to develop coherent, uniform contracting and commercial rules to govern transactions pertaining to them.[17]

The challenge for the Code and for commercial law in general is two-fold: to accommodate new forms of property and, at the same time, to

13. These changes are just as apparent within the legal profession as within business and industry. In the past, a lawyer establishing a new law office would purchase books (statutes, cases, and treatises) for her law library. Today's lawyer is more likely to acquire computer diskettes or CD-ROMs containing the relevant statutes, cases, and treatises; to enter into contracts with providers, such as WESTLAW or LEXIS, to access such materials; to search the Internet to find appropriate resources; and to use document assembly programs to draft documents and pleadings.

14. George Guilder has declared the defining characteristic of an information economy to be the search for competitive advantage from the falling price of processing and communicating information. George Guilder, *Telecosm: Feasting on the Giant Peach*, FORBES, Aug. 1996, at S84.

15. *See, e.g.*, Alice Haemmerli, *Insecurity Interests: Where Intellectual Property and Commercial Law Collide*, 96 COLUM. L. REV. 1645, 1646 (1996).

16. The global nature of the Internet has been noted as one of its distinguishing features. *See* ACLU v. Reno, 929 F. Supp. 824, 831 (E.D. Pa. 1996), *aff'd*, 117 S. Ct. 2329 (1997) (describing the Internet as "a decentralized, global medium of communications. . . . The Internet is an international system"). For a discussion of the particular challenges presented to the international community in responding to electronic commerce, see Boss, *supra* note 3.

17. While some parts of the Code, such as Article 9 on secured transactions, have always applied to all personal property, whatever its nature, and encompassed both tangible and intangible assets, other parts, such as Article 2, have been restricted to a goods-based model. Indeed, the same could be said of Article 6 (dealing with bulk transfers of goods) and Article 7 (dealing with the warehousing or shipment of goods pursuant to a document of title). The payments articles of the Code, including Articles 3, 4, and 5, have had payments as their subject matter, and thus would appear to apply regardless of the subject matter of the underlying transactions. Article 8 stands out as the one article which concerns property (securities) consisting of often intangible claims on an ongoing business, rather than claims on tangible property.

accommodate new means of contracting and performing contracts. Indeed, if the Code and other state laws are not adapted to the new demands of electronic commerce, the regulation of electronic commerce will become primarily the domain of federal regulation.[18]

THE U.C.C. REACTS TO ELECTRONIC COMMERCE

Although the Code was originally drafted in the 1940s and 1950s, its various articles have undergone repeated revision over the years to modernize and clarify their provisions. In recent years, changes have been driven increasingly by the need to accommodate electronic commerce.

Many of the provisions of the Code have been premised on the existence of a piece of paper, either to document the existence of a deal, or to represent certain underlying claims, such as rights to business interests (e.g., stock certificates) or to be paid (e.g., by check or other negotiable instrument). By the late 1960s, the required physical movement of paper documents to transfer effective title to securities was perceived as cumbersome, time-consuming, and responsible for an unnecessary back-office "paperwork crunch."[19] To resolve this problem, in 1978, revisions to Article 8 were made to accommodate uncertificated securities by permitting the issuer or transfer agent of the stock to maintain records, presumably on computer, and effect stock transfers by a book entry system in lieu of issuing a paper stock certificate. The system envisaged by the drafters of the 1978 Article 8 failed to materialize, however, as offerors continued to issue paper certificates,[20] electronic stock transfers did take place between broker-dealers, and the system that evolved in practice was based on a centralized system of holding certificates.[21]

18. *See* Julian B. McDonnell, *The Code Project Confronts Fundamental Dilemmas*, 26 LOYOLA L.A. L. REV. 683 (1993).

19. U.C.C. § 8 Prefatory Note (1995).

20. The banks and broker-dealers, in cooperation with the Depository Trust Company (DTC), a trust company organized for the benefit of its participants, and the National Securities Clearing Corporation devised their own solution to the problem. A system of "indirect" holding developed in which DTC maintained "jumbo" certificates representing shares in its possession, and transferred securities by adjustments to participants' accounts at DTC. Participant banks and broker-dealers in turn provided similar services to their own customers. The 1978 Article 8 could not accommodate this system because it was based on the assumption that investors would own securities directly, either in the form of physical certificates, or as book entries in the accounts of issuers or transfer agents.

21. In response to the legal uncertainties created by the disjuncture between the vision of the 1978 Article 8 and the realities of business practice in this area, Article 8 was revised again in 1994. Rather than try to capture the complex relationships between investors and financial services intermediaries in the Article 8 provisions, the drafters defined a new term, "security entitlement." *Id.* § 8-102(a)(17) (1995). A security entitlement arises when a financial asset is credited to a securities account maintained with a financial intermediary. *Id.* § 8-501. For an overview of the changes in Article 8, see Charles W. Mooney, Jr. et al., *An Introduction to the Revised U.C.C. Article 8 and Review of Other Recent Developments with Investment Securities*, 49 BUS. LAW. 1891 (1994); James Steven Rogers, *Policy Perspectives on Revised U.C.C. Article 8*, 43 UCLA L. REV. 1431 (1996).

The universal reliance by banks on computer processing facilities to handle the collection of checks led to the 1990 revisions to Article 4 of the Code. These revisions recognized the necessary implications of high speed information processing[22] and the possibility of eliminating the flow of paper through the system by truncating the check collection process.[23] Moreover, banks already had moved a large portion of funds transfers away from the paper-based check system to the wire transfer system. As these paperless funds transfers were not subject to Articles 3 or 4, Article 4A was drafted to provide a comprehensive statement of legal rules to provide greater certainty to the participants in the wire transfer business.[24] As is discussed later,[25] one of the most significant innovations of Article 4A was the introduction of the concept of "commercially reasonable security procedures" as a method for determining when a payment order should be attributed to a particular sender.[26]

Other changes in the Code to accommodate electronic commerce have been less obvious. Several of the revisions to date have attempted to address the fact that commerce may be conducted without paper documents. For example, Article 8 in the 1994 revisions eliminated any statute of frauds writing requirement for contracts transferring interests in securities.[27] Article 5 on letters of credit was the first article of the Code to attempt to replace the concept of a writing with the concept of a "record," defined as "information that is inscribed on a tangible medium, or that is stored in an electronic or other medium and is retrievable in perceivable form."[28] Moreover, while letters of credit traditionally have been viewed as payment against documents, the revised Article 5 "contemplates and facilitates the growing recognition of electronic and other nonpaper media

22. *See* U.C.C. § 4-101, Official Comment (1984) (noting the need for rules "with ample provision for flexibility to meet the needs of the large volume handled and the changing needs and conditions that are bound to come with the years"). Some of the rules of Article 4 are premised on the fact that computers, not humans, will process the checks. *See, e.g., id.* § 4-401(c) (1995) (post-dated checks); *id.* § 4-406, cmt. 4 (no duty to examine checks manually); *id.* § 4-110 (permitting electronic presentment in place of delivery of the item itself).

23. *Id.* § 4-101, cmt. 3 ("The revisions in Article 4 are intended to create a legal framework that accommodates automation and truncation for the benefit of all bank customers.").

24. U.C.C. § 4A, Prefatory Note (1991). For a summary of the development of Article 4A, see Fred H. Miller & William B. Davenport, *Introduction to the Special Issue on the Uniform Commercial Code*, 45 BUS. LAW. 1389, 1391 (1990).

25. *See infra* notes 46-53 and accompanying text.

26. U.C.C. § 4A-202 (1995).

27. Revised § 8-113 provides: "A contract . . . for the sale or purchase of a security is enforceable whether or not there is a writing signed or record authenticated by a party against whom enforcement is sought." As the Official Comment notes: "[t]he statute of frauds is unsuited to the realities of the securities business, . . . whatever benefits a statute of frauds may play in filtering out fraudulent claims are outweighed by the obstacles it places in the development of modern commercial practices in the securities business."

28. U.C.C. § 5-102(a)(14) (1995).

as 'documents' "[29] by broadly defining "document" to include presentations in "a written or other medium permitted by the letter of credit or . . . by the standard practice."[30]

There are several revision projects currently underway which will be addressing electronic commerce issues more extensively. Drafting committees are currently at work on revisions to Article 2 on the sale of goods, Article 2A on leases of goods, Article 9 on secured transactions, and Article 1 on general provisions. In addition, there is a drafting committee creating a new Article 2B to deal with software contracts and licenses of information. Each of these efforts is motivated in whole or in part by a desire to deal with the problems encountered in the growth of electronic commerce. As early as 1991, a study group commissioned by the Permanent Editorial Board of the Uniform Commercial Code to examine the sale of goods provisions of Article 2 of the Code concluded that revision of the article was appropriate and timely in light of technology-driven changes in commercial practices.[31]

Additionally, in 1996, recognizing that the contracting issues raised by electronic commerce were far broader than those covered by the Code, NCCUSL established a Drafting Committee on Electronic Communications in Contractual Transactions. The charge to that committee was "to draft such revisions to general contract law as are necessary or desirable to support transaction processes utilizing existing and future electronic or computerized technologies,"[32] and to do so in a manner consistent with the comparable provisions of the Code as revised.[33]

CONTRACTING THROUGH THE USE OF ELECTRONIC TECHNOLOGIES

In the early 1970s, businesses began to replace traditional paper-based means of communication with electronic communication technologies. Certain companies began to transact business using "electronic data in-

29. *Id.* § 5-102, cmt. 2.

30. *Id.* § 5-102(a)(6). Thus, one may make a presentation by an electronic medium so long as either standard practice recognizes such a presentment or the letter of credit explicitly authorizes it.

31. *PEB Study Group: Uniform Commercial Code, Article 2, Executive Summary* (Mar. 5, 1991), *reprinted in* 46 BUS. LAW. 1869 (1991). *See* Amelia H. Boss, *Developments on the Fringe: Article 2 Revisions, Computer Contracting, and Suretyship*, 46 BUS. LAW. 1803 (1991).

32. NCCUSL Drafting Committee for Electronic Communications in Contractual Transactions, *Memorandum to Scope and Program Committee* (Jan. 3, 1997) (as approved by the Scope and Program and the Executive Committees). The chair of the Drafting Committee is Professor Patricia Blumenfeld Fry of the University of North Dakota Law School. The reporter is Professor D. Benjamin Beard of the University of Idaho College of Law. *See also* Reporter's Memorandum (Apr. 10, 1997) (visited July 11, 1997) <http://www.law.upenn.edu/library/ulc/ulc.htm>.

33. *See infra* notes 62-69 and accompanying text (discussing the work of the drafting committee).

terchange," a method for the electronic communication of business data between computers in standardized formats.[34] Although this type of commercial practice offered significant cost and time savings to its users, it raised a number of perplexing issues involving the application of existing legal rules and principles. In particular, existing rules from the common law or the Code regarding contract formation, contract validity, and contract terms were considered inadequate for assuring the legal validity and enforceability of contracts formed through the use of electronic media.[35] In response to those perceived problems, and in the absence of appropriate statutory revisions to accommodate electronic commercial practices, parties doing business electronically began to execute "trading partner agreements" or "interchange agreements" in an attempt to resolve contractually the legal uncertainties they faced.[36]

Nonetheless, there was a continuing recognition that the answer to the uncertainties of electronic commerce lay not in the execution of such agreements, but in the clarification of the rules applicable to electronic commerce, particularly with the growth of the use of the Internet, where parties frequently interact without execution of any overarching agreement. Particular issues requiring resolution included the application of "statute of frauds" requirements to electronic environments; the satisfaction of traditional formal requirements such as a "writing" or "signature"; the attribution of electronic messages to the sender; and the methods of contract formation. The pending revisions to the Code go a long way toward resolving many of these uncertainties.

THE STATUTE OF FRAUDS; WRITINGS AND SIGNATURES

The application of the statute of frauds[37] has been of particular con-

34. *See ABA Report, supra* note 12 (providing an introduction to EDI).

35. *Id.* at 1649-50.

36. One of the first domestic model trading partner agreements was a product of the Section of Business Law. In 1990, the Electronic Messaging Task Force produced a report and model EDI trading partner agreement to promote greater predictability and uniformity in the drafting and interpretation of private contractual relations governing EDI relationships. *See generally id.* Other groups throughout the world also addressed the issues of electronic commerce through model agreements. *See* Amelia H. Boss, *Electronic Data Interchange Agreements: Private Contracting Toward a Global Environment*, 13 NW. J. INT'L L. & BUS. 31 (1992); AMELIA H. BOSS & JEFFREY B. RITTER, ELECTRONIC DATA INTERCHANGE AGREEMENTS (ICC 1993). In 1996, the United Nations Economic Commission for Europe Working Party on the Facilitation of International Trade Procedures (WP.4) developed a Model Interchange Agreement for the International Use of Electronic Data Interchange to promote the use of EDI in international trade.

37. The statute of frauds provision currently in Article 2 requires a writing. U.C.C. § 2-201 (1995). A writing includes anything printed, typewritten, or made subject to any other intentional reduction to tangible form. *Id.* § 1-201(46). *See also id.* § 1-206(1) (general statute of frauds provisions for transactions over $5000).

cern.[38] Despite attempts to eliminate the statute of frauds completely,[39] all current revisions to the Code have retained it in some form. In order to accommodate electronic commerce, however, the current versions do not require a "writing" which is "signed." What is required instead is a "record" which has been "authenticated" by the person against whom enforcement is sought.[40]

This resolution of the statute of frauds problem demonstrates the twofold approach currently adopted by the Code revisions. First, the revisions substitute the concept of a "record" for the concept of a writing. The term "record" is defined as "information that is inscribed on a tangible medium or that is stored in an electronic or other medium and is retrievable in perceivable form."[41] This definition clearly contemplates electronic messages. Second, the revisions use the term "authenticating" a record to replace the concept of "signing."

> *Authenticate* means to sign, or to execute or adopt a symbol . . . or encrypt a record in whole or in part with present intent to identify the authenticating party, or to adopt or accept a record or term, or to establish the authenticity . . . of a record or term that contains the authentication or to which a record containing the authentication refers.[42]

The drafts of Articles 2, 2A, and 2B frequently speak of "authenticated records" rather than "signed writings" in provisions other than the statute of frauds. Indeed, Article 2B even provides that authenticated records within the meaning of that article will satisfy writing and signature requirements of other law.[43] All these changes make electronic transactions

38. As recently as 1996, a Georgia court held that a fax did not constitute a written notice because it was only "beeps and chirps." Dep't of Transp. v. Norris, 474 S.E.2d 216, 218 (Ga. App. 1996). For an analysis of cases on both sides of the issue, see BENJAMIN WRIGHT, *Writings and Signatures*, *in* THE LAW OF ELECTRONIC COMMERCE ch. 16 (2d ed., Nov. 1996).

39. The statute of frauds has been eliminated effectively in sales of securities covered by Article 8. *See supra* note 27. Early drafts of revised Article 2 eliminated the writing requirement of U.C.C. section 2-201, but the May 1997 draft of Article 2 followed the drafts of Articles 2A and 2B by retaining the requirement.

40. U.C.C. § 2B-201(a) (May 5, 1997 draft); *id.* § 2-201(a) (May 16, 1997 draft); *id.* § 2A-201(a) (May 1997 draft). The statute of frauds provision of Article 9 is a bit different; it requires a "signed" security agreement, *id.* § 9-203(1)(a), but "sign" is defined to mean "to identify a record by means of a signature, mark, or other symbol with intent to authenticate it." *Id.* § 9-102(a)(38) (Apr. 14, 1997 discussion draft).

41. *Id.* § 2B-102(a)(31) (May 5, 1997 draft); *id.* § 2-102(a)(25) (May 16, 1997 draft); *id.* § 2A-102(a)(23) (May 16, 1997 draft); *id.* § 9-102(a)(30) (Apr. 14, 1997 discussion draft); *id.* § 5-102(a)(14).

42. *Id.* § 2B-102(a)(2) (May 5, 1997 draft); *see also id.* § 2-102(a)(1) (May 16, 1997 draft) (containing a slightly different wording). *See* § 9-102(a)(38) (Apr. 14, 1997 discussion draft) ("sign" means to identify a record by means of a signature, mark, or other symbol with intent to authenticate it).

43. U.C.C. § 2B-104(b)(1) (May 5, 1997 draft).

as valid as if executed on paper, and thereby enhance the use of electronic technologies.[44]

In recent months, a great deal of attention has been paid to the idea of "electronic" or "digital" signatures and their use in electronic commerce. To the extent business people want assurances that these digital signatures will meet the formal requirements for binding commercial transactions, the proposed revisions should resolve some of their most obvious and pressing concerns. These revisions affirm by statute the general validity of electronic contracting, a proposition long accepted by the majority of courts deciding cases in this area.[45]

ATTRIBUTION

The concepts of "record" and "authentication" alone are not a thorough-going solution to the problems raised by electronic contracting; additional revisions deal with other specific issues. One of the pivotal issues in electronic commerce is the problem of binding an electronic message with the person who purports to send it. While electronic commerce may seem to take place in "cyberspace," online identities ultimately must be matched up with responsible parties in the physical world. Transactions conducted over computer systems are inherently at risk from a breach of the computer security system. The risk may come from internal sources, such as disgruntled employees, or external sources, such as competitors or hackers. Those who conduct business electronically face two related problems associated with "authenticating" the sender of a message. First, they want to know that, when they receive an electronic message, they can rely upon the message as from the purported sender. Second, they want to avoid liability themselves in the event a message purporting to come from the identified sender actually was sent by an interloper or malefactor.

The provisions of Article 4A governing the attribution of payment orders in electronic funds transfers systems provided the model for the currently-proposed revisions. Article 4A provides that a person will be bound by a payment order in three situations. The first two, which merely restate the common law, are noncontroversial: if either the identified sender authorized the payment order or is otherwise bound by it under the law of agency, that order is treated as authorized and the sender is obligated.[46] The third rule, however, is an innovation: if the parties have agreed to follow certain commercially reasonable security procedures to verify the authenticity of the payment order, any payment order received pursuant

44. The tactic of using different terminology (e.g., "record" and "authentication") is not the only approach that may be used to resolve electronic commerce issues. *See, e.g., UNCITRAL Model Law, supra* note 11 (providing that where the law requires a writing or signature, it may be satisfied in the electronic environment in a specified way).

45. See WRIGHT, *supra* note 38, for a discussion of the case law.

46. U.C.C. § 4A-202(a) (1995).

to those procedures, whether or not "truly authorized," is deemed to be effective against the identified sender.[47]

The presumption arising from the use of agreed-upon security procedures is rebuttable. The payment order is unenforceable if the identified sender can prove the order was not made by any person whom the sender entrusted with the means to send it.[48] If the payment order was sent by someone who gained access to the purported sender's transmission facilities or access device, the sender cannot avoid liability because the assumption is that the sender is in the best position to guard against such unauthorized access. If, however, the sender can prove the payment order was not sent through its transmission facilities, it can avoid liability.

Thus, under Article 4A, apart from common-law notions of authorization or agency, a purported sender is only bound if the payment order is sent pursuant to an agreed-upon security procedure. Even then, use of such a security procedure only gives rise to a rebuttable presumption that the purported sender is bound. If the purported sender can establish that the order emanated from an interloper outside the purported sender's control and with whom it had no contact, the sender can escape liability, but the burden of demonstrating that fact rests with the purported sender.

Proposed Article 2B adopts the notion of an attribution procedure which is similar to the security procedure defined in Article 4A. An attribution procedure is one adopted by the parties to verify that received electronic messages actually were sent by one or the other of them.[49] If, acting in good faith, the receiving party properly applies an attribution procedure and determines a message was from the other party, then the other party is bound.[50] Unlike Article 4A, Article 2B does not provide any statutory means for an alleged sender to overcome the presumption that the message came from it by establishing that the message came from an interloper. The only way under the statute for an alleged sender to escape liability is to demonstrate that there was no agreed-upon attribution procedure, that the attribution procedure was not commercially reasonable,[51] or that the receiving party did not act in good faith or comply with the attribution procedure.

Article 2B goes even further, imposing liability for messages even where there is no agreed-upon or mutually adopted attribution procedure. A message is attributable to a party where: (i) the message was sent by a person who obtained access to the necessary access number or devices from a source under the control of an alleged sender; (ii) the access resulted from an alleged sender's failure to exercise reasonable care in protecting

47. *Id.* § 4A-202(b).
48. *Id.* § 4A-203(a)(2).
49. U.C.C. § 2B-110 (May 5, 1997 draft).
50. *Id.* § 2B-111 (a)(2).
51. Section 2B-110(a) provides that, for a procedure to qualify as an attribution procedure, it must be commercially reasonable.

the number or device; and (iii) the receiving party relied upon the message to its detriment.[52] This standard combines a principle of estoppel with a fault-based liability rule: a person who negligently permits a message to be sent is bound by that message to anyone who detrimentally relies on that message. This provision, however, differs in one respect from traditional estoppel notions. Rather than limit recovery only to the extent of any reasonable reliance, it deems the message effective as an undertaking of the alleged sender.[53]

These new attribution procedures of Article 2B, which will be reflected in the provisions of Articles 2 and 2A, and possibly Article 1 as well, are still in the process of evolution. When an electronic message that was not authorized in fact should be deemed effective is a problem raised in most acute form in the context of open networks, such as the Internet. Given the growing significance of electronic commerce on the Internet, these provisions will be subjected to vigorous debate before their final form is determined.

ELECTRONIC AGENTS

With recent advances in information technology, the use of computer programs to send or respond to messages automatically has moved from the realm of science fiction to business reality. Computers are now routinely programmed to take actions, such as sending purchase orders or acknowledgments, which would typically lead to the formation of a contract if the actions had been taken directly by a human actor. The revisions to Articles 2, 2A, and 2B recognize the existence of what are known as "electronic agents,"[54] computer programs designed to act on behalf of a party without the need for human review.[55] The draft provisions are designed to provide guidance to a court confronted with the use of electronic agents but reluctant to apply the traditional rules of agency law to this new context. They make it clear that parties may act through the use of electronic agents and are bound by their performance and messages.[56] Operations of an electronic agent may be effective to form an agreement,

52. *Id.* § 2B-111(a)(3) (May 5, 1997 draft).

53. *Cf. UNCITRAL Model Law, supra* note 11, Article 13 (purported sender responsible for acts of any person gaining access to facilities or devices through relationship with the purported sender or its agent without any reliance requirement; presumption only rebuttable if recipient knew or should have known of hacker).

54. U.C.C. § 2-102(a)(12) (May 16, 1997 draft); *id.* § 2A-102(a)(8) (May 1997 draft); *id.* § 2B-102(a)(13) (May 5, 1997 draft).

55. An example of this type of electronic agent in use in Internet electronic commerce today can be found on the website of Cisco Systems, Inc., a leading provider of routers and software for Internet service providers. *See* Cisco Systems, *Networked Commerce* (visited July 11, 1997) <http://www.cisco.com/public/ordsum.html>.

56. U.C.C. section 2B-202 (May 5, 1997 draft) makes it clear that an agreement may be made through the operation of an electronic agent.

even if no individual knows of or reviews the action or its results.[57] Thus, any lingering questions about the apparent absence of a "meeting of the minds" are eliminated.

CONTRACT FORMATION

As noted above, the proposed revisions to the Code recognize that contracts may be formed and performed through the use of electronic agents. In addition, where electronic communications are used, the revisions set forth specific rules on the timing and effectiveness of a message. As a general matter, an electronic message is effective when it is received.[58] Moreover, where a contract is formed through the exchange of two electronic messages, the contract is deemed formed when the response constituting the acceptance is received,[59] a clear abrogation of the common-law "mailbox rule" which has been deemed inappropriate for an electronic environment.[60] Receipt is a defined term: "An electronic record is received when it enters an information processing system in a form capable of being processed by a system . . . the recipient uses or has designated . . . for the purpose of receiving such [messages]."[61] It is not necessary for "receipt" for the recipient to know of, open, or read the message. All that is required is that it be available for processing.

OTHER CONTRACTING ISSUES

The changes previously outlined are simply an overview of the changes to be expected in the Code to accommodate electronic commerce. To embrace electronic commerce fully, however, a more comprehensive revision of general contract law is clearly appropriate. In response to that need, NCCUSL established a Drafting Committee to develop a law governing "Electronic Communications in Contractual Transactions."[62] The

57. U.C.C. § 2B-203(e) (May 5, 1997 draft). The provision continues by giving special rules applicable to these electronic transactions.

58. *Id.* § 2B-203(b). This is subject to special rules applicable where the originator of a message requests that receipt of the message be acknowledged electronically. *Id.* § 2B-205.

59. *Id.* § 2B-204(a)(1).

60. This result is consistent with the result on virtually all model trading partner agreements which have addressed the issue. *See* BOSS & RITTER, *supra* note 36, at 54-58. It is also consistent with the Convention on the International Sale of Goods, which follows the rule that messages are effective upon receipt and applies to transnational transactions between members of Convention signatories, unless the parties expressly provide otherwise. United Nations Convention on Contracts for the International Sale of Goods, Article 18(2), Apr. 11, 1980, 19 I.L.M. 671, 675 (acceptance of an offer is effective when received by offeror).

61. U.C.C. § 2B-102(a)(30) (May 5, 1997 draft).

62. *See supra* note 32 and accompanying text. The April 10, 1997 draft of the law is available at *Drafts of Uniform and Model Acts* (visited July 6, 1997) <http://www.law.upenn.edu/library/ulc/ulc.htm>.

committee had its first meeting in May 1997. Although it would be premature to discuss in any detail the uniform law this committee will produce,[63] certain general observations may be made. First, the primary purpose of the statute will be to permit the expansion of electronic commercial practices and to promote the development of the legal infrastructure necessary to support electronic commerce.[64] Second, the general approach of the Code revisions (using terms such as "record" and "authenticate" to substitute for "writing" and "signature") undoubtedly will be followed, as will the general approaches to attribution and contract formation. In addition, specific rules dealing with other matters may be included. An initial preliminary draft covered such issues as defining an "original" record,[65] the rules governing admissibility of electronic records into evidence,[66] the standards for retaining electronic records,[67] and determining the time and place of dispatch and receipt of electronic messages.[68] Currently under discussion is the extent to which the new law will address specific issues arising from the use of electronic digital signatures and the implementation of a public key infrastructure.[69]

ARTICLE 2B: LICENSING OF INFORMATION AND SOFTWARE CONTRACTS

In addition to containing important electronic contracting provisions, the new Article 2B significantly expands the present scope of the Code,

63. A final statute is highly unlikely before the summer of 1999.

64. The April 10 draft contains a list of underlying purposes of the Act. Even if such a provision is not in the final product, there is no doubt that this is indeed the underlying purpose. Indeed, specific provisions of the draft articulated the general principle that electronic communications should not be denied legal effect solely on the ground the record is in electronic form.

65. The April 10 draft considered by the drafting committee approached the issue of "original" in the same manner as the *UNCITRAL Model Law*, *supra* note 11, Article 8.

66. Here, the *UNCITRAL Model Law*, *supra* note 11, Article 9, is again the prototype.

67. *See UNCITRAL Model Law*, *supra* note 11, Article 10.

68. The determination of the time and place of receipt may become important in the application of choice-of-law or forum principles. *See UNCITRAL Model Law*, *supra* note 11, Article 15.

69. A tutorial is available which serves as a basic introduction to asymmetric cryptography and its use in creating digital signatures. *See* ABA Information Security Committee, Section of Science and Technology, *Digital Signature Guidelines* (visited July 11, 1997) <http://www.abanet.org/scitech/ec/isc/dsg-toc.html>.

A number of states have enacted or are considering some form of legislation recognizing electronic or digital signatures. Current citations to such legislation may be found at McBride, Baker & Coles, *Summary of Legislation Relating to Digital Signatures, Electronic Signatures, and Cryptography* (last modified July 11, 1997) <http://mbc.com/ds_sum.html>. The Commonwealth of Massachusetts, Information Technology Division Legal Department website, <http://www.magnet.state.ma.us/itd/legal/>, provides background information on policy issues associated with the creation of the "public key infrastructures" that could regulate and administer the use of asymmetric cryptography in electronic commerce, as well as provides information about Massachusetts draft legislation. Given the wide range in types of legislation being considered, the area is one ripe for uniform legislation.

and embraces types of transactions typically encountered in the conduct of electronic commerce. Given the ever-increasing use of computers in business environments, one of the more frequently litigated issues concerning the scope of the Code was the application of Article 2 to computer software contracts.[70] Two problems arose in applying Article 2 to these transactions. First, software, unlike goods, is not bought or sold; it is licensed. Thus, the structure of the transaction is different. Second, the subject matter of the transaction is not goods. The purchaser or licensee of software is not interested in acquiring the diskette or physical medium, but rather the information contained in the software. It is the information, not the material representation of it, that is the subject matter of the deal.

The sponsors of the Code initially explored the feasibility of covering computer software under the Code by restructuring the provisions of Article 2 to distinguish between core provisions applicable to all contracts (the hub) and those restricted to particular forms of contracts, such as sales, leases, or licenses (the spokes). Concluding such a "hub and spokes" approach was too ambitious to be practicable at the present, NCCUSL, one of the sponsors of the Code revisions, decided it would be more appropriate to develop a separate article of the Code (Article 2B) to cover licensing agreements. As a result, in 1995, a new committee was created to draft a new article to the UCC, Article 2B, to cover licensing transactions. The current project, which requires approval by both of the sponsors of the Code, the American Law Institute, and NCCUSL, may be completed as early as August of 1998.

Article 2B will apply to software contracts and licenses of information.[71] All software contracts will be covered, whether structured as sales or licenses. By contrast, only "licenses" of "information" will be covered. The scope of Article 2B with regard to information is defined both by the form of the transaction, a license, and by the subject matter of the transaction, information. The definition of license is designed to show the conditional or limited nature of the rights granted and excludes transfers of security interests, transfers of ownership rights in intellectual property, and transfers of licenses in intellectual property implied by law.[72] The definition of information includes data, text, images, sounds, computer programs, databases, literary works, audiovisual works, motion pictures, mask works or

70. For a sampling of the literature appearing within the pages of *The Business Lawyer* on this topic, see Amelia H. Boss, *Developments on the Fringe: Article 2 Revisions, Computer Contracting, and Suretyship*, 46 BUS. LAW. 1803 (1991); Amelia H. Boss et al., *Scope of the Uniform Commercial Code: Advances in Technology and Survey of Computer Contracting Cases*, 44 BUS. LAW. 1671 (1989); Amelia H. Boss & William J. Woodward, *Scope of the Uniform Commercial Code: Survey of Computer Contracting Cases*, 43 BUS. LAW. 1513 (1988); Jeffrey B. Ritter, *Software Transactions and Uniformity: Accommodating Codes Under the Code*, 46 BUS. LAW. 1825 (1991); Jeffrey B. Ritter, *Scope of the Uniform Commercial Code: Computer Contracting Cases and Electronic Commercial Practices*, 45 BUS. LAW. 2533 (1990).

71. U.C.C. § 2B-103 (May 5, 1997 Draft).

72. *Id.* § 2B-102(22) (defining "license").

the like, and any intellectual property or other rights in the information.[73] This is meant to include the copyright industries (e.g., music, motion pictures, television, and publishing), but will exclude sales of books and newspapers (because those transactions are sales, not licenses) and patent licenses.

In expanding the scope of the Code to cover licenses for information, the drafters are taking a dramatic step that recognizes the complex changes in the nature of commercial transactions—tangible goods are no longer the primary focus of commerce. Yet, it would be a mistake to conclude that in bringing information licensing within the scope of the Code, the attempt is to codify a substantive body of law governing all rights in information. Those substantive rights are determined by law outside the Code such as intellectual property law, both federal (patents, trademarks, and copyrights) and state (trade secrets, etc.), as well as the law of privacy. Article 2B does not purport to set forth substantive rules governing information and its ownership; rather, it merely sets forth the *contracting* rules which will govern the commercial relationships between parties in an information licensing or software transaction.

While not defining the substantive attributes of information assets, Article 2B nevertheless tailors its rules to conform to the subject matter of licensing transactions. In that regard, Article 2B facilitates the incorporation of electronic commerce into the general body of contract law and accommodates the special issues raised by software contracts and information licensing. First, the manner in which many information licensing and software transactions are entered into[74] is sufficiently different from traditional modes of contracting that some modification of basic contracting principles is warranted. Second, the nature of licensing, and the special characteristics of information and software as commercial assets, are such that it is necessary to have different default rules applicable in the absence of a contrary agreement by the parties.[75] Third, the nature of information transactions, many of which may be entered into and performed online, engenders concerns not traditionally present in commercial transactions.

73. *Id.* § 2B-102(19) (defining "information").

74. One might attempt to talk about the manner in which such transactions are "negotiated," but it would be misleading to characterize the process in that way. First, with the increasing use of the Internet and electronic technologies in the acquisition of information and software, the process bears little resemblance to the negotiation traditionally characteristic of large commercial transactions. Deals may be concluded with the mere click of a button. Second, in the acquisition of software and information products through traditional retail operations, terms are often on a "take-it-or-leave-it" basis. These types of transactions, resulting in what is colloquially called a "shrink-wrap license," or what Article 2B would call a "mass market license," represent the parties' agreement in name only. *See* Arthur Leff, *Contract as Thing*, 19 AM. U. L. REV. 131 (1970); Ian R. Macneil, *Bureaucracy and Contracts of Adhesion*, 22 OSGOODE HALL L.J. 5 (1984).

75. As with all rules under the Code, the default rules of Article 2B are subject to the overriding ability of the parties to vary them by agreement. U.C.C. § 1-102 (1995).

One of the most significant innovations of Article 2B is its recognition of what is called a "mass-market license."[76] A mass market license has two distinguishing features: (i) licenses are offered on a take-it-or-leave it basis by the licensor to a licensee who cannot negotiate terms; and (ii) the license is offered to the public at large without regard to the identity of the licensee. Examples include sales of shrinkwrap software through a retail outlet, or the sale of information by the operator of a website to anyone who agrees to pay its price and accepts the terms and conditions found there. These two characteristics result in certain special mass-market rules. First, a licensee who agrees to a mass-market license becomes bound by its terms unless those terms can be found to be "deal breakers,"[77] are unconscionable,[78] or are specifically barred in mass-market licenses by the provisions of Article 2B.[79] Second, because mass-market licenses for software are frequently used in transactions resembling the sale of goods (e.g., the "over-the-counter" purchase of software), Article 2B follows the Article 2 goods-based rules on such matters as implied warranties of quality[80] and standards of performance.[81] Third, because of the anonymous nature of mass-market licenses, Article 2B adopts the default rule that such licenses are transferrable by the licensee unless specifically prohibited in the license.[82]

76. A "mass-market transaction" is defined as a transaction in a retail market for information, directed to the general public as a whole under substantially the same terms for the same information. *Id.* § 2B-102(a)(26) (May 5, 1997 Draft). It includes all consumer transactions, but will not include non-consumer transactions above a particular dollar limit yet to be determined. Limiting the scope of the mass market by providing a dollar cap ranging from $500 or $1000 to $20,000 per transaction has been proposed.

77. *Id.* § 2B-308(b). "Deal breakers" are terms which the licensor should know would cause a reasonable licensee to refuse the license if brought to the licensee's attention. Nonetheless, if the licensee proceeds to manifest assent specifically to that term, it shall be deemed to have accepted that term. *Id.* § 2B-308(c).

78. The unconscionability provision of draft section 2B-109, which follows that currently found in present section 2-302, allows a court to invalidate a term in any agreement upon a finding of unconscionability.

79. *See, e.g., id.* § 2B-105 (provision in non-2B transaction "opting in" to the rules of Article 2B unenforceable in mass market license); *id.* § 2B-313(c)(1) (effect of disclaimer against viruses limited in mass market); *id.* § 2B-406(c) (conspicuous disclaimer required in mass-market license). Additionally, there are other terms that are either mandated or proscribed in all consumer licenses. *See id.* § 2B-106 (special choice-of-law rule for consumers in absence of agreement); *id.* § 2B-107 (invalidating choice-of-forum clause, where forum would not otherwise have jurisdiction over the consumer and would unfairly disadvantage the consumer); *id.* § 2B-303 (limiting effect of no-oral modification clause); *id.* § 2B-618 (hell and high water clauses not presumptively enforceable). In addition, some contractual provisions may be preempted by application of state and federal intellectual property law.

80. *Id.* § 2B-403 (paralleling implied warranty of merchantability of section 2-314).

81. *See id.* §§ 2B-601 and 2B-607 (perfect tender rule applied to mass-market license involving delivery of a copy); *id.* § 2B-610 (allowing rejection for defective tender in mass market transaction).

82. *Id.* § 2B-502(b)(1).

With regard to performance standards, Article 2B follows the general rule that a party's failure to comply with the terms of the contract is a breach giving rise to damages. An exception is made, as previously noted, in the case of information distributed through a mass market where a single copy is at issue. Article 2B gives the licensee the right to reject any nonconforming tender under the Article 2 "perfect tender" rule.[83] Outside that situation, however, Article 2B follows the common-law rule of "substantial performance." This makes the breaching party liable to the aggrieved party for damages, but prevents the aggrieved party from avoiding *its* obligations under the contract (such as the licensee's duty to pay) based on the breach.[84] This decision reflects the difficulty of achieving a "perfect tender" with products as complex as software and recognizes that transactions covered by Article 2B, such as software development contracts, include a large services component.

The warranty provisions of Article 2B reflect some of the special concerns associated with information and software contracts. In a licensing agreement, the licensor retains rights to the information being licensed; consequently, no title passes and it is a misnomer to speak of any "warranty of title." Rather, a licensor warrants that it has the authority to transfer the rights granted by the license; that the licensor will not interfere with the licensee's enjoyment of those rights; and that no third person will interfere based on a claim arising from an act of the licensor.[85] These warranties do not apply to claims of infringement. Outside an exclusive license, where the licensor warrants that it owns the intellectual property rights to be transferred, the licensor under the current draft only warrants it "has no reason to know" of any possible intellectual property infringement; the licensor does not warrant that no such claims exist or that the intellectual property rights transferred are valid.[86] An alternative under discussion by the committee would add a new subsection imposing an indemnity obligation on the licensor in the event of any successful infringement claim against the licensee.[87]

With regard to the quality of the subject matter transferred, Article 2B applies different warranties to (i) computer programs, (ii) informational content, and (iii) development contracts.[88] With regard to computer programs, the licensee wants to be sure that the program will perform as expected. For computer programs sold in mass-market transactions, a war-

83. *Id.* § 2-601 (1995) (perfect tender applies only to the initial tender of goods in a contract that does not involve an installment sale).

84. *Id.* § 2B-601 (May 5, 1997 draft); *id.* §§ 2B-102(38) and 2B-108; RESTATEMENT (SECOND) OF CONTRACTS § 237 (1979).

85. U.C.C. § 2B-401(a) (May 5, 1997 draft).

86. *Id.* alt. A.

87. *Id.* alt. B.

88. *Id.*

ranty of merchantability is made.[89] Outside the mass-market context, a merchant warrants that the program will substantially conform with any promises or statements made in the documentation or specifications provided by the licensor.[90]

In the case of informational content, the main concern of the licensee is the accuracy of the information conveyed. Imposing a strict liability standard in the case of inaccuracies in information would have a profoundly negative effect on the information industry. In essence, adopting the common law doctrine of negligent misrepresentation,[91] Article 2B provides that a merchant providing informational content warrants only that there is no inaccuracy caused by its failure to exercise reasonable care.[92] Moreover, this warranty only applies where the information is provided in a "special relationship of reliance," following those cases which refuse to impose liability in the absence of a "special relationship" justifying a duty of reasonable care between the parties.[93]

Concerns about the potential exposure of information service providers, such as newspapers, publishers, and other mass marketers of information, and the desire not to inhibit the flow of such information has led to an additional exclusion. There is no warranty of accuracy in cases of "published informational content," a concept which refers to information made available without being customized for a particular business situation of a particular licensee.[94]

In the case of contracts for custom development or design of software or information, Article 2B recognizes that the transaction may be viewed as a services contract, in which case the licensee is contracting for workmanlike efforts on the part of the licensor. Thus, the warranty given by such a licensor is that of "workmanlike efforts." There is not an implied promise that the licensor will actually achieve the purposes sought by the licensee. Article 2B recognizes, however, that the parties, in certain circumstances, intend a contrary result—that the licensor will not be paid *unless* the software or information achieves a certain purpose. If the circumstances show such an understanding, there is an implied warranty that the information will be fit for such purpose.[95]

89. *Id.* § 2B-403 (May 5, 1997 draft) (titled, "Implied Warranty: Quality of Computer Program").

90. *Id.* § 2B-403(b).

91. RESTATEMENT (SECOND) OF TORTS § 552 (1976).

92. U.C.C. § 2B-404 (May 5, 1997 draft) (titled, "Implied Warranty: Informational Content and Services"). This follows the reasoning of cases such as *Milau Associates, Inc. v. North Avenue Development Corp.*, 368 N.E.2d 1247 (N.Y. 1977), and *Micro-Managers, Inc. v. Gregory*, 434 N.W.2d 97 (Wisc. Ct. App. 1988).

93. *See* Daniel v. Dow Jones & Co., 520 N.Y.S.2d 334 (Civ. Ct. 1987); A.T. Kearney, Inc. v. IBM, 73 F.3d 238 (9th Cir. 1995).

94. U.C.C. § 2B-404(b)(2) (May 5, 1997 draft).

95. *Id.* § 2B-405(a)(1). The current draft currently combines the treatment of development and design contracts with another, arguably distinct, transaction, where the licensee specif-

COMPUTER VIRUSES

Liability for computer viruses[96] has been of particular concern in the Article 2B drafting process. Two issues on which consensus has not been reached are the obligation imposed on a party to assure that any information tendered is free from any virus and the manner in which liability for viruses may be disclaimed. Although computer viruses may be introduced during the development or manufacturing process, they are most frequently introduced into computer systems as a result of improper activity by third parties. Licensors therefore have argued that imposing liability on them without regard to fault for the acts of third parties would be inappropriate. They favor a standard which merely imposes upon them the obligation to use reasonable care to exclude viruses. Licensees, however, consider software or information containing viruses as inherently unmerchantable and have argued for the imposition of warranty liability for viruses. In this context, it is somewhat ironic to note that warranty liability has generally been disclaimable under the Code whereas the obligation to exercise reasonable care has not.[97] Although the drafting committee has yet to reach consensus on the issues involved,[98] the current draft imposes a mutual obligation to exercise reasonable care to exclude viruses in all electronic performances or messages, but allows that duty to be satisfied by language stating that no action was taken to exclude viruses, or that a risk exists that viruses have not been excluded, a duty which cannot be disclaimed in mass-market transactions.[99]

ELECTRONIC REMEDIES AND ELECTRONIC REGULATION

Advances in technology have made it possible for licensors of information to include in their products codes or devices: (i) which monitor the use of the information by the licensee, (ii) prohibit the licensee from unauthorized uses, (iii) discontinue use of the information upon expiration of

ically asks for software to perform a particular purpose, and in response to that request, the licensor furnishes software. Analogizing to the implied warranty of fitness for purposes of present section 2-315, Article 2B also would impose an implied warranty in such an instance. It is expected that future drafts of Article 2B will treat the two situations in separate provisions.

96. Article 2B defines a virus to mean "computer instructions intended to disrupt, damage, destroy, or interfere with use of a communications facility or a computer without the consent or permission of the owner." *Id.* § 2B-313 (a).

97. Present section 1-102 specifically provides that while the provisions of the Code are generally subject to contrary agreement of the parties, obligations of reasonableness and care may not be disclaimed.

98. At the April 1997 meeting of the drafting committee, a motion to adopt a duty of reasonable care with statutory safe harbor was rejected by a vote of four to six; a motion to adopt a disclaimable warranty specific to viruses was defeated four to seven; and a motion to adopt a duty of care that was non-disclaimable in a mass-market standard form was also rejected four to six.

99. U.C.C. § 2B-313 (May 5, 1997 draft) (electronic viruses).

the license term, or (iv) permit discontinuation of use upon default by the lessor. These devices, referred to as "software locks," "logic bombs," or "drop dead" devices, have been the subject of heated discussion.[100]

Article 2B makes an initial distinction between software codes which merely limit or restrict the use of the information (thereby preventing breach), and those which permit the exercise of remedies upon breach. Codes restricting use of the information as provided in the license are generally permissible.[101] The licensor must take care, however, not to deactivate the software in a way that prohibits uses authorized by the agreement; such deactivation is more accurately characterized as the exercise of a right upon default.

The issue of electronic remedies upon default is far more controversial. Upon default by the licensee, the licensor has rights to self-help under Article 2B. Because a licensor retains a substantial interest in the subject matter of the license, the licensor has a right to take possession or prevent the use of the subject matter of the license not unlike the right of a lessor or secured party to repossess under Article 2A or Article 9 respectively.[102] As in Articles 2A and 9, the right to self-help repossession must be accomplished without any breach of the peace. Article 2B imposes, however, additional restrictions on self-help not present in either Articles 2A or 9. These restrictions are significant. They originated out of concern for electronic remedies, but are not so limited in their scope. First, there must be a breach by the licensee that is material as to the entire contract; technical defaults will not suffice. Second, a licensor may not exercise any self-help rights if there is a foreseeable risk of injury to person or significant damage to or destruction of information or property of the licensee.[103] A third limitation on electronic repossession or electronic self-help is even more restrictive: the license agreement must contain a term authorizing the licensor to include any electronic devices in the licensed information.[104] Moreover, the use of the electronic remedy where there has been no ma-

100. *See* Stephen L. Poe & Teresa L. Conover, *Pulling the Plug: The Use and Legality of Technology-Based Remedies by Vendors in Software Contracts*, 56 ALBANY L. REV. 609 (1993); Esther C. Roditti, *Is Self-Help a Lawful Contractual Remedy?*, 21 RUT. COMP. & TECH. L.J. 431 (1995).

101. U.C.C. section 2B-314 (May 5, 1997 draft) provides that such codes are permissible if the contract authorizes their use. The proposed Code merely prevents unauthorized uses of the information, infringement of intellectual property rights, and the further use of information at the expiration of the term. Reasonable notice is required, however, if the license term is for more than 30 days. See also section 2B-628(d) which provides that a party may use electronic means to enforce rights on termination for reasons other than expiration of lease term as long as the other party is notified.

102. *Id.* § 2B-715 (titled, "Right to Possession and to Prevent Use"); *id.* § 2B-716 (titled, "Licensor's Self-Help"); *id.* § 2A-525; *id.* § 9-503.

103. *Id.* § 2B-716(a)(2).

104. *Id.* § 2B-716(b). Article 2B presently has optional language concerning this term: either there must be manifest assent to the term or the term must be conspicuous.

terial breach by the licensee constitutes a breach by the licensor, making it liable for any foreseeable loss.[105]

CONCLUSION

The process of adapting the Code to new business practices and technologies began as soon as the first official version was released in 1957 when banks began processing checks with computers, and has continued to include electronic trading in securities and wholesale funds transfers. The current revisions and proposed additions to the Code and general contract law attempt to establish a viable framework for the conduct of electronic commerce. Electronic commerce is still commerce, whether conducted over closed, proprietary computer networks or open networks, such as the Internet. Existing principles of commercial law can and will be adapted to meet the new demands of these business practices. Efforts now underway within the uniform law drafting process are aimed both at keeping the regulation of electronic commerce within the domain of state rather than federal legislation, and at creating a law of electronic commerce that is responsive to national and global business developments.

105. *Id.* § 2B-716(b).