

THE ENFORCEABILITY OF CONTRACTS
NEGOTIATED IN CYBERSPACE

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To businesses, the prospect of using cyberspace¹ communication technologies to negotiate contracts is alluring. More than seventy-five countries have full service links to the Internet,² and computer owners in most of the remaining countries are able to send and receive electronic messages.³ “With the Internet, the whole globe is one marketplace.”⁴ Simply invest in a modem, obtain an Internet connection through a local Internet service provider (“ISP”), and you are in business negotiating contracts electronically, world-wide.

Use of the Internet is exploding.⁵ A 1995 report published by Merit Network showed NSF Net traffic rising from 10 billion character packets per month in 1992 to approximately 70 billion by the beginning of 1995. More recently, Matrix reported the number of Internet hosts increased from 1,136,000 in October, 1992 to 12,881,000 in July 1996, with an increase in domain registrations from 3,900 in July, 1989 to 488,000 in July, 1996. Business Week estimated in November 1994 that 20 million individuals were then linked to the Net, with thousands more joining monthly.⁶ Matrix estimated that, as of October, 1995, 39 million individuals were using electronic mail.⁷

“[T]he most common use of the Internet among companies is . . . basic: zapping information that just can't wait for Federal Express.”⁸ By linking buyers and sellers electronically and eliminating paperwork, internal transaction costs should drop dramatically.⁹ Consumer and business software is already available via the Internet, and the ultimate in spending money — “electronic cash” — is fast becoming a practical reality.¹⁰ It is estimated that as much as fifteen percent of consumer purchases, sums reaching into the hundreds of billions of dollars, will be electronic transactions by the beginning of the 21st Century.¹¹

Time concepts disappear in the world of cyberspace. The Net is on 24 hours a day, relegating “telephone tag” to a by-gone era. HAL is on your desk, digital cash in hand, ready to open the “pod doors”¹² for business with more than 48,000 different networks around the world all linked through the Internet.

PRINCIPLES OF CONTRACT FORMATION

Common Law concerning the creation of binding contracts contemplates a stereotypical pattern:

1. the making of an offer (i.e., a proposal by the “offeror” setting forth the terms upon which the offeror is prepared to do business, the manner in which acceptance of the terms is to be communicated, and containing a manifestation of an intent by the offeror to be bound upon the seasonable acceptance by the offeree);¹³
2. the communication of the offer to the “offeree”;¹⁴
3. the acceptance of the offer by the “offeree” who manifests an intent to be bound by the terms of the offer;¹⁵
4. the communication of the acceptance by the offeree to the offeror; and
5. “consideration” (i.e., with the exception of donative agreements, an exchange of value such as “one dollar and other good and valuable consideration”).¹⁶

At the conclusion of this sequence a binding contract is presumed to have been formed.

When the parties to the contract are in agreement upon the terms of the offer and their mutual intent to be contractually bound, there is no contract formation issue.¹⁷ In the real world, however, disputes arise because the parties disagree on what constituted the terms of the offer, claim the lack of contractual intent, dispute that the acceptance was timely communicated or was not in the correct and contractually required form, or disclaim the authority of the party giving the acceptance to commit to the proposal. Businessmen and women thus usually create writings, and affix signatures to those writings, memorializing what has been agreed upon and their intent to perform in accordance with those terms.¹⁸

Except to the extent required by the Statute of Frauds, or other statutes of similar effect¹⁹, there is no requirement that a contract be in writing and signed.²⁰ Oral contracts not barred by the Statute of Frauds are just as enforceable as contracts in writing with signatures, acknowledgements, ribbons, seals, and the like, and

even contracts within the Statute of Frauds are not invalid — they are just unenforceable. Writings and signatures do serve important and socially useful functions independent of compliance with the Statute of Frauds, however: evidence, ceremony, approval, clarity and finality, to name some.²¹

THE STATUTE OF FRAUDS

The essence of contract is a “meeting of the minds” between two parties who have the capacity to contract, one of whom offers and the other of whom accepts the offer, on a legal subject and with a legal objective in mind. The parties bind themselves to undertake the performance required by their agreement, and may recourse to the legal system to force contract performance or obtain monetary damages for breach.

The law governing the creation of contracts grew up in a simple era, where the paradigm was two merchants bargaining face-to-face about their respective rights and obligations. At common law, certain formalities were required to create binding agreements. One of those formalities was compliance with the Statute of Frauds.

The original Statute of Frauds was enacted in 1677. Section 17 of the Statute of Frauds as originally written provided:

And be it further enacted by the Authority aforesaid, That from and after the said four and twentieth Day of *June* no Contract for the Sale of any Goods, Wares and Merchandizes, for the Price of ten Pounds Sterling or upwards, shall be allowed to be good, except the Buyer shall accept Part of the Goods so sold, and actually receive the same, or give something in earnest to bind the Bargain, or in Part of Payment, or that some Note or *Memorandum* in Writing of the said Bargain be made and signed by the Parties to be charged by such Contract, or their Agents thereunto lawfully authorized.

The Statute of Frauds had as its objective the prevention of perjury, and the subornation of perjury, with respect to the formation of contracts. The Statute of Frauds takes the view, carried through to this day albeit with mounting criticism,²² that certain types of agreements, and certain subject matter of agreements, are so serious

as to require that the agreement be committed to a writing signed by the parties or their authorized agents. In the absence of a writing no amount of swearing was to be permitted to prove contracts subject to the Statute.²³

In evaluating the objective of the Statute, and the litigation that has followed in its 300 year wake creating exceptions that many say have subsumed the Statute, one must bear in mind that dispute resolution by court or jury trial was a relatively new phenomenon in 1677, and that the rules of evidence were then just being developed.²⁴ In fact trial practice in 1677 prevented interested witnesses — those who were parties to the alleged contract — from testifying to its terms and to the striking of a bargain. Instead, parol evidence from third parties was offered to show the making of a contract. Great dissatisfaction was expressed about this in the law courts:

It is come to that pass now, that every thing is made an action on the case, and actions on the case are become one of the great grievances of the nation; for two men cannot talk together but one fellow or other, who stands in a corner, swears a promise and cause of action. These catching promises must not be encouraged. It were well if a law were made whereby some ceremony, as striking hands etc., were required to every promise that should bind.²⁵

The Statute of Frauds is best viewed both as a improvement on the law of evidence — by requiring better “proof” of contracts — and as a device to control the otherwise unbridled discretion of the jury to find contracts upon the dubious evidence of third parties and not the testimony of the principals.²⁶ To both of these ends the Statute of Frauds required the production of a writing signed by the party to be charged.²⁷

The advent of mass markets, advertising, multinational sales and manufacturing organizations, and modern communications facilities, such as the telephone, telex and facsimile machine, have all challenged the personal negotiation common law scenario. Modern trial practice permits the parties to the alleged agreement to testify about their dealings, and to be cross-examined about the details of the making of any oral agreements and binding commitments. The Statute of Frauds, however, still survives in various forms in the United States,²⁸ creating a potential obstacle to the enforcement of non-traditional contracts.

The California codes, for example, contain several provisions requiring that certain contracts be in writing.²⁹ The California version of Uniform Commercial Code (“UCC”) Section 2201, applicable to “transactions in goods,”³⁰ provides:

- (1) Except 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. A writing is not insufficient because it omits or incorrectly states a term agreed upon but the contract is not enforceable under this paragraph beyond the quantity of goods shown in such writing.
- (2) Between merchants if within a reasonable time a writing in confirmation of the contract and sufficient against the sender is received and the party receiving it has reason to know its contents, it satisfies the requirements of subdivision (1) against such party unless written notice of objection to its contents is given within 10 days after it is received.
- (3) A contract which does not satisfy the requirements of subdivision (1) but which is valid in other respects is enforceable
 - (a) If the goods are to be specially manufactured for the buyer and are not suitable for sale to others in the ordinary course of the seller's business and the seller, before notice of repudiation is received and under circumstances which reasonably indicate that the goods are for the buyer, has made either a substantial beginning of their manufacture or commitments for their procurement; or
 - (b) If the party against whom enforcement is sought admits in his or her pleading, testimony, or otherwise in court that a contract for sale was made, but the contract is not enforceable under this provision beyond the quantity of goods admitted;
 - (c) With respect to goods for which payment has been made and accepted or which have been received and accepted. (Section 2606)

In an increasingly electronic world, the legal system thus faces the challenge of adapting the law to commercial custom and efficient practice serving the socially useful functions that are the objective of the Statute of Frauds.³¹ Computers exchange messages that have contractual significance, and yet the messages exchanged are neither autographed nor written in the traditional sense. The business community needs assurance that contracts negotiated in cyberspace are valid and enforceable, and the traditional notion of a writing, autographed by the parties, must find an electronic equivalent. One of the solutions to the problem is the EDI trading partner agreement.

