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Part II

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CHAPTER 9

ELECTRONIC COMMERCE: AUTHENTICATION AND ELECTRONIC CONTRACTING

§ 9.1 Nature of the Problem

The NII is of little interest unless it can handle commerce. Traditional parts of the NII—the public-switched telephone system, broadcast and cable television, and print publications—each worked out their own patterns of contracting and securing payment. Newer, open architectures like the Internet present greater challenges. Users of these open networks must be able to make contracts through the net, and they must be able to arrange for payment for goods and services.

Commercialization of the Internet and the growing use of other parts of the NII for commercial transactions will lead to an increasing number of contracts being entered into electronically. In some cases, this simply means presentation of an offer, including some or all of the contract terms in a message on the user's screen, and purported acceptance of this offer by a human keyboard or a mouse action. For example, a seller might communicate price terms in a message displayed on a user's screen, intending that the user "accept" by pressing a keyboard key to move on to another set of choices on a different screen display.

In other cases, involving electronic data interchange (EDI), contractual offers and acceptances are exchanged without conscious human intervention at the time of the exchange.[1] The offering computer simply sends a message in a prearranged format called a *transaction set,* which the receiving computer is able to process through a program using the same format. If the communicated offer matches terms the receiving computer is programmed to accept, that computer sends an acceptance message in an *acceptance transaction set,* thus completing contract formation.[2]

Electronic means can be used not only to make and accept promises, but also to make warranties, representations, and disclaimers. For example, a supplier of information content or of pointers may disclaim liability for defamation or disclaim warranties of fitness for a particular purpose, either under Article 2 of the U.C.C. or the common law.[3]

The same basic techniques can be used for other legally significant events in contract performance, including submission of invoices, payment orders, and

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[1] EDI is used for a variety of commercial transactions, in addition to contracting. *See* Edward S. Adams et al., *A Revised Filing System: Recommendations and Innovations,* 79 Minn. L. Rev. 877, 920 (1995) (reviewing approaches for using information technology to automate U.C.C. Article 9 filing systems, and noting existence of EDI transaction set for Article 9 filings).

[2] *See generally* Michael S. Baum & Henry H. Perritt, Jr., Electronic Contracting, Publishing and EDI Law (John Wiley & Sons, Inc., 1991).

[3] Warranties are considered in **Ch. 5.**

orders under a master contract. These techniques also can be used for other commercial transactions, such as securities transfers, negotiable instruments, U.C.C. Article 9 filings, and negotiable bills of lading. They obviously can be used, perhaps with additional features, to arrange for payment through systems resembling those used to arrange credit card charges or those used for negotiation of traveler's checks.

When some human response to an electronic message occurs, an offeree may attempt to deny acceptance on the grounds that he did not read the offer or understand the legal significance of the keyboard or mouse actions. Furthermore, the offeree may challenge whether the acceptance by keyboard or mouse action satisfies signature and writing requirements. The same set of possibilities present themselves in the EDI context, except that the problem is intensified because there is no conscious human involvement at the time of the exchange of communications.

In late 1995, the most urgent problem confronting the Internet was the absence of a widely deployed system for making payments. Most of the technological and administrative problems had been worked out, and it was a matter of diffusing the solutions through the marketplace and ensuring the adequacy of the legal parts of the payments infrastructure. As credit card and "cybermoney" transactions become common in the NII, legal solutions to contract formation and performance issues used in the EDI context may not be adequate because of the involvement of consumers in the credit card and cybermoney transactions.[4] Thus, it is important to understand how the fundamental common law and UCC requirements for making and interpreting contractual obligations intersect with basic computer techniques. With this understanding, it is possible to consider solutions like trading partner agreements (TPAs) frequently used in the EDI context.

This chapter explains how technological means of ensuring reliability of electronic transactions leading to contractual obligations can be combined with the traditional law of contract formalities to provide an infrastructure within which electronic commerce can occur. In particular, the chapter shows how statutory, regulatory, and contract arrangements developed for electronic funds transfers can be combined with public key encryption and common-law contract principles to establish that framework.

§ 9.2 —Repudiation Examples

Repudiation is a continuing concern when contractual obligations are made or disclaimed electronically. In legal terms, *repudiation* is a justification for

[4] As § **9.15** explains, EDI as currently practiced, relies greatly on trading partner agreements. Those agreements, and much of the model legislation drafted for use in the international context, assumes that the trading partners are merchants and that consumers are not participants. When consumers are involved, commercial law must address disparate bargaining power and sophistication.

nonperformance of an alleged contractual obligation. A supplier confronted with a demand that he ship goods in response to an order denies a contractual obligation to ship by repudiating (denying) the contract alleged by the ordering party. A customer confronted with a demand for payment for services performed refuses to pay based on repudiation of an alleged contractual undertaking to pay. A disappointed merchant filing a breach of contract claim, by repudiating an alleged waiver agreement, denies that she agreed to waive her claim. In all these examples, the time for performance under an alleged contract has occurred, and thus claims for breach have ripened. The term "repudiation" traditionally was applied mainly to *anticipatory repudiation,* which occurred when the alleged obligor refused to perform in advance of the time that performance was due.[5] In the electronic contracting context, the term has come to be used informally to refer to the possibility that an alleged obligor will deny any contractual obligation to perform, before or after the time performance is due.

In this informal usage, *repudiation* includes any defense to a breach of contract claim, conceptually encompassing not only denials of the requirements of offer and acceptance, but also denials of adequate consideration, claims of incapacity and affirmative defenses such as accord and satisfaction, and impossibility of performance. None of these defenses raises problems particularly associated with information technologies, except for denials of offer and acceptance (denial of contract formation) and closely associated contract-interpretation disputes. It is in this sense, that this chapter considers repudiation. In other words, this chapter considers the situation in which persons charged with contractual obligations deny the obligation by repudiating the message on which the obligations are said to be based. The denial may involve assertion of forgery or denial that a particular message was intended to have legal effect.

Most evaluations of electronic contracting and payment systems readily identify the risk of forgery by the purchaser of goods and services as a major risk that must be addressed before such systems can become a commercial reality. The risk of forgery overlaps the risk of repudiation because repudiation is likely to involve an allegation of forgery when none actually occurred. In an actual forgery, the purported purchaser says, "That is not my signature; it is a forgery." In a repudiation, the purchaser says falsely, "That is not my signature; it is a forgery."[6] Unless a seller who accepts the electronic payment can reduce the risk of either an actual forgery or a falsely alleged forgery, the seller is not assured of payment.[7]

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[5] John E. Murray, Jr., Murray on Contracts § 109(B), at 609 (3d ed. 1990) (describing origin of *anticipatory* repudiation doctrine). *Accord* Restatement (Second) of Contracts § 250 (1981) (repudiation is statement by obligor to obligee that obligor will not perform when the time for performance is due).

[6] *See* Xanthopolous v. Thomas Cooke, Inc., 629 F. Supp. 164, 169 (S.D.N.Y. 1985) (denying payment of traveler's checks to acceptor who did not insist on counter signature in his presence; rejecting theory that original purchaser of traveler's checks had faked a forgery).

[7] This statement begs the question of who bears the ultimate risk of loss when a forgery occurs or is claimed and cannot be disproven. It assumes the seller, as the first person to accept the electronic payment, bears the risk. The rationale is that the first to accept the allegedly forged payment has the best opportunity to detect the forgery.

§ 9.3 Contract Formation

Contractual obligations do not exist unless certain formalities are satisfied. The coming into existence of a contractual obligation is known as *contract formation:* "[T]he formation of a contract requires a bargain in which there is a manifestation of mutual assent to the exchange and a consideration."[8] There are many ways in which mutual assent can be established,[9] and there also are well-recognized doctrinal mechanisms for enforcing promises even when the elements of a bargain are not present.[10] Nevertheless, traditional contract-formation analysis begins with identification of an offer and an acceptance. The exchange represented by the offer and acceptance constitutes formation of a contract.

In the computer context, an offer is manifested by a communication directed to one or more persons that describes a service to be performed or a good to be delivered if the person receiving the communication engages in some expressly described or implied conduct. The form of this computerized offer may be plain language in a message or posted file; it may be values in the fields making up an EDI transaction set; it may be encrypted; it may be a button that says in effect "click here if you want x." No particular form of communication is required.[11] The electronic offer can be directed at a particular person, a specified group, or anyone who makes a return promise or engages in specified conduct.[12]

Of particular importance in the electronic context, is the idea that the maker of the offer defines how it may be accepted:

> (1) An offer may invite or require acceptance to be made by an affirmative answer in words, or by performing or refraining from performing a specified act, or may empower the offeree to make a selection of terms in his acceptance.
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> (2) Unless otherwise indicated by the language or the circumstances, an offer invites acceptance in any manner and by any medium reasonable in the circumstances.[13]

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[8] Restatement (Second) of Contracts § 17(1) (1981). The author acknowledges the value of many conversations with his colleague Joseph W. Dellapenna, which illuminated the theories of contract formation.

[9] *See id.* § 18 (promise by each party for beginning or rendering performance can show assent); *id.* § 19 (manifestation of assent can be made by written or spoken words or other acts or by failure to act); *id.* § 22 (manifestation of mutual assent usually made by offer followed by acceptance, but contract formation requirements may be satisfied even though neither offer nor acceptance can be identified and even though the moment of formation cannot be determined).

[10] *See id.* § 17 cmt. e (examples of informal contract without bargain); *id.* § 90 (elements of promissory estoppel in which promise is enforced because of reasonable detrimental reliance).

[11] *See* Restatement (Second) of Contracts § 24 (1981) (defining offer as manifestation of willingness to enter into a bargain justifying an understanding that a bargain is invited).

[12] *Id.* § 29 (intent of offeror dictates who holds the power of acceptance; furthermore, offeror has great latitude in conferring power of acceptance).

[13] *Id.* § 30.

This leaves no significant doubt about the efficacy of an offer that empowers persons to accept it only by sending certain types of electronic messages. There also is no doubt that an offer can be effective when it is communicated through an agent,[14] such as a computer program.[15] On the other hand, the offer and acceptance must relate to each other.[16] For example, if A sends a computerized offer to B, perhaps in the form of an EDI transaction set inviting acceptance by B's sending an acceptance transaction set back to A, and the acceptance transaction set is sent by C instead of B, there is no contract. A's offer is not reasonably interpreted as being directed to C or inviting an acceptance by C. Similarly, if B sends an acceptance transaction set to A without reference to A's offer[17] there is no contract because the acceptance did not refer to the offer.

The most likely controversies relating to contract formation involve (1) interpretation of offers, that is, distinguishing offers from solicitation of offers as in the advertising and credit card contexts, and (2) identification of the persons to whom an offer is addressed. Statements in advertisements traditionally were construed as solicitation of offers rather than offers.[18] Thus a refusal to sell on the terms communicated in the advertisement did not breach a contract; it merely was a rejection of the buyer's offer to make a contract. This general rule did not apply when an advertisement manifested a clear intent to make a promise, for example a statement of definite price, accompanied by the phrase, "first come, first served."[19] The most famous case is *Carlill v. Carbolic Smoke*

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[14] *Id.* § 23 cmt. a (offer can be communicated through agent).

[15] The Restatement deals with agency in terms of a human acting on behalf of another human. It is possible to extend this idea to the operation of a computer program as programmed by a human. Actually, the computer agency concept is a much more pure example of agency theory due to the elimination of the uncertain "human variable."

[16] Restatement (Second) of Contracts § 23 (1981) ("It is essential to a bargain that each party manifest assent with reference to the manifestation of the other").

[17] "Reference" in the sense that it is used in the text and in the Restatement means relationship; it does not mean explicit mention. The reference to A's offer can exist without subjective intent by B. *See generally* Restatement (Second) of Contracts § 23 (1981) and accompanying illustrations, especially illus. 1(b).

[18] *See* Restatement (Second) of Contracts § 26 cmt. b (1981) (advertisements, while they may possibly stand as offers if language of commitment is present, generally are not sufficient alone to act as offer to sell). *See also* Mesaros v. United States, 845 F.2d 1576 (D.C. Cir. 1988) ("[Advertisements] are mere notices and solicitations for offers which create no power of acceptance in the recipient."); Williston, A Treatise on the Law of Contracts § 27 (3d ed. 1957) ("[I]f goods are advertised for sale at a certain price, it is not an offer, and no contract is formed by the statement of an intending purchaser that he will take a specified quantity of the goods at that price. The construction is rather favored that such an advertisement is a mere invitation to enter into a bargain, rather than an offer.").

[19] *See* Restatement (Second) of Contracts § 26 cmt. b, illus. 1 & 2 (comparing an advertisement as a offer with an advertisement found not to be an offer); John E. Murray, Jr., Murray on Contracts § 34, at 69 (3d ed. 1990) (citing Lefkowitz v. Great Minneapolis Surplus Store, 86 N.W.2d 689 (Minn. 1957)). *See also* Steinberg v. Chicago Medical Sch., 371 N.E.2d 634 (Ill. 1977). The *Steinberg* court found a cause of action existed for breach of contract when an

Ball Co.,[20] in which an advertisement promised to pay a £100 reward to anyone contracting a cold after using the advertised smoke ball.[21] Evidencing promissory intent, the advertisement also said that it had deposited £1000 with a bank as a kind of escrow agent.[22] The court found that the nature of the communication evidenced an intent to take the risk of a large number of offerees,[23] the risk motivating the general rule.

The Restatement[24] establishes a presumption that advertisements are ordinarily intended as solicitations of offers rather than offers. It acknowledges, however, first, that one may make an offer through an advertisement, and second, that an advertisement that is not an offer nevertheless may contain promises or representations that become part of the eventual contract.[25]

Terms of contracts communicated electronically are similar to the terms published by the issuer of a credit card. The electronic messages may be intended to reach a very large number of people who may subsequently enter into discrete transactions, presumably under the published terms. The prevailing view is that credit card terms do not give rise to enforceable obligations to allow access to the credit represented by the card.[26] Rather, they are revocable offers of contracts, which are accepted each time the cardholder uses the credit card.[27]

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applicant to medical school submitted an application in response to an invitation expressed in the medical school catalogue, but the medical school failed to evaluate the application according to the criteria set forth in the catalogue. 371 N.E.2d at 638. The *Steinberg* court concluded that the submission of the application and the payment of fee was an offer to apply, which was accepted by receipt of the application and acceptance of the fee. 371 N.E.2d at 641.

[20] 1 Q.B. 256 (1893) (discussed in Murray on Contracts § 34, at 70).

[21] *Id.* at 257.

[22] *Id.* ("1000 pounds is deposited with the Alliance Bank, Request Street, Shewing our sincerity in the matter.").

[23] *Id.* at 262. "In point of law this advertisement is an offer to pay 100 pounds to anybody who will perform these conditions, and the performance of these conditions is acceptance of the offer." While acknowledging that the advertisement was vague in some respects, L.J. Lindley concluded that "the defendants must perform their promise, and, if they have been so unwary as to expose themselves to a great many actions, so much the worse for them. *Id.* at 265.

[24] *See* Restatement (Second) of Contracts § 26 cmt. b (1981) ("It is of course possible to make an offer by an advertisement directed to the general public, but there must ordinarily be some language of commitment or some invitation to take action without further communication.").

[25] *Id.*; *id.* cmt. f; *id.* § 24.

[26] *See, e.g.*, Garber v. Harris Trust & Sav. Bank, 432 N.E.2d 1309, 1312 (Ill. App. Ct. 1982) ("prevailing view in this country is that the issuance of a credit card is only an offer to extend credit"); *In re* Ward, 857 F.2d 1082, 1087 (6th Cir. 1988) (Merritt, J. dissenting) ("unilateral contracts are formed each time the card is used"). *But see* Gray v. American Express Co., 743 F.2d 10 (D.C. Cir. 1984) (cardholder whose card was canceled by refusing to authorize a particular charge entitled to statutory procedures; criticizing view that cardholder has no contract rights).

[27] Feder v. Fortunoff, Inc., 494 N.Y.S.2d 42 (App. Div. 1985) (affirming dismissal of complaint). "The issuance of a credit card constitutes an offer of credit which may be withdrawn by the offeror at any time prior to acceptance of the offer through the use of the card by the holder." *Id.* at 42.

"The credit card relationship, properly analyzed, should be viewed as an offer by the issuer to create the opportunity for a series of unilateral contracts which are actually formed when the holder uses the credit card to buy goods or services or to obtain cash."[28]

The advertising and credit card cases raise a presumption that computer messages describing goods or services to be purchased are solicitations of offers rather than offers themselves. But if they invite the person to whom the communication is made to act by pressing a key, clicking a mouse button, or sending a particular type of message, such act is an offer, and an automated response to it by the author of the communication constitutes acceptance.

It is conceivable that an offering or soliciting computer system would function in unanticipated ways, actually communicating an offer or solicitation to persons not subjectively intended to receive it. In that circumstance, the test of "manifested intention" might be satisfied if it is reasonable for an actual receiver to interpret it as intended for her. Thus, a misdirected offer message received by a participant in an EDI market should be legally effective as an offer if it is expressed in the transaction set defined for offers and if its interpretation by the receiver conforms to the interpretation contemplated by the EDI transaction set.

The advertisement and credit card cases and the misaddressed offer analyses relate to the possibility that a purported offeror will repudiate an alleged contract asserted by a purported offeree. There also are circumstances in which purported offerees repudiate contractual obligations asserted by offerors. In the EDI context, an offeree might deny that an acceptance message was sent or deny that a message actually sent was effective as an acceptance.

In the plain language context, an offer may describe conduct and say that such conduct constitutes acceptance of an offer. The conduct may occur with or without the actor intending that it constitute legally effective acceptance. For example, after the purported offer is communicated, a recipient may engage in the specified conduct and subsequently deny that his conduct constituted an acceptance of an offer either because he had no knowledge of the offer or knew of it but did not mean to accept it. Consider a screen message that says, "If you hit any key you accept the following terms," setting forth terms of a proposed contract either on the same screen or incorporating by reference another screen or document. A user of the computer system on which that message appears hits any key to continue. It may be plausible for the user of the computer system to deny knowledge of the screen message (many people ignore some messages that appear on their computer screens) and to deny that simply proceeding to the next series of screens constituted any intentional acceptance of any offer.[29]

The likelihood of this kind of repudiation of acceptance can be reduced by defining accepting conduct so that it is unusual. For example, instead of inviting acceptance by hitting any key, a plain language offeror might define acceptance

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[28] *In re* Ward, 857 F.2d 1082, 1087 (6th Cir. 1988) (Merritt, J., dissenting) ("Unilateral contracts are formed each time the card is used").

[29] The offer may be a waiver of the right to assert a claim.

as typing the phrase "I accept the offer made by this screen." An offer to sell for a particular price might define acceptance as the conduct of typing the digits representing the price, preceded by a dollar sign.

Repudiation of purely automated offers and acceptances, as in the EDI context, can be managed by designing EDI systems to reduce the likelihood of misdirected offers being decoded and acted upon by receiving programs and to minimize the risk of unintended generation of acceptance messages. Such program design is equivalent legally to careful instruction of a human agent, considered in § **9.5.**

§ 9.4 Contract Interpretation

Contract-interpretation disputes arise when one party says, "You agreed to X," and the other party says, "No, I only agreed to Y." Did the contract mean X or Y? Contractual obligations include within their scope only subject matter that was common to the offer and acceptance. Thus determining the scope of a contractual obligation requires interpreting the offer and acceptance to determine the terms included in the contract.[30] So the contract-formation and contract-interpretation inquiries are not entirely distinct. The two inquiries can be separated, however, first by asking whether a contract of some kind exists because the requisites of contract formation have been satisfied, and second by asking whether a breach has occurred based on resolution of a contract-interpretation dispute to give a particular meaning to the obligation.

Electronic commercial contracting is a likely source of contract-interpretation disputes. Computer messages in the commercial context are terse and have meaning only when connected with context. Moreover, fully automated commercial messages have meaning only by resolving external references to computer program code, values in translation tables, and definitions of data structures like EDI transaction sets. One transaction set attaches one meaning to a coded message; another transaction set attaches another.[31]

Such interpretation ambiguities can be resolved by using three techniques. First, it is necessary to decide what documents or other data nominally external to the offer and acceptance appropriately are incorporated into and should be considered a part of the "four corners" of the contract. The evidence may conflict as to which version of a nominally external document is the appropriate one. For example, an offer may incorporate by reference a table equating certain

[30] Restatement (Second) of Contracts ch. 9 (1981) (introductory note preceding § 200) (sets forth the applicable principles for assigning contractual obligations to the parties); *id.* § 200 cmt. a (questions of interpretation arise in determining whether there is a contract).

[31] *See generally* Douglas Robert Morrison, *The Statute of Frauds Online: Can a Computer Sign a Contract for the Sale of Goods?*, 14 Geo. Mason U. L. Rev. 637 (1992) (explaining EDI transaction sets, and concluding that audit trail produced by EDI satisfied purposes of statute of frauds).

codes with certain product numbers or prices. Such a table maintained in a computer system is intended to change from time to time, and information is not necessarily available as to when changes were made or what the preceding value was, unless appropriate audit trails are laid. Even if such a table is determined to be part of a contract, a decision maker still must determine what the relevant values in the table are so they may be associated with the codes in the contracting message.

Second, great weight should be given to the actual conduct of the parties in performing their contractual relationship.[32] This means that if a particular message has always been treated by both parties as justifying certain conduct, it presumptively should be interpreted as contemplating that conduct when it recurs.[33]

Third, obligations can be determined by "usage of trade" or trade practice.[34] Extrinsic reference to trade practice is particularly important when new technologies are used to make and perform contracts, especially because the new technologies use specialized terminology and facilitate communication by the use of computer-readable codes that do not have any natural-language meaning.[35]

§ 9.5 Agency

The law of agency plays a role in many contract transactions because many contracts are entered into and performed through agents rather than directly by principals. As noted in **§ 9.3,** the *Restatement (Second) of Contracts* contemplates the making and acceptance of offers through agents. The law of agency determines when a principal is bound by an agent's acts even though the principal claims those acts were unauthorized. The same basic problem, of deciding when a principal is bound by allegedly unauthorized acts of an intermediary, arises in electronic contracting. When a participant in a fully automatic

[32] Restatement (Second) of Contracts § 202(4) (1981) ("Where an agreement involves repeated occasions for performance by either party with knowledge of the nature of the performance and opportunity for objection to it by the other, any course of performance accepted or acquiesced in without objection is given great weight in the interpretation of the agreement").

[33] It should be noted, however, that Restatement § 202(4) refers to "course of performance accepted or acquiesced in without objection." Thus, if actual conduct was not known to the other party, he had no opportunity to object to it, and thus the unknown conduct may have only diminished significance in an interpretation dispute. This obviously could occur when two computer agents are interacting with each other and something happens that one party claims was unintended and unknown. The course of performance between the two computer systems thus might have only diminished weight in solving interpretation problems.

[34] Restatement (Second) of Contracts § 202(5) (1981) ("Whenever reasonable, the manifestations of intention of the parties to a promise or agreement are interpreted as consistent with each other and with any relevant course of performance, course of dealing, or usage of trade").

[35] *Cf. id.* § 202 cmt. e (noting usual importance of general English language usage to resolve interpretation disputes; however, "this rule is a rule of interpretation in the absence of contrary evidence").

electronic contracting system like EDI seeks to escape an alleged contractual obligation or waiver of right, he frequently seeks to do so on the grounds that his computer system did something unanticipated and unauthorized. This is exactly the situation the law of agency addresses. The person confronted with the possibility of undesired contractual obligation is the principal, and the computer system is the agent.

In simplest terms, the law of agency binds a principal to the acts of an agent within the agent's actual or apparent authority.[36] If a principal mistakenly gives an agent actual authority, the principal nevertheless is bound by the agent's acts.[37] So also, if a principal makes a mistake in programming an electronic contracting computer system, the principal actually has authorized the computerized agent and is bound by its commitments.

This conclusion is reinforced by *apparent authority* analysis. The theory of apparent authority is that a principal is bound by the conduct of an agent in situations, created or acquiesced in by the principal, in which others reasonably believe the agent has actual authority.[38] Thus, if a principal connects his computer to an electronic contracting system (or in an open architecture adheres to electronic contracting protocols), he is in effect saying to the other participants in that system, "here is my authorized agent." Then, if the agent enters into a transaction that is not subjectively authorized by the principal, the principal is nevertheless bound because he created the situation in which it was reasonable for the others to believe the agent had authority.[39]

§ 9.6 Formalities: Traditional Solutions to Offer-and-Acceptance and Interpretation Problems

Traditionally, contract law, like the law of wills and the law of property, reduced the universe of likely disputes over offer and acceptance and interpretation by

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[36] Restatement (Second) of Agency § 7 (1957) ("Authority is the power of the agent to affect the legal relations of the principal by acts done in accordance with the principal's manifestations of consent."; cmts. a–d deal with various authority issues); *id.* § 8 ("Apparent authority is the power to affect the legal relations of another person by transactions with third persons, professedly as agent for the other, arising from and in accordance with the other's manifestations to such third persons."); Authority, or actual authority, and apparent authority follow the same general rules of interpretation, but for apparent authority, the manifestation to the third party is substituted in place of the agent. *Id.* § 8 cmt. a.

[37] *Id.* § 7 cmt. b (while consent of the principal is required for authority to exist, "[t]he agent's conduct is authorized if he is reasonable in drawing an inference that the principal intended him so to act although that was not the principal's intent, and although as to a third person such a manifestation might not bind the principal."). *See also id.* § 44 (allowing agent to act upon reasonable beliefs when instructions from the principal are ambiguous).

[38] *Id.* § 8 cmt. c ("Apparent authority exists only to the extent that it is reasonable for the third person dealing with the agent to believe that the agent is authorized.").

[39] However, as noted previously, to be binding the actions must be reasonable.

defining certain formalities. These formalities are the hallmarks of contract formation. These formalities are embodied in the

1. Requirements for writings and signatures
2. Statute of frauds
3. Parol evidence rule, which limits the universe of communications that can be taken into account in resolving interpretation disputes
4. Requirement that certain contracts be under seal and that contracts under seal have certain effects
5. Requirement that certain contracts be attested
6. Requirement that certain contractual obligations be notarized.

Each type of formality is associated to some degree with particular technologies. Thus, changing the technologies of contracting changes the way the formalities must be understood and applied. For appropriate application of contract law to contracts made and performed through information technology, one must begin by understanding the core purposes of contract formalities. Then, one must consider each formality and determine what it should mean in the new technological contexts.

Commentator Lon Fuller postulated that formalities such as signatures in contract law perform three distinct functions: an evidentiary function, a cautionary function, and a channeling function.[40] Other commentators add protective functions.

Formalities serve an evidentiary purpose by ensuring the availability of artifacts that are likely to be admissible as probative evidence should a dispute arise over whether a legally significant act occurred or, if an act occurred, its content. Formalities serve a channeling function by making clear the line between intent to act in a legally significant way and intent to act otherwise.[41] The channeling function also is a way of routinizing decisions as to whether or not a document has legal effect by reducing the need for evidence on the facts of

[40] *Consideration and Form,* 41 Colum. L. Rev. 799 (1941). *See* Swerhun v. General Motors Corp., 812 F. Supp. 1218, 1222 (M.D. Fla. 1993) (standard for enforcing promise on promissory estoppel theory depends in part on the extent to which "the evidentiary, cautionary, deterrent and channeling functions of form are met"); Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules,* 99 Yale L.J. 87, 123–24 (1989) (characterizing Lon Fuller as justifying legal formalities by their evidentiary, cautionary, and channeling functions).

[41] *See* C. Douglas Miller, *Will Formality, Judicial Formalism, and Legislative Reform: An Examination of the New Uniform Probate Code "Harmless Error" Rule and the Movement Toward Amorphism,* 43 Fla. L. Rev. 167, 259–60 (1991) (discussing intent-verifying and ritual purposes of formality).

a particular case.[42] The cautionary function of formality induces deliberation and reflection before action.[43]

Technology can satisfy the evidentiary function very well. Indeed, EDI exchanges and public key encryption coupled with procedures defined through trading partner agreements meet evidentiary needs better than traditional formalities shoehorned into the electronic context. A properly authenticated digital signature is much better evidence of the source and integrity of a message than an electronic replica of a handwritten signature printed on hard copy output. Nevertheless, most computer-readable media are inherently malleable; it is more difficult to say that the contents of a computer file are the same as those of the file at an earlier time (if encryption is not used as an authentication technique) than it is to say that the contents of a paper record are the same as the contents of that paper record at an earlier time. This inherent malleability means that the forms of computer representations may serve the evidentiary function less well than contracts represented on paper. Trading partners cannot rely on the characteristics of the communication and storage media; they must give special attention to ensure that the evidentiary function is served appropriately.

Electronic contracting invites rethinking of the channeling function. A traditional contract is a single document that is self-contained within its "four corners." The parties and a court hearing a dispute over a claim of breach can determine contractual duties and privileges by referring to no more than the single document.[44] In electronic contracting practice, however, a collection of distinct messages and files make up the contractual obligation. Distributing a contract over multiple documents certainly is not unknown in conventional contracting; parties regularly make external references, include fine print on the back of a preprinted form, write purchase orders against a master agreement, and inferentially rely on trade custom to give meaning to their contractual obligations.[45] But the range of evidentiary artifacts that are candidates for inclusion in electronic contract is surely greater. Typical computer-to-computer communication is cryptic, necessitating reliance on external tables, code books, and documentation to give meaning to symbols.

Electronic contracting serves the channeling function as long as the channels are well designed by system architects. The architects must distinguish

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[42] *Id.* at 269 (explaining channeling function of attestation clause in terms of standardizing will and routinizing probate).

[43] *Id.* at 261.

[44] Parties frequently put "integration clauses" in contracts to make sure that external references are not intended. *See generally* Restatement (Second) of Contracts § 210 (1981) ("A completely integrated contract is an integrated agreement adopted by the parties as a complete and exclusive statement of the terms of the agreement").

[45] See the discussion of course of performance, course of dealing, and usage of trade earlier in **§ 9.4.**

communicative acts intended to have legal effect from those not intended to have legal effect. From a litigator's perspective, the problem is first to show the set of information the parties were aware of, and then to show the subset they intended to be a part of their mutual obligations.[46] One way to do that is to have a system that flags legally effective messages differently from informal communications not intended to have legal effect. Alternatively, digital signature techniques can be used as an automated integration clause.[47] All legally significant communications are collected into one or more files that are digitally signed.

The cautionary and protective functions are more difficult to meet. A computer programmed to enter into EDI transactions does so automatically and will do so virtually forever without any reflection on the part of the person being contractually bound. Even when there is nominal human intervention, as in the case of screens that disclose the terms of contracts and warn that proceeding past that screen will have legal consequences, the warnings are easily ignored by impatient users accustomed to moving from screen to screen as fast as they can. The law may develop default rules to mitigate the danger of consumers and small enterprises being overreached by automatic contractual obligations that are relatively hard to undo.[48] It is difficult, however, to assess the need for statutory, regulatory, or judicial intervention to police cautionary and protective functions unless examples of abuse reach the courts or legislative bodies. The author knows of no significant abuses at the present time.

The protective function can be enhanced by electronic contracting techniques. These techniques easily can prevent a vulnerable actor from performing a legally significant act without the knowledge and participation of another. Features in electronic information services like America Online and CompuServe that prevent children from accessing certain files and discussion areas without parental consent are models of how the protective function can be served.[49]

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[46] *But see* W. David Slawson, *Standard Form Contracts and Democratic Control of Lawmaking Power,* 84 Harv. L. Rev. 529 (1971). Recognizing that it is unrealistic in this day and age to require standard form contracts to be uncoerced, informed agreements, the article attempts to "construct an 'administrative law' of contracts, whereby the unilaterally drawn portions of what we now call contracts could similarly be kept consistent with the parties' actual agreement and otherwise fair to both of them." *Id.* at 532–33.

[47] An *integration clause* in a contract is a clause that excludes all communications and documents other than the document in which it appears as evidence of contract terms. "This document represents the complete agreement of the parties," is a simple integration clause. See **§ 9.12** for discussion of digital signature techniques.

[48] An example of the problem, although not an example of electronic contracting, is the arrangement for automatic deductions from a bank account or preauthorized automatic monthly bills to a credit card account. Such authorizations are relatively easy to establish, but it may be difficult to stop them without incurring higher transaction costs.

[49] See **§ 9.24** presenting the language of the AOL agreement.

§ 9.7 —Statute of Frauds: Signatures and Writings

The statute of frauds requires signatures and writings for certain types of contracts. One version of the statute of frauds is codified in § 2-201(1) of the Uniform Commercial Code: "[e]xcept as otherwise provided in this section a contract for the sale of goods for the price of $500 or more is not enforceable by way of action or defense unless there is some writing sufficient to indicate that a contract for sale has been made between the parties and signed by the party against whom enforcement is sought or by his authorized agent or broker." Similar requirements exist for letters of credit,[50] securities,[51] and security interests.[52]

The statute of frauds interacts with authentication requirements discussed in **§ 9.10.** Suppose B has repudiated an alleged contractual obligation running in favor of A, in B's pleadings in a breach of contract action brought by A. A seeks to introduce evidence of the contract in the form of two plain language messages, one representing the offer, and the other representing the acceptance. A's authentication problem is to show that the messages produced in court are the messages exchanged between the parties. A's statute of frauds problem is that even if these are the messages exchanged between the parties, they may not give rise to a contractual obligation because they do not constitute writings and/or they are not signed.

As one of the formalities of contract formation, signatures play an important role in the evidentiary requirement for authentication, discussed in **§ 9.10.** Conventional signatures also serve cautionary and channeling functions. Well-designed electronic contracting systems serve the evidentiary function of signatures by linking something associated with the signer to the thing signed. This may be accomplished by a password such as the personal identification number (PIN) associated with an electronic funds transfer or debit card, by the private key used to make a digital signature through public key encryption, or by swiping the magnetic strip on an electronic identification card. More simply, a person may be requested by a screen message: "If you wish to sign this request, please type your full name in the field below, intending that it be your signature." Any of these techniques should suffice as a *signature,* which usually is defined as any mark made with the intent that it be a signature.[53] The cautionary

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[50] U.C.C. § 5-104(1) (1990) ("A credit must be in writing and signed by the issuer and a confirmation must be in writing and signed by the confirming bank. A modification of the terms of a credit or confirmation must be signed by the issuer or confirming bank.")

[51] *Id.* § 8-319 (explicity sets forth a statute of frauds requirement for contracts for the sale of securities).

[52] *Id.* § 9-203.

[53] *See* 1 U.S.C. § 1 ("In determining the meaning of any Act of Congress, unless context indicates otherwise, 'signature' . . . includes a mark when the person making the same intended it as such"). *See generally* Joseph Denunzio Fruit Co. v. Crane, 79 F. Supp. 117 (D.C. Cal. 1948) (explaining signature requirements).

and channelling functions are served by a system design that makes the signing "ceremony," such as the card swipe or PIN entry, distinct from the rest of the transaction.

The traditional writing requirement serves evidentiary, cautionary, and channeling purposes. Written communications are more reliable evidence of their content than the memories of witnesses of oral communications. Writing something down is a more serious act than talking about it and thus serves the cautionary function. Only written communications have contractual significance, not oral ones, and this serves the channeling function. Electronic representations of electronic communications differ from traditional writings only in their evidentiary value. The question is whether the electronic record, as it exists at the time of a dispute, is at least as good evidence of the communication as it occurred at the legally relevant time as would be a communication recorded on paper at the legally relevant time. The answer depends on the nature of the electronic system. The starting point should be to recognize that the requirement for a writing has been applied flexibly for a century or more.[54] Then one must focus on the reliability of the electronic system producing the evidence of the transaction,[55] essentially an evidentiary question, considered in **Chapter 12.** The probative character of a computer-stored and computer-generated writing is increased by the use of digital signature techniques, which ensure the detectability of an alteration, as explained in § **9.12.**

§ 9.8 —Attestation

Attestation is a formality beyond writing and signature requirements, traditionally associated with wills.[56] Attestation has evidentiary value because those attesting to a will are available to testify as to the fact that the will actually was signed by the person whose signature is purported to be on it. Attestation reinforces signature requirements, providing additional sources of evidence to associate a signature with a particular person, coupling the signature more tightly with the documents to which it is affixed, and further authenticating

[54] *See* Nationwide Resources Corp. v. Massabni, 658 P.2d 210 (Ariz. Ct. App. 1982) (acknowledging statute of frauds requirement, but finding "[t]he majority rule is that the contract must be signed by the party against whom it is sought to be enforced, but not by the party who seeks to enforce it and a written offer signed by the party sought to be changed, if orally accepted by the person to whom it was made, will be sufficient to satisfy the Statute of Frauds.") The court concluded by finding a mailgram to be sufficient to satisfy the statute of frauds. *Id.* at 215.

[55] John Robinson Thomas, *Legal Responses to Commercial Transactions Employing Novel Media,* 90 Mich. L. Rev. 1145 (1992) (reviewing cases involving statute of frauds questions over telegraphic communications, and concluding that electronic mail should satisfy requirements).

[56] Bruce H. Mann, *Formalities and Formalism in the Uniform Probate Code,* 142 U. Pa. L. Rev. 1033, 1041 (1994).