EDI TRADING PARTNER AGREEMENTS

Parties that contemplate frequent exchanges of contractually significant electronic messages in closed communication environments can negotiate EDI trading partner agreements to achieve the functions traditionally served by signed writings.³² Electronic Data Interchange (EDI) is a standardized method of exchange of business data, where the format of the data and the contractual significance of the exchange is established in advance by contract or by reference to a public standard.³³ These often complex custom-crafted agreements set up the detailed terms and conditions of the transactions, and most importantly, establish the moment in the process of computer to computer communication process when the parties become contractually bound.³⁴

By implementing EDI, trading partners can replace the traditional exchange of routine paper documents, such as quotations, requests for quotations, purchase orders, transportation orders, acknowledgments, invoices and check stubs with their agreed upon electronic equivalent.³⁵ EDI streamlines the procurement process by doing away with cumbersome and expensive paper shuffling, as the parties agree to rely upon electronic verification of the transaction.³⁶ Reliance upon electronic communications and elimination of confirmatory paper records in turn permits the placing of orders more frequently and for smaller quantities, thus reducing the necessity for



large inventories. For many companies, EDI is essential to just-in-time manufacturing and marketing techniques.³⁷

In an EDI transaction, symbolic information — transactions sets³⁸ — is communicated from the computer system of one trading partner to the computer system of the other partner. The parties to the EDI transmission agree in the EDI trading partner agreement that properly exchanged data gives rise to contractual obligations between the participants.³⁹ In a carefully drawn EDI trading partner agreement — usually a conventional paper document signed by the parties — the parties will detail their individual roles and legal liabilities for transmitting, receiving and storing electronic transaction sets.⁴⁰ Addressing these topics in advance not only reduces legal uncertainty, but helps to establish that the trading partners mutually intend that the electronic interchange of data will give rise to contracts which are as valid and binding as those formed by the exchange of conventional paper documents.⁴¹

The enforceability of a contract formed by the electronic interchange of transaction sets depends on how effectively the parties have substituted, by EDI contract, suitable replacements for the traditional hallmarks of oral or paper communications having contractual consequences.⁴² Satisfying the Statute of Frauds is considered the single most common characteristic of the traditional contract formation process that needs to be addressed to determine the validity and enforceability of contracts formed through the use of EDI.⁴³

The EDI trading partner agreement typically attempts to address the Statute of Frauds problem in several ways. First, the parties to the agreement adopt a special definition of “writing” and “signed,” thus substituting a private definition for the statutory definition. Second, the parties adopt a “waiver strategy,” i.e., stating in writing a specific waiver of the applicability of the Statute of Frauds to transactions conducted pursuant to the EDI trading partner agreement. Third, the parties by contract build a case for estoppel against the assertion of the Statute of Frauds.⁴⁴

GARAGE SYSTEMS COMES TO MARKET

Not all electronic commerce is conducted pursuant to EDI trading partner agreements in closed environments. The creating of EDI trading partner agreements requires a significant commitment of time and effort. Many small businesses in particular will eschew the effort in favor of negotiating via plain text electronic mail. The courts must thus deal with contract enforcement issues in a non-EDI context in unbounded cyberspace.

Imagine that a new company, Garage Computer Systems, was formed in California's Silicon Valley in 1994.⁴⁵ The Garage business plan is based on the manufacture of custom 486/586 workstations, utilizing cell manufacturing methods, where the necessary raw materials – disk drives, DRAM memory and CPU chips, chassis, motherboards, modems, NICs, display adapter cards, CD-ROMs, sound cards, power supplies, wire harnesses and cabling – are delivered direct to the cell manufacturing team for final “screw driver” assembly and test.⁴⁶ The business objective is to capture the low end of the business desktop workstation market, where the specific requirements for customized business workstations are not being met, except at great cost, by the usual commercial sources. Garage Computers is very much a “build to suit” organization.

Garage's business plan is predicated on dramatically lowering overhead. To achieve that end, Garage has adopted paperless “just in time” purchasing practices. Regular sources of raw materials are all linked to Garage through the Internet, and carefully worked out plans for EDI contracting have been put into place with Garage's major suppliers. Garage is not, however, able to obtain all of its DRAM and CPU chip requirements from the major manufacturers, so it regularly contacts brokers and “surfs the Net” in search of legitimate and “grey market” DRAMs, CPUs and other computer components in short supply.

Internet Memory Systems (“IMS”) does business in spot market DRAMs, CPUs and related products. It is headquartered in Singapore, taking advantage of Singapore's fiber-optic telecommunications infrastructure and

Singapore's location astride the major air and sea routes. IMS's world-wide sales force is constantly on the telephone, telex, facsimile and the Net, seeking out customers.

Fred Smith, North American sales manager of Internet Memory Systems, is based in San Jose, California. Fred actively seeks out potential customers for DRAMs and CPUs on the Net. In late 1994 Fred posted the following message in the Usegroup BA.MARKET.COMPUTERS:

From: fsmith@ix.netcom.com (Fred Smith)
 Subject: Internet Memory Systems
 Date: 11 Dec 1994 23:53:18 GMT
 Organization: Netcom

Come and check out my home page on the WWW.

Here are some of the savings that I offer:

486DX4-100 w/Test SW	\$350
486 80MHz CPU	\$230
1MB SIMMS	\$36
4MB SIMMS	\$120
16MB SIMMS	\$420

Call us today, or order from the www.

Thank You

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=====
Fred Smith      | fsmith@ix.netcom.com
                  | Certified Netware Engineer,
                  | LAN Analysis
Disclaimer      | Opinions are Mine, not my
                  | employer's
-----
NetCruiser New User FAQ
  ftp://ftp.netcom.com/pub/fsmith/www/newuser.html
TIA Setup FAQ
  ftp://ftp.netcom.com/pub/fsmith/tia/tiasetup.html
Fred's Home Port
  ftp://ftp.netcom.com/pub/fsmith/www/fsmith.html
-----
CONGRESS.SYS Corrupted: Re-boot Washington D.C. (Y/n)?
=====

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Garage Systems has obtained an order from a new customer Systems and Technology for Business. STB is a world-wide business and professional consultancy headquartered in Redwood City. STB is revamping the computer network that ties together all of its offices and professionals, replacing the aging but still powerful VAX 11-780 based system at its headquarters and the Novell Netware 2.12 and MS-DOS 5.0 based LANs in some of its outlying offices (some of the professionals still use IBM Selectrics!) with a worldwide network of Intel 586-based netservers operating Novell Netware 3.12 and 4.0 LANs, all tied together over the Internet. The workstations on the professionals' desks are specified as Intel 486DX4-100 or equal.

The 1000 unit initial STB order is the largest order Garage Systems has ever obtained, and presents a serious business problem. Garage is committed to a rapid build of the workstations, but as a new business Garage is not high on the favored customer list at Intel and AMD. Likewise it is in the “background noise scatter” at Toshiba, Micron, NEC, TI, Samsung and the other large manufacturers of DRAMs. Andy Acquisition, the director of procurement at Garage Computers, is instructed by senior management at Garage to obtain supplies from whatever source he can locate.

Another of the unique aspects of Garage's business is that its “employees” are located around the world. They travel where business dictates, and live where chance, weather, amenities, and previous employment has taken them. Andy Acquisition, for example, was formerly employed by Silicon Graphics in Neuchâtel, Switzerland, and has a lovely home overlooking the Lake. Andy communicates with the “factory” by voice, voicemail, video conference links through his workstation — Andy claims to have been instructed in video conferencing techniques by Demi Moore! — facsimile and the Internet.

Andy frequents various on-line Usegroups to keep abreast of professional developments, and “lurks” in the groups known to contain announcements of the availability of supplies. Seeking out sources of CPU and DRAM supply, Andy executes a DEJANEWS search and finds Fred Smith's announcement of the availability of CPU chips and DRAM memory. Andy downloads a copy of the Fred Smith announcement to his workstation. The DEJANEWS search also yields messages from several individuals who report that they had done business with Internet Memory Systems, and Fred Smith, on a satisfactory basis. Andy gets positive references on IMS from his local banking sources and from Dun & Bradstreet's on-line database.

Satisfied with this due diligence and under pressure to get components into the manufacturing pipeline, Andy sends Fred an e-mail message. Andy copies the message to his workstation. Andy's workstation has been programmed to automatically make a back up copy of his hard disk on a weekly basis on QIC-80 tape, thereby retaining an archived copy of all messages sent to or received by Andy.

Andy's e-mail message to Fred Smith, filled with the typographical errors and abbreviations typical of such traffic, reads as follows:

```
From andya@garage.pr.net.ch
Sat Dec 31 05:31:04 1994
Received: from chsun.eunet.ch (chsun.eunet.ch [146.228.10.15]) by
get.ix.netcom.com (8.6.9/8.6.5) with ESMTP id FAA09448 for
<fsmith@ix.netcom.com>; Sat, 31 Dec 1994 05:31:03 -0800
```

Received: from andya.UUCP by chsun.eunet.ch (8.6.4/1.34)id
 OAA01660; Sat, 31 Dec 1994 14:32:39 +0100
 Received: by garage.pr.net.ch (UUPC/extended 1.12b); Sat, 31 Dec
 1994 14:15:10 MET
 Date: Sat, 31 Dec 94 14:15:09.
 From: "Andy Acquisition" <andya@garage.pr.net.CH>
 Message-ID: <2f05595e.andya@garage.pr.net.ch>
 To: Fred Smith <fsmith@ix.netcom.com>
 Cc: andya@garage.pr.net.ch
 Subject: DRAM and CPU Order

I wish to immediately place order for CPUs and DRAMs necessary to
 fab 1000 work stations specially ordered by our customer.
 Customer demands 32MB DRAM per workstation. Seek 16MB DRAM chips
 (or 4x4MB DRAM chips if 16MB not available). Also seek AMD
 486DX4-100 chips. Each w/s to have test s/w on 3.5 floppy.

To facilitate fab, pls assemble kits of 32MB DRAM and CPU w/Test
 SW in suitable antistat packaging.

Required ship schedule:

Week 1: 100 sets
 Week 2: 200 sets
 Week 3: 300 sets
 Week 4: 400 sets

Air Ship > SFO for pickup by Garage Computer Systems, 100 Howard
 Street, Belmont, CA.

Please confirm receipt of this order and prices by return E-Mail.

Andy Acquisition (andya@garage.pr.net.ch)

Immediately upon receipt Fred sends an e-mail message to Singapore, copied to Andy, forwarding Andy's
 original offer and requesting guidance from Singapore as to the availability of product, prices, and delivery
 dates. Singapore responds to Fred, and the following message from Fred then appears on Andy Acquisition's
 workstation:

From fsmith@ix.netcom.com Sat Dec 31 09:41:24 1994



Received: from also.netcom.com (also.netcom.com [199.2.134.6]) by
get.netcom.com (8.6.9/8.6.5) with ESMTP id JAA09541 for <andya>;
Sat, 31 Dec 1994 09:41:23 -0800
Received: (andya@localhost) by also.hooked.net (8.6.9/8.6.5) id
JAA26709; Sat, 31 Dec 1994 09:41:08 -0800 Date: Sat, 31 Dec 1994
09:41:08 -0800
From: Fred Smith <fsmith@ix.netcom.com>
Message-Id: <199412311741.JAA26709@also.ix.netcom.com>
To: andya@garage.pr.net.ch
Cc: fsmith@ix.netcom.com
Cc: jsmith@ims.com.sg
Subject: DRAM and 486DX4

Rec'vd UR email. Confirm Toshiba 4 MB 1x3 SIMMS 70 NS available
in quantities requested. Price \$120 today. Can supply AMD
Am486DX4-100s at \$350 with AMD test s/w for each set.

UR Schedule impossible. Can ship following:

Week 1: 50 sets
Week 2: 100 sets
Week 3: 250 sets
Week 4: 250 sets
Week 6: 350 sets

Shipment SFO via Singapore Air Cargo. Shipping manifest details
to follow by email from John Smith, IMS Singapore.

Please wire funds to our bank Development Bank of Singapore, Acct
#67743270 for first set kits. Good funds must be in hand before
each shipment.

Please confirm by return email to hold DRAM price.

Andy Acquisition immediately confirms Garage's commitment to the revised terms and delivery schedule in a return e-mail to Fred, with a copy sent by e-mail to John Smith, IMS Singapore. John Smith in turn sends an e-mail message to Andy with wire transfer instructions.

Andy arranged a letter of credit in favor of IMS in the required amounts, to be drawn when Development Bank of Singapore has possession of the shipping documents showing the dispatch of the DRAMs and CPUs to San

Francisco. Garage's bank deals directly with DBS over FedWire in creating the letter of credit. Fred, John and Andy are all notified by e-mail of the creation of the letter of credit at DBS in favor of IMS.

Two days after the letter of credit is created in favor of IMS, CNN Morning News reveals that the Niihama, Japan, main resin plant of Sumitomo Chemical, producer of 60% of the epoxy resin used in the fabrication of plastic DRAM chip packaging, was destroyed in a fire.⁴⁷ The price of DRAM “explodes,” with the price in the grey market doubling and tripling as the DRAM brokers and computer manufacturers anticipate immediate shortages of DRAM. Faced with this dramatic escalation in prices, IMS internally decides that it will not ship to Garage; it succumbs to the entreaties of Toshiba and agrees to sell the chips back to Toshiba at 20% over IMS' cost. Toshiba is one of IMS's main suppliers, although never publicly acknowledged as such, and IMS wishes to remain in its good graces. Toshiba wants the chips so that it will have stock on hand during the impending scarcity to allocate among its regular customers at long-term contract prices.

Garage is a Toshiba customer, having set up EDI purchase arrangements with Toshiba. In times of shortage Toshiba allocates available DRAM on the basis of historic purchasing volume, and the duration of the customer's relationship with Toshiba. During the buying panic after the Sumitomo Chemical fire Toshiba's best customers receive 50% of their historic shipments. As a new customer Garage can expect very little DRAM from Toshiba.

CPU prices are spared from the impact of the Sumitomo Chemical fire, because CPU chips, unlike DRAM, are packaged in ceramic. The problem posed by the possible shortage of DRAMs is compounded, however, by simultaneous local developments in San Jose, California. Acting at the request of Intel, Magistrate Judge Patricia Trumbull announces that she will enjoin the sale by AMD of the Am486.⁴⁸ The initial public news does not specify what is to happen to chips already fabricated by AMD, makes no mention of whether chips already in the hands of third parties can be shipped, and does not specify which variety of Am486 chips are



affected. Rumors immediately circulate that Intel will ask U.S. Customs to stop shipments of AMD chips from entering the United States. IMS decides not to risk shipment into the United States under these conditions.

Fred sends an e-mail message to Garage announcing IMS' decision to refrain from shipping Am486's into the United States. That same e-mail message contains the misrepresentation that IMS is unable to ship DRAM because of the Niihama fire. Fred offers to ship substitute Intel 486 chips, and intimates that he might be able to secure DRAM to Garage at \$240 per 4MB. Garage panics, and resorts to the open market for "cover." Garage manages to secure DRAM chips at \$260 per 4MB, and substitutes higher priced Intel 486 DX4-100s for the specified AMD Am486s.

Garage Computer consults counsel, who recommends that suit be filed in federal court in San Jose against Internet Memory Systems and Fred Smith to recover the difference between the contract prices and the prices that Garage was forced to pay for cover. Garage also sues to recover the penalty that it expects to pay STB for late delivery.

Fred Smith cannot be located, but IMS is eventually served in accordance with the Hague Convention and answers the suit. IMS moves for summary judgment, on the grounds that enforcement of any alleged agreement between IMS and Garage is barred by reason of the statute of frauds, there being no "writing" "signed" by IMS.

IS THE TRANSACTION EXEMPT FROM THE STATUTE OF FRAUDS ?

Invariably the question arises whether the Statute of Frauds, in any of its present day iterations, is applicable to the contract in question. The monetary limitation in the applicable version of the statute might take the contract outside its application. The 10 pounds sterling limitation on the applicability of the original Statute of Frauds has been increased on numerous occasions since 1677; in UCC Section 2201 the monetary limit, for contracts involving “transactions in goods,” is \$500.⁴⁹ In the case of the Garage-IMS transaction, however, the monetary limit does not exempt the transaction from the operation of the UCC 2201(1) Statute of Frauds.⁵⁰

UCC Section 2201(3) contains a series of exemptions from the application of the UCC Statute of Frauds. These exemptions are of little help to Garage in the IMS-Garage transaction, however. DRAM and Am486 chips are not specially manufactured for Garage (Section 2201(3)(a)), and one must assume that in making the motion for summary judgment IMS has not admitted in its pleading the making of a contract with Garage (Section 2201(3)(b)). The non-negotiation of the letter of credit would seem to preclude application of Section 2201(3)(c), although arguments could be made that the tender of a conditional letter of credit, where prevention of satisfaction of the conditions is exclusively within the control of the seller, is a form of payment satisfying Section 2201(3)(c).⁵¹

IS THIS A TRANSACTION IN GOODS ?

The application of the UCC Section 2201 Statute of Frauds to the contract between IMS and Garage also depends upon the proper characterization of the subject matter of the contract. Does the contract involve a “transaction in goods?” The IMS sale of DRAM and CPU chips is clearly a “transaction in goods” within the statutory definition.⁵² Note, however, the presence in the e-mail messages of reference to IMS' promise to deliver AMD's CPU test software.

Many computer technology transactions involve licenses, rather than sales. A license is neither a lease nor a sale; in the reported cases it is sometimes characterized as a “mere waiver of the right to sue.”⁵³ The question is thus frequently presented whether a transaction in which computer software changes hands is a “transaction in goods” as to which the Uniform Commercial Code applies.

In the isolated one-off transaction the courts look to the “essence of the agreement” to determine whether the provision of the custom software predominates, and the transaction is thus a license, or whether the furnishing of the custom software is only “incidental” to the sale of hardware, a “transaction in goods.” The “essence of the agreement” argument breaks down when it comes to mass market or standardized transactions, however. In Advent Systems, Ltd. v. Unisys Corp., the Third Circuit Court of Appeals held that shrink wrapped computer software delivered on diskettes is a “good” within the Uniform Commercial Code. The theory, as explained by the Third Circuit, is that

[c]omputer programs are the product of an intellectual process, but once implemented in a medium are widely distributed to computer owners. An analogy can be drawn to a compact disk recording of an orchestra rendition. The music is produced by the artistry of musicians and in itself is not a 'good,' but when transferred to a laser-readable disc becomes a readily merchantable commodity. Similarly, when a professor delivers a lecture, it is not a good, but, when transcribed as a book, it becomes a good.⁵⁴

In the Garage-IMS transaction it seems clear that the parties contemplated the incidental licensing of the AMD test software. The transaction between Garage and IMS ought to be characterized by the court as a “transaction in goods” subject to the provisions of the UCC.

THE PRESENCE OF COPYRIGHTED SOFTWARE IN THE TRANSACTION

Mention should be made of Section 204 of the Copyright Act. This section provides that:

- a) A transfer of copyright ownership, other than by operation of law, is not valid unless an instrument of conveyance, or a note or memorandum of the transfer, is in writing and signed by the owner of the rights conveyed or such owner's duly authorized agent.
- (b) A certificate of acknowledgment is not required for the validity of a transfer, but is prima facie evidence of the execution of the transfer if –
 - (1) in the case of a transfer executed in the United States, the certificate is issued by a person authorized to administer oaths within the United States; or
 - (2) in the case of a transfer executed in a foreign country, the certificate is issued by a diplomatic or consular office of the United States, or by a person authorized to administer oaths whose authority is proved by a certificate of such an officer.⁵⁵

This Copyright Act “Statute of Frauds” requires a writing to convey ownership or other interests in the copyright itself.

In Konigsberg Int'l. v. Rice⁵⁶ an issue of copyright ownership arose out of an oral joint venture formed between author Anne Rice and two Hollywood producers for the creation of certain works. Although one was prepared, no writing was ever executed conveying ownership or any other interest in copyrights to the joint venture. The Hollywood producers contended, however, that they acquired an ownership interest in the copyrights by oral agreement with defendant Rice. The Ninth Circuit Court of Appeals found otherwise:

In Effects II,^[57] we stated that the writing must ensure that the author “will not give away his copyright inadvertently” and “forces a party who wants to use the copyrighted work to negotiate

with the creator to determine precisely what rights are being transferred and at what price.” The writing should also serve as a guidepost for the parties to resolve their disputes: “Rather than look to the courts every time they disagree as to whether a particular use of the work violates their mutual understanding, parties need only look to the writing that sets out their respective rights.” To serve these functions, the writing in question must, at the very least, be executed more or less contemporaneously with the agreement and must be a product of the parties' negotiations.

Although section 204 is often referred to as the “copyright statute of frauds,” it actually differs materially from state statutes of frauds. While the latter may be satisfied by a writing not intended as a memorandum of contract, not communicated to the other party, and even made in pleading or testimony years after the alleged agreement, section 204 may not. State statutes of frauds serve a purely evidentiary function – to prevent enforcement through fraud or perjury of fictitious agreements. Thus, agreements subject to statutes of frauds may be perfectly valid, yet unenforceable without evidence of a writing.

By contrast, a transfer of copyright is simply “not valid” without a writing. Section 204's writing requirement not only protects authors from fraudulent claims, but also “enhances predictability and certainty of ownership” – ‘Congress's paramount goal' when it revised the Act in 1976.⁵⁸

In the Garage-IMS transaction it seems clear that the parties intended that Garage would have only a right to use the AMD diagnostic software, and that no transfer of an ownership interest in the copyright in the AMD software was contemplated.

THE INTERNATIONAL CHARACTER OF THE TRANSACTION

Given the international character of the Garage-IMS transaction, the 1980 United Nations Convention on Contracts for the International Sale Of Goods (“UNCISG”) may supply the applicable rule of law. UNCISG governs contracts for the sale of goods between parties whose places of business are in different contracting states.⁵⁹ The pertinent part of the UNCISG for present purposes is Article 11, which provides that

A contract of sale need not be concluded in or evidenced by writing and is not subject to any other requirement as to form. It may be proved by any means, including witnesses.

Parties in the contracting states may, however, expressly preclude the application of UNCISG by appropriate contract language,⁶⁰ and may provide that writings are required to modify contracts that are themselves in writing.⁶¹

Under UNCISG it would appear that any contract formed by e-mail communication, between parties whose places of business are contracting states, is potentially enforceable without regard to the character of the writing or a local Statute of Frauds.⁶² Singapore was not a UNCISG contracting state at the time of the transaction,⁶³ and thus UNCISG probably does not apply to the Garage-IMS contract.⁶⁴

G O D H A T H W R O U G H T W R I T I N G S S U F F I C I E N T U N D E R T H E S T A T U T E

Given the applicability of the UCC Statute of Frauds to the transaction between IMS and Garage, Garage must demonstrate that the e-mail messages transmitted over the Internet between Fred Smith's computer and Andy Acquisition's computer satisfy the writing and subscription requirements of UCC 2201(1). The case law regarding e-mail messages, and whether and to what extent they satisfy the UCC Statute of Frauds, is non-existent. The closest analogy seems to be to that 19th Century innovation, the telegram.

Samuel F. B. Morse's May, 1844 telegram message, “What Hath God Wrought,”⁶⁵ did not take long to have its impact in the courts of law. In what may be the earliest case on record, the 1856 case of Durkee v. Vermont C. Ry.,⁶⁶ an action was brought to recover commissions earned by the plaintiff for his services in the negotiation of a loan to the defendants. Plaintiff Durkee found a lender Holbrook, and requested authorization from his principals at the railroad to conclude loan negotiations with Holbrook. In response to the request for authority to conclude the loan, Durkee received a telegram from Peck, who had been authorized to act on behalf of the defendant railroad: “Mr. Harrison Durkee, Saratoga: Yes; effect it with Holbrook. Signed John H. Peck.” The Vermont Supreme Court viewed the issue as turning on proper proof of the telegram containing the contractual commitment.

In regard to the proof offered to establish telegraphic communications, it seemed to us that where such communications are relied upon to establish contracts, where the force and effect will depend upon the terms used, they must be proved in the same manner as other writings, as in letters and contracts, are. For a telegraphic communication is ordinarily in writing, in the vernacular, at both ends of the line, it must of necessity be so at the last end, unless the person to whom it is addressed is in the office at the time, which is sometimes the fact. In such case, if the communication were never reduced to writing, it could only be proved, like other matters resting in parole, by the recollection of witnesses in whose hearing it was repeated.

In regard to the particular end of the line where inquiry is first to be made for the original, it depends upon which party is responsible for the transmission across the line, or in other words, whose agent the telegraph is. The first communication in a transaction, if it is all negotiated across the wires, will only be effective in the form in which it reaches its destination. In such case inquiry should first be made for the very dispatch delivered. In default of that, its contents may be shown by the next best proof. If the course of business is, as in the cases, to preserve copies of all messages received in books kept for that purpose, a copy might readily be obtained which would ordinarily be regarded as better proof than the mere recollection of a witness. And according to the early English and the American practice, the party is bound to produce a copy of the original, (that being lost,) when in his power, and known a sufficient time before the trial to enable him to do so.

And perhaps if no copy of such message is preserved, but the original message ordered to be sent is preserved, that should be produced, although this were not strictly the original in the case, the letter delivered, which was the original, being lost.

But where the party to whom the communication is made is to take the risk of transmission, the message delivered to the operator is the original, and that is to be produced, or the nearest approach to it by way of copy or otherwise.

In Trevor v. Wood,⁶⁷ another early case, the parties, dealers in bullion and currency, agreed in advance to deal by telegraph. Trevor & Colgate sent a telegram to Wood & Co. accepting Wood & Co.'s offer to sell Mexican dollars. Between the Wood & Co. offer and Wood & Co.'s receipt of Trevor's telegraphed acceptance four days passed, "in consequence of some derangement in a part of the line." In that four day period the price moved, and Wood & Co. refused to ship the currency. When suit was brought, Wood & Co. acknowledged sending a telegram putting the Mexican dollars on offer, but denied that this was a writing. The court held otherwise.

It was agreed between these parties that their business should be transacted through the medium of the telegraph. The object of this agreement was to substitute the telegraph for other methods of communication, and to give to their transactions by it the same force and validity they would derive if they had been performed through other agencies. In accordance with this agreement the offer was made by telegraph to the appellants in New York, and the acceptance addressed to the respondents in New Orleans, and immediately dispatched from New York by order of the appellants. It cannot, therefore, be said that the appellants did not put their acceptance in a proper way to be communicated to the respondents, for they adopted the method of communication which had been used in the transaction by the respondents, and which had been selected by prior agreement between them as that by means of which their business should be transacted.

Under these circumstances the sending of the dispatch must be regarded as an acceptance of the respondents' offer and thereupon the contract became complete.

By 1946 American courts were stating that “[i]t is well established that a telegram satisfies the requirements of the statute of frauds.”⁶⁸

THE MULTIPLICITY OF MESSAGES

In the *Garage-IMS* situation it is necessary to make out the terms of the contract from several e-mail messages. A number of the cases involving telegrams concerned the issue of whether a telegram of acceptance was required to state all of the contract terms — whether the acceptance must be the “mirror image” of the offer. The rule developed that a telegram of acceptance need not state all of the terms; the contract could be taken out of the operation of the Statute of Frauds by proof of a series of writings.

Did the papers which passed between the parties, constituting the memorandum of the transaction (sic), contain such a description of the lands in dispute as was sufficient, in connection with extrinsic evidence not contradictory of nor adding to the written description, to meet the requirements of the Michigan statute of frauds? We say 'the papers,' because the principle is well established that a complete contract, binding under the statute of frauds, may be gathered from letters, writings, and telegrams between the parties relating to the subject-

matter of the contract, and so connected with each other that they may be fairly said to constitute one paper relating to the contract.⁶⁹

In Gibson v. De La Salle Institute⁷⁰ the plaintiff alleged that a contract for the purchase and sale of wine was formed as a result of the exchange of telegrams between plaintiff and defendant. The defendant contended that the enforcement of any such contract was barred by the Statute of Frauds. The trial court struck from the record evidence of the circumstances surrounding the sending of the telegrams, with the result that the agreement was held unenforceable under the Statute of Frauds. The California Supreme Court reversed, holding that a contract can be established through proof of the circumstances surrounding the exchange of telegrams, where those circumstances and the telegrams identify the parties to the contract, the terms of the agreement and the terms are sufficient to constitute an enforceable contract.

In Brewer v. Horst & Lachmund Co.,⁷¹ the question was also the sufficiency of the exchange of telegrams. In Brewer the Statute of Frauds was deemed to be satisfied by the fact of the sending of a telegram of acceptance in response to the telegram of offer.

The two telegrams bear the same date; on their face the last one was sent to plaintiff in response to the first; and it is clear that they should be read together, to determine whether they constitute a note or a memorandum required by the statute of frauds. [citations omitted]. We are satisfied that the telegrams, thus read by the light of the circumstances surrounding the parties, are sufficient to take the contract out of the statute of frauds. Any other conclusion than the one here reached would certainly impair the usefulness of modern appliances to modern business, tend to hamper trade, and increase the expense thereof.

HOW TELEGRAMS ARE SIGNED

UCC Section 2201 requires a writing “signed” by the party against whom enforcement is sought. Issues concerning “signature” also arose with the advent of use of the telegram as an instrument of business communications.



The early writers on the subject of telegrams took the view that the long-hand autograph on the telegram form delivered to the telegrapher, with an oral request that the text be transmitted, satisfied the Statute of Frauds when the text was then transmitted in Morse code to the recipient or telegraph office nearest the recipient. In one particularly fanciful passage, a court viewed the telegraph operator's key as a thousand-mile long steel pen.

So when a contract is made by telegraph, which must be in writing by the statute of frauds, if the parties authorize their agents either in writing or by parol, to make a proposition on one side and the other party accepts it through the telegraph, that constitutes a contract in writing under the statute of frauds; because each party authorizes his agents, the company or the company's operator, to write for him; and it makes no difference whether that operator writes the offer or the acceptance in the presence of his principal and by his express direction, with a steel pen an inch long attached to an ordinary penholder, or whether his pen be a copper wire a thousand miles long. In either case the thought is communicated to the paper by the use of the finger resting upon the pen; nor does it make any difference that in one case common record ink is used, while in the other case a more subtle fluid, known as electricity performs the same office.⁷²

Where the text of the telegram was orally dictated to the telegrapher, rather than written out or typed, the view was adopted that the telegraph company was the agent of the author, and the writing requirement was satisfied by the telegram itself which was “written” by the sender's agent.

The manipulations of the operator by which the defendant's name became appended to the despatch were his own, and were equivalent to an actual personal signing of his name with pen and ink.⁷³

THE TELEX ARRIVES

In the twentieth century the telegram gradually gave way to the telex machine, allowing each user to have direct access to every other user with a telex machine. The telex machine gave rise to familiar issues, such as whether, where and when the contract was formed.

In the Denunzio litigation in the late 1940's⁷⁴ the parties conceded that “teletype messages did not bear the signature in writing of the party to be charged in the sense that they were not literally signed with pen and ink in the ordinary signature of the sender.” Examining the early cases holding that any mark or sign written or placed on an instrument of writing with the intent to execute or authenticate the writing sufficed for purposes of the signature requirement, the Denunzio court said that it

must take a realistic view of modern business practices, and can probably take judicial notice of the extensive use to which the teletype machine is being used today among business firms, particularly brokers, in the expeditious transmission of teletype-written messages. No case in point has been called to the Court's attention on this particular point, and a diligent search of the authorities has failed to uncover the status of teletype machines as satisfying the California statute of frauds. The point appears to be a res nova, but this Court will hold that the teletype messages in this case satisfied the statute of frauds in California.

The significance of the Denunzio case lies in its reliance upon the use of symbols or code letters as identifying the sender and recipient, and as authenticating the document, and in the recognition that the courts must adapt the law of “writings” and “signatures” to modern business practices and to new technologies.

THE M O D E R N V I E W O F S I G N E D W R I T I N G S

In drafting the UCC the Commissioners created special definitions of “signed” and “writing.” As defined, “signed” includes “any symbol executed or adopted by a party with present intention to authenticate a writing.”⁷⁵ “Written” or “writing” includes “printing, typewriting or any other intentional reduction to tangible form.”⁷⁶

In A & G Constr. Co. v. Reid Bros. Logging Co.⁷⁷ the question was whether the writing was sufficient under the UCC. The document did not contain a personal signature: rather the words Glen W. Reid were typed at the end of the letter. The Alaska Supreme Court held that the typed words satisfied the requirements of UCC Section 2201. The Court adopted the view that the UCC's signing requirement turns on authentication, and concluded that an authenticated “signature” may be “printed, stamped or written; it may be by initials or

thumbprint. It may be on any part of the document and in appropriate cases, may be found in a billhead or letterhead.”

A & G Constr. Co. v. Reid Bros. is typical of the modern American cases, where the focus of attention is on intent of the author to authenticate, coupled with the use of a symbol, mark or other device affixed to the document with that intent.⁷⁸ The “signature” need not be in any particular form or location.⁷⁹

In regard to a signature, it is the intent rather than the form of the act that is important. While one's signature is usually made by writing his name, the same purpose can be accomplished by placing any writing, indicia or symbol which the signer chooses to adopt and use as his signature and by which it may be proved: e.g., by finger or thumb prints, by cross or other mark, or by any type of mechanically reproduced or stamped facsimile of his signature, as effectively as by his own handwriting.⁸⁰

Many common business practices have been held to result in “signatures” sufficient under the Statute of Frauds. In Brown v. The Butchers & Drovers' Bank⁸¹ a bill of exchange endorsed with the figures 1.2.8, written in lead pencil, was held sufficient: “[A] person may become bound by any mark or designation he thinks proper to adopt, provided it is used as a substitute for his name, and he intend to bind himself.” Code words adopted by prearrangement,⁸² bank account numbers written on the back of checks,⁸³ stationary containing a business letterhead,⁸⁴ purchase order forms with the firm name at the top,⁸⁵ have all be held to satisfy the “signed” requirement of the Statute of Frauds. Hand markings on a notepad⁸⁶ and a hand written “X”⁸⁷ have also been held sufficient.

In Clark v. Coats & Suits Unlimited,⁸⁸ a typewritten memorandum, in the To: From: style of business memoranda, satisfied the signing requirement of the Michigan statute of frauds.

The memorandum purports to be “From Ted Goldsmith.” As stated by Professor Corbin, the manner and means used to inscribe the signature are a “question of intention to authenticate.” Plaintiff, therefore, should be permitted to present evidence to show that Ted Goldsmith sent plaintiff the memorandum that Ted Goldsmith intended to authenticate the document when sent, thus satisfying the signature requirement of the statute of frauds. Furthermore, if it can be shown that Ted Goldsmith sent plaintiff the memorandum and he intended to authenticate such,

a question of fact remains on the issue of whether or not Ted Goldsmith signed the memorandum in his individual capacity, as an agent of the remaining defendants, or both. Because several questions of fact exist, it is our opinion that the trial court improperly granted accelerated judgment on the ground that the memorandum did not satisfy the writing requirement of the statute of frauds. Thus, we find it necessary to reverse the court's order and remand for trial on this issue.

In Ellis Canning Company v. Bernstein,⁸⁹ the question was whether a contract was created between the parties when the terms of the contract was recorded on audiotape. The case arose out of the impending bankruptcy of a meat packing company. Ellis agreed to provide financing to the meat packing company, owned by Bernstein. The financing contemplated the filing of a Chapter 11 Plan. A meeting was held to confirm the arrangements between the parties and the details of the Chapter 11 agreement. The parties reached agreement but agreed there was no time to put the agreement in writing. The lawyer for Ellis then agreed with Bernstein that their statement of the terms of the agreement should be tape recorded. The Court held that the statute of frauds provisions of UCC Section 8319, which required a writing signed by the party against whom enforcement was sought when the agreement concerned the sale of securities,⁹⁰ were satisfied by the tape recording.

We think and we hold that when the parties to an oral contract agree that the oral contract shall be tape recorded, the contract is 'reduced to tangible form' when it is placed on the tape. We do not overlook the requirement for signature contained in the statute, but the clear purpose of this is to require identification of the contracting party, and where, as here, the identity of the oral contractors is established, and, in fact, admitted, the tape itself is enough. So, we hold that even if the signed correspondence is insufficient to get around the statute [which it isn't], the tape recording of the oral contract would be a 'reduction to tangible form' under the provisions of the UCC. Probably the opposite result would be required under historical statutes of frauds which do not contain the tangible form language of this somewhat unusual definition of the word 'written'. However, under this statute, we think the tape recorded agreement meets the requirements.

The question was whether a name typed on a document otherwise not bearing an autograph constitutes the required signature satisfying the Statute of Frauds dealing with real estate transactions arose in Hessenthaler v. Farzin.⁹¹ There the Farzin's engaged real estate agents to sell their property. An offer of sale was drawn up by

the purchasers and sent to the sellers. The purchasers told the sellers that if they wished to accept the offer a telegram should be sent. The sellers sent a mailgram confirming their acceptance, and the purchasers mailed an agreement for signature. The sellers defaulted and the purchasers sued for specific performance. The issue on appeal was whether there was a memorandum sufficient to satisfy the statute of frauds, the sellers never having signed the written contract tendered after the sending of the mailgram in purported acceptance of the offer.

The first question we must decide is whether or not the mailgram [sellers] sent to Dougherty [buyer] constitutes a “signed” writing as contemplated by the statute. Neither our resources nor that of the parties has revealed any Pennsylvania cases that address the issue of whether or not a mailgram can be sufficient to satisfy the statute. The purpose served by the statute, however, convinces us that the mailgram that was sent in this case is sufficient to constitute a signed writing.

In a footnote, the Court in Hessenthaler stated that

Although the issue is one of first impression in Pennsylvania, these types of questions are likely to arise with greater frequency in the future, as businesses and individuals increasingly rely on similar methods of negotiations such as electronic mail, telexes and facsimile machines in conducting their business affairs.⁹²

The Hessenthaler Court stated that the question was whether the signature requirement had been satisfied. According to the Court, the focus was on whether there was some reliable indication that the party to be charged under the writing intended to authenticate it.

The twin objectives of the statute of frauds are: first, the statute is not designed to prevent the performance or enforcement of oral contracts that were in fact made; but, second, there must be adequate proof to convince the Court that there is no serious possibility of consummating fraud by enforcement of the agreement.

Referring to a series of earlier cases, the Court in Hessenthaler ruled that the proper approach was to look to the reliability of the memorandum, judged by the circumstances attending its preparation, its content, and its external appearance. In the particular case at hand, the Court felt that the mailgram constituted a signed writing because its content suggested little question of its reliability. The authors of the mailgram identified

themselves, they made certain that their intention be clearly understood by declaring their acceptance, and they identified the terms and conditions of the performance of the acceptance.

In light of the primary declaration of identity, combined with the inclusion of the precise terms of the agreement, we are satisfied that the mailgram sufficiently reveals appellant's intention to adopt the writing as their own, and thus, is significant to constitute a 'writing' for purposes of the Statute.

W H E R E D I D H A L S I G N A N D W H E N W A S H A L B O U N D ?

Statutes and precedent frequently make the question of whose law governs, and which court is the proper court to hear and determine the matter, depend upon a determination of when and where the contract was formed.

In Entores, Ltd. v. Miles Far East Corporation,⁹³ the court was faced with the issue of where, for purposes of jurisdiction, a contract is formed when the contract is formed by an exchange of telexes. In Entores Lord Denning held that the instantaneous communications rule — the contract is formed when the acceptance is communicated and received — applied to contracts formed by telex communications as well as contracts made over the telephone or shouted across rivers and crowded rooms. Thus, for purposes of the jurisdiction and venue statute there at issue, the contract was deemed formed at the place of receipt. Lord Denning noted that American decisions have often applied the post office “drop box” rule to telex communications — the contract is formed when the acceptance is placed in the mail — but thought the American decisions wrongly decided.

In Brinkibon Ltd. v. Stahag Stahl und Stahlwarenhandels-gesellschaft GmbH,⁹⁴ the House of Lords approved the Entores rule, holding that telex communications were governed by the “instantaneous communications” rule, while letters and telegrams were governed by the “drop box” rule. Lord Wilburforce did concede, however, that the instantaneous communications rule, even when applied to telex messages, had its limitations:

Since 1955 the use of telex communication has been greatly expanded, and there are many variants on it. The senders and recipients may not be the principals to the contemplated contract. They may be servants or agents with limited authority. The message may not reach, or be intended to reach, the designated recipient immediately: messages may be sent out of office hours, or at night, with the intention, or on the assumption, that they will be read at a later time. There may be some error or default at the recipient's end which prevents receipt at the time contemplated and believed by the sender. The message may have been sent and/or received through machines operated by third persons. And many other variations may occur. No universal rule can cover all such cases; they must be resolved by reference to the intentions of the parties, by sound business practice and in some cases by a judgment where the risks should lie.

The facsimile has been analogized to the telex for purposes of determining where, and when, a contract has been formed. In Gunac Hawkes Bay (1986) Ltd. v. Palmer,⁹⁵ a New Zealand court held that, for purpose of the New Zealand contract venue statute, the instantaneous nature of the facsimile communication led to the conclusion that a contract is formed at the time and place where the communication is received. In two Canadian cases, Joan Balcom Sales Inc. v. Poirier⁹⁶ and Rolling v. William Investments Ltd.,⁹⁷ the courts held that the contract was formed in the county of where the facsimile was received. In Asher v. Goldman Sachs & Co.,⁹⁸ the Queen's Bench held that the Entores rule, developed for telexes, also applied to “faxes,” and ruled that a contract formed by exchange of facsimile transmissions is created at the location of the facsimile machine where the acceptance is received.

JUST THE FAX

The facsimile machine was invented in 1843, shortly after the introduction of the telegraph.⁹⁹ For years facsimile languished due to lack of standardization. Now, with standardization through CCITT, near universal compatibility has been achieved, and “fax” machines are a staple of commerce. In the United States, there are an estimated six million “fax” machines, supplemented by an estimated one million “fax” boards in desktop computers. The number of transmitted pages soared from 1.5 billion in 1985 to 17 billion in 1991.¹⁰⁰

The legal effect of a document transmitted by facsimile has received only limited attention in the courts. In two recent cases courts have discuss the relationship between two usual characteristics of facsimile transmission, the imprinting of the identification of the transmitting machine on the head of the document as transmitted and the use of a facsimile cover page, and the signing requirement of the Statute of Frauds. In Parma Tile Mosaic & Marble Co. Inc., v. Estate of Short,¹⁰¹ the court held that the automatic imprinting by the transmitting fax machine of the sender's identification at the top of each transmitted page as received does not satisfy the signature requirement of the Statute of Frauds.¹⁰² The court observed that the imprint could not be treated as a signature unless it was inserted or adopted “with an intent, actual or apparent, to authenticate a writing.”¹⁰³ The court took the view that the mere act of identifying the sending machine, and the sending of the document from that machine, does not constitute a signing authenticating the contents of the document for purposes of the Statute of Frauds.¹⁰⁴ In National Coin Laundry, Inc. v. Solon Automated Services, Inc.,¹⁰⁵ the court stated that the common facsimile transmission cover letter, which accompanied an unsigned draft agreement, could not be viewed as “signing” the draft contract because the cover page did not authenticate the draft which it accompanied.¹⁰⁶

In several contexts where the issue of authentication was not present the document transmitted by facsimile has been treated as the equal of any other document. In Calabrese v. Springer Personnel of New York, Inc.¹⁰⁷ interrogatories were served on defendants pursuant to a court order requiring answers within twenty days. Defendants received the copy of the interrogatories transmitted by facsimile, but rejected them as not being served in compliance with the requirements of local law. When the answers were not received within the twenty days after service by facsimile, but rather eight days later, plaintiff moved for sanctions. The question presented turned on whether the copy was received during business hours:

Perhaps, literally reading Rule #2103(b)(3) CPLR, there could now ensue controversy as to whether the recipient's office is open, whether anyone is in charge, and whether the fax machine is in a conspicuous place. I refuse, however, to engage in such Augustinian folly. Of course the office is open when the fax machine is receiving. If an operator is present, of course there is

delivery. If no operator is present, of course the fax machine, which is visited regularly, is in a conspicuous place. Faxing patently satisfied the plain intent of the subsection. Any other interpretation would war with the canon of construction contained in Section #104 CPLR, and would justify the blunt observation about the Law which Charles Dickens put in the mouth of Mr. Bumble in Oliver Twist.

In Beatty v. First Exploration Fund 1987 and Company¹⁰⁸ respondent partnership gave written notice of a partnership meeting, and sent the limited partners a written form of proxy for use at the meeting. To be effective, the partnership agreement required delivery of the executed proxy to the partnership prior to the meeting. Some of the proxies were returned by “fax.” The chairman refused to count the ballots cast by “fax” proxy, and declared the motion at hand passed. Suit was then filed by plaintiffs, who contended that if the proxies sent by “fax” were counted the motion would have been defeated. The court found the “fax” proxies to be valid.

It was argued by counsel for the Fund that validating faxed proxies would increase the risk of fraud, create uncertainty, and give an unfair advantage to those limited partners who had access to a telecopier or fax machine. I reject that argument. Faxed proxies are, in effect, a photocopy of an original proxy. They reveal what is depicted on an original proxy, including an exact replica of the signature of the person who signed the original proxy. I observe no greater opportunity for the perpetration of a fraud by the use of faxed proxies than by the use of original proxies. The same observation applies to the matter of uncertainty.¹⁰⁹

In Schenk v. Red Sage, Inc., the defendant restaurant owner offered the position of head chef at the restaurant to the plaintiff. The defendant signed and “faxed” the contract to the plaintiff. When the plaintiff sued for breach of contract the restaurant owner claimed the faxed document was not intended to be an employment contract, but instead a “letter of intent” or “draft outline.” The court concluded that a contract transmitted by facsimile machine, if so intended by the parties, is the final written document into which all previous negotiations merge.¹¹⁰

One must, however, be wary of the existence of specific requirements for presentation of original documents in certain transactions. Facsimile copies will not necessarily be an adequate substitute if the particular statutory scheme or transaction requires the presentation of originals. Thus in Mercado Agricola v. Mellon Bank International,¹¹¹ the court found a copy of an original signed certificate, transmitted by facsimile and stamped “original” by the beneficiary, did not satisfy the requirements of banking practice concerning negotiable instruments requiring that an original document be presented.¹¹²

THE LAW OF COMPUTER EVIDENCE

As we have seen, electronic messages may satisfy the Statute of Frauds if the court to whom the communication is presented accepts the analogy to prior technological innovations in communication. To prove the creation of a contract from e-mail messages, such as those passing between Andy Acquisition and Fred Smith in the Garage/IMS transaction, the messages must be admitted into evidence by the court. In this respect, the policies behind the Statute of Frauds, emphasizing documents and writings showing that a party agreed to be bound in contract as a means of insuring reliable evidence and legal rulings, have come full circle.

Modern trial technique emphasizes the use of documentary evidence. Juries generally view documents as more trustworthy, and more deserving of belief, than oral testimony. When Garage offers the Fred Smith e-mail message in evidence the questions that need to be addressed are:

- A. Is the document a writing?¹¹³
2. Has a proper foundation been laid for its admission into evidence?
3. If the original¹¹⁴ is not available, may a duplicate¹¹⁵ be offered into evidence under an exception to the best evidence rule?¹¹⁶
4. If the document is offered to prove the truth of the statements asserted therein, are the statements admissible under an exception to the hearsay rule, such as the business records exception?¹¹⁷

5. Has the secondary evidence, offered to prove the contents of the transmission, been properly authenticated?¹¹⁸

Foundation is preliminary proof establishing that the document is what it is claimed by its proponent to be.¹¹⁹ With documents offered into evidence for purposes of presenting their content to the finder of fact, as opposed to exhibits used for illustrative or demonstrative purposes, testimony must be provided to “authenticate” the document — demonstrate that the document is what it appears to be — and “identify” the purported author. Rule 901, Federal Rules of Civil Procedure, is an example of the “authentication” and “identification” requirements of a proper “foundation.”

The requirements of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.

The rule seems to be developing that as long as sufficient facts are presented to the court to warrant a finding that the records from which the electronic message was extracted are trustworthy, the message appears trustworthy, and the opposing party is afforded an opportunity to inquire into the accuracy thereof and how the records were maintained and produced, a proper foundation for the admission of the record in evidence is present. The foundational facts, necessary to demonstrate the trustworthiness of the electronic message, can come from testimony of a witness with knowledge, a comparison by an expert with authenticated specimens, distinctive characteristics (such as content, appearance, substance, internal patterns), data compilations, or processes or systems producing accurate results.¹²⁰

[T]he foundation for admission of computerized records consists of showing the input procedures used, the tests for accuracy and reliability and the fact that an established business relies on the computerized records in the ordinary course of carrying on its activities. The . . . opposing party then has the opportunity to cross-examine concerning company practices with respect to the input and as to the accuracy of the computer as a memory bank and retriever of information. . . . [T]he court must 'be satisfied with all reasonable certainty that both the machine and those who supply its information have performed their functions with utmost accuracy.' . . . [T]he trustworthiness of the particular records should be ascertained before they

are admitted and the burden of presenting an adequate foundation for receiving the evidence should be on the parties seeking to introduce it rather than upon the party opposing its introduction.¹²¹

As one court said, “[b]usiness records are reliable to the extent they are compiled consistently and conscientiously.”¹²²

The admissibility of a document offered to prove the existence of a contract, such as the print-out of the Fred Smith counter-offer message transmitted over the Internet, is a question of ordinary proof. In the United States, documents are not automatically assumed to be authentic, and are not automatically admitted into evidence.¹²³ Preliminary proof “authenticating” the document — establishing that the document is what it is claimed by its proponent to be — must be proven by competent evidence. The best witness is a person with firsthand knowledge of the document — viz., Andy Acquisition's testimony that “Exhibit A is the e-mail message I received on December 31, 1994 from Fred Smith making an counter-offer to sell us chips, written in response to my prior e-mail making an offer to purchase.” Normally this would be sufficient.¹²⁴

In the absence of testimony from a witness with direct knowledge, the proponent of the document can “authenticate” by demonstrating the integrity of the document and the reliability of the systems used to send, receive, store and print the document. A systems administrator might be called to testify to (1) the fact that the firm maintained a system of automatically storing e-mail messages received from internal and external sources, (2) the procedure by which those documents are stored, (3) the steps taken by the firm to safeguard the tapes, and (4) the process by which the witness caused the message to be printed out for purposes of bringing it to court. This is not much different than traditional testimony given by a document custodian that a particular piece of paper was regularly placed in the company's files, that it was the company's practice to keep such documents in its files, and that the exhibit in question was found in the company's files. The person who set up Andy's computer system, including the nightly back-up of the e-mail traffic,¹²⁵ could testify to the existence of the backup system, and to the finding of the electronic version of the message on the back-up tape.¹²⁶

Garage must do more than offer the e-mail message into evidence — it must show that the message came from Fred Smith, who manifested an intent to be bound by its contents. In Harlow v. Commonwealth,¹²⁷ a telegraph office manager testified to the contents of a telegram received by his office nine months prior to his employment. The telegram was dated at a location some 400 miles from the scene of the crime, and was offered apparently to show that the defendant had transferred the stolen money by wire. On appeal from the conviction, defendant argued that there was no evidence that he sent or authorized the sending of the telegram.

This is a case of first impression in Virginia dealing with the question of the nature of the evidence necessary to prove the authorship or identity of the sender of a telegram. The authorities elsewhere are agreed that it is difficult, if not impossible, to formulate a definite or precise standard governing the admissibility of a telegram in evidence. It has never been considered safe to make telegrams self-authenticating. There must be something to show that the message is not the act of a stranger. While authenticity may be shown by direct and circumstantial evidence, it is not enough that the writing on its face purports to be from the sender. There must be competent proof that the alleged sender did actually send, or authorize the sending of the telegram in question, whether a copy or original, before it becomes competent evidence. [Citations omitted.]

The telegram was not signed by anyone. There is no evidence that Harlow applied for the telegram, furnished the funds for transmission, or from whom the message came. There is no evidence that it was written, or authorized to be written, or sent by Harlow.

In the *Garage v IMS* proceedings the Garage system supervisor cannot complete the authentication of the Fred Smith e-mail message, because he or she has no personal knowledge of the fact that it is from Fred Smith. The contents of Fred's e-mail, however, serve to authenticate it as a message from Fred when Andy's outbound offer message is offered as additional foundation evidence.

The analogy is again to the law developed with respect to telegrams, where the law has established reply telegrams as self-authenticating. In House Grain Co. v. Finerman & Sons,¹²⁸ the plaintiff and defendant

allegedly formed a contract for the sale of barley by means of an exchange of telegrams. At trial the plaintiff offered into evidence the telegram he received from the defendant. On appeal, this was argued as error.

The argument is that the telegram was not admissible because there was no proof George sent it nor proof of his handwriting; that it was sent by one Borut, who it appears from the evidence was a business associate of George; and that George testified he did not send it. House testified that in course of the telephone conversation he had with George on February 20th, he told George he would send him a telegram confirming the terms and conditions of the sale and asked him to send a similar confirming telegram back to House. When House finished Palmer took the telephone and told George some of the language to be incorporated in the telegram. In the course of the conversation House had with Harry on February 27th, House showed Harry the telegram. Harry did not question its authenticity.

The telegram was sent in response to the one sent by House to George. The fact that the two telegrams may have crossed in transmission does not alter the fact. It is settled that a telegram received in reply to a telegram addressed to the sender is presumed to be genuine, and is admissible in evidence without further proof of the identity of the sender. A reply-telegram authenticates itself.

The fact that the e-mail message from Fred Smith was sent in reply to Andy Acquisition's proposal, coupled with proof of the subsequent communications between the parties, by e-mail, could serve to authenticate Fred Smith's counter offer as a genuine e-mail message from Fred.

E-mail messages, like the message from Fred Smith which Garage seeks to authenticate, consist of two parts: the Header and the Body. The Header information is important for evidentiary purposes, because it purports to show that Fred Smith was the creator of the message, shows the time of the creation of the message, and shows the means by which the message traveled to Andy Acquisition. In the reported decisions such as Bibb v. Allen, the courts have permitted extrinsic proof to be offered that a nickname, cipher, or assumed name has been adopted or used by a particular person or firm, and that a document “signed” with the nickname, cipher or assumed name is binding upon the person or firm adopting the name. In the Garage-IMS transaction under discussion, both Fred Smith (fsmith) and Andy Acquisition (andya) have adopted Internet “handles,” and the court should conclude that the e-mail message bearing the name “fsmith” is “signed” for purposes of its admission into evidence as a document from Fred Smith. The fact that the “signature” is mechanically

reproduced, rather than placed upon paper, is no longer a valid objection, for, as we have seen, in dealing with the requirement for a signature it is the intent rather than the form of the act which is important.

In certain situations there is a further evidentiary issue, which is whether the document contains inadmissible hearsay. In the *Garage v IMS* proceedings, Garage offers the Fred Smith e-mail message both to prove its receipt, and to prove its contents, i.e., the terms stated in the offer which Garage, through Andy Acquisition, accepted. Given Fred Smith' apparent position with IMS, the court would probably apply the admission exception to the hearsay and find that the contents are admissible over the hearsay objection.

Problems with the hearsay nature of business communications are a frequent source of dispute in litigation. The business records exception to the hearsay rule is another vehicle used to make the content of business communications admissible into evidence. In the first reported case dealing with the admissibility of the content of an e-mail message, Monotype Corp. PLC v. International Typeface Corp.,¹²⁹ an e-mail message from Adler, a Microsoft employee, to another Microsoft employee, was sought to be admitted as a business record. The Court of Appeals upheld the trial court's denial of admission of the content of the e-mail message on the grounds that the trial court properly found that the prejudicial nature of the content of the message outweighed its probative value in the context of the issues at hand.¹³⁰ The Court of Appeals went on to say, however, the e-mail message was not created as a result of a systematic business activity, thus suggesting that the content of the message might not be admissible under the business records exception to the hearsay rule.

The Monotype court seems to have missed the point. The e-mail message in question was clearly prepared by one employee and sent to another employee in the ordinary course of business, and was either captured on paper, or archived electronically. Under the Federal Rules of Evidence, all that is required to be shown to qualify the contents for the business records exception is that the record was kept in the usual course of a regularly conducted business activity, and that it was the regular practice of that business activity to make the memorandum.¹³¹ It would seem sufficient for admissibility purposes if a witness testifies as to the details of the electronic mail system, to the finding of the particular message in question in the archives or among the

printouts of e-mail messages, that it was the regular practice of the employees of the company in question to use e-mail and send e-mail messages, that the handle adopted by a particular employee appears on the message, and that the company in question, or companies in general, relied upon e-mail in the course of business communications.¹³²

THE VALUE OF A DIGITAL SIGNATURE

The law of computer evidence allows authentication to be established by evidence that the underlying system produces trustworthy results.¹³³ Use of public key cryptography to create a digital signature, in combination with a digital certificate binding that signature to a certain individual, is one such authentication system now being pushed for public adoption and implementation.

The term “digital signature” is sometimes misunderstood. The term connotes an electronic equivalency to an autograph on paper, such as the electronic address “fsmith@ix.netcom.com” or the electronic mail origination “From:” header on Fred Smith's message. The “digital signature” standards presently being urged for adoption contemplate that a “digital signature” will be more than this: a “digital signature” will be the result of the use of a method of asymmetric encryption of data — public key encryption (“PKE”) — that at once provides assurance of both message origin and message integrity.¹³⁴ Both of these features — proof of message origin, or data origin authentication, and proof of message integrity — are the distinct consequences of the PKE process.¹³⁵

Succinctly stated, the public key-private key is a uniquely matched pair of numerical “transformations” each of which can “undo” the result of the other's application to a message or other data. Independent of which key is used to encode (“encrypt”) the data, the subsequent use of the other matching key decodes (“decrypts”) the previous result. Each key has only one “mate”, and the derivation of the mate from the known key is computationally infeasible. As a result of the computational resources that must be brought to bear —

resources that are for all real purposes unavailable — messages encrypted with the private key of the sender can be decrypted only with the corresponding public key of the sender. If the public key of the sender is known confirmation of the identity of the sender results, because only the holder of the private key matching the corresponding public key could have encrypted the message.¹³⁶ Thus, upon receipt of an encrypted message purportedly originating from Fred Smith, Andy Acquisition's successful decryption of the message using the corresponding public key of Fred Smith confirms that the message originated from the holder of Fred Smith's private key.

The PKE system can also be used to give assurance of document integrity. To allow the recipient to ascertain document integrity — assurance that the text of the message and the digital signature appended thereto have not been altered — a one way hash function is used to computationally create a message digest. The message digest is a unique numeric digital distillation of the original text and digital signature — a “hash result” that is computationally infeasible of being linked back to the original text from the hash result alone — which the recipient can use to verify the integrity of the text and the non-alteration of the digital signature. Since it is computationally infeasible for the same hash digest to result from more than one text and digital signature “hashed” with a secure hash function, the recipient can apply the same secure hash function to the plain text of the decrypted message and digital signature and compare that result to the hash digest provided by the sender. If the two digests match, the recipient is assured that the content of the text and the digital signature have not been altered.

The utility of the public key encryption system of digital signatures depends on the ability of the recipient to learn the public key of the purported sender. This can be learned in several ways; prior exchange of public keys by “snail mail” for example. Since “snail mail” and facsimile transmission are not fast enough in cyberspace, particularly if one envisions computer systems routinely processing transactions where the participants are not identified in advance, there is clearly a need for on-line repositories where names and digital signatures are

readily accessible and searchable. In an on-line world, Andy Acquisition will thus want to look up Fred Smith's public key in a repository where numerous public keys are maintained.

Even if the integrity of the message is established, and the digital signature is established as that of Fred Smith, Andy Acquisition will want assurance that the particular electronic message is from the correct Fred Smith. PKE does not, of necessity, bind the public key to a known and unique individual, and the recipient must thus resort to other methodologies to link the correct Fred Smith to the received message. One method of confirming that linkage is to ask the known correct Fred Smith to deliver a written document through the post, or by facsimile transmission, containing his public key contemporaneous with the transmission of the encrypted e-mail message. This may prove cumbersome in practice, however, because the objective of digital commerce is to do away with common, more familiar, writings giving assurance of the identity of the sender. Why resort to digital signatures at all, if the authenticating linkage is to be supplied by a written document delivered by mail!

To surmount the problem of linkage assurance — assurance that the Fred Smith is the correct Fred Smith — the recipient can resort to a trusted third party that provides the required assurance. In cyberspace these third parties include certification authorities. The role of a CA is to issue a certificate that confirms, with various levels of assurance, the linkage between the public key holder and a unique individual. Much like a notary public, the trusted third party, having put the user through a multilevel examination, certifies to those who receive documents from the user that the user of a particular public key is in fact the person bonded to the digital identification certificate.¹³⁷ When a public key signature is combined with a digital certificate, confirmation of the identity of the author can be achieved.¹³⁸ When proof of origin and proof of integrity of the text is bound to a particular individual through a digital certificate issued by a trusted third party, one has a system that offers the opportunity to satisfy all of the objectives of the Statute of Frauds in a manner more reliable than the “signed” autograph on a “writing.”

Several states have now enacted legislation to promote the use of digital certificates.¹³⁹ The State of Utah was the first.¹⁴⁰ The Utah legislation contemplates a specific scheme of digital signatures, imposes regulatory requirements on certification authorities, requires the creation of digital signature repositories, and specifies the use of public key-private key encryption. The Utah legislation also changes the common law presumption as to the validity and non-reputability of documents which are digitally signed, both in a contract law sense and in evidentiary law sense, as to digital signatures accompanied by digital certificates issued by certificate authorities licensed by Utah or other governmental entities having licensing or authorization requirements similar to those of Utah.¹⁴¹ Qualified digital signatures are presumed to be those of the person or firm bonded to the public key in the digital certificate.¹⁴² A qualified digital signature is deemed “signed”¹⁴³ and “written”¹⁴⁴ for purposes of the Statute of Frauds,¹⁴⁵ although the Utah legislature carefully did not preclude any non-qualifying message from being considered “signed” or “written” under applicable law.¹⁴⁶

THE FUTURE OF THE STATUTE OF FRAUDS

The utility of a statute of frauds has been the subject of constant and wide ranging debate in the United States. The Statute has been abolished in sales transactions in the place of its birth, England,¹⁴⁷ and there is some feeling that the statute of frauds should be abolished, not only for sales transactions, but for licensing transactions as well. The most recent proposal of the Uniform Commercial Code drafting committee, organized under the auspices of the National Conference of Commissioners on Uniform State Laws, proposes the abolition of the statute in sale transactions.

A contract or modification is enforceable, whether or not there is a record signed by the party against whom enforcement is sought, even if the contract or modification is not capable of performance within one year of its making.¹⁴⁸

The UCC drafting committee has included two new provisions, borrowed from the UNCITRAL EDI Model Law, specifically to deal with the attribution of electronic messages to their purported author.

SECTION 2-212. ELECTRONIC MESSAGES; ATTRIBUTION.

If an electronic message is sent to another party, as between the party indicated in the message as the initiating party and the party receiving the message, the party described as the initiating party is bound by the terms of the message if:

- (1) the message was sent by that party or a person who had authority to act on behalf of that party in reference to such messages;
- (2) by properly applying a procedure previously agreed to by the parties for purposes of authentication, the recipient concluded that the message was originated by, or otherwise attributable to, the initiating party; or
- (3) the message as received resulted from actions of a person whose relationship with the party described as the initiating party enabled that person to gain access to and use the method employed by the alleged initiating party to identify data messages as its own.

SECTION 2-213. INTERMEDIARIES IN ELECTRONIC MESSAGES.

- (a) If a party engages an intermediary to perform services such as the transmission, logging, or processing of data, the party who engages the intermediary is liable for any damage arising directly from that intermediary's acts, errors, or omissions in the performance of such services.
- (b) If a party sends an electronic message through or with the assistance of an intermediary providing transmission or similar services, the party who sends that message is bound by the terms of the message as received notwithstanding errors in the transmission unless the party receiving the message should have discovered the error by the exercise of care reasonable under the circumstances or the receiving party failed to employ a verification or authentication system agreed to by the parties before such transmission.

Many contract scholars believe that contracts ought to be allowed to be formed and proven by any means, and that requiring writings is inconsistent with modern high speed communications mechanisms resulting in non-paper based transactions. The arguments advanced in favor of the abolition of the statute of frauds tend to focus on the many exceptions to the application of the statute, and to the supposed realities of “modern commerce” that transactions are created by exchanges of electronic or other communications that supposedly are not

“signed” “writings.” The recent recently published UNIDROIT Principles of International Commercial Contracts,¹⁴⁹ intended to harmonize international commercial custom in trade and restate general principles of international contract law, for example, provides that

[n]othing in these Principles require a contract to be concluded in or evidenced by writing. It may be proved by any means, including witnesses.¹⁵⁰

CONCLUSION

Although many transactions do take place without “signed writings,” in the traditional sense of autographs and subscribed contracts, the perceived limitations on the traditional notions of “writing” and “signed” can be easily corrected by modernized definitions of “signed” and “writing” or “authenticated,”¹⁵¹ or by the adoption of an electronic concept of adequate contract documentation. Focusing the debate on “electronic signatures” will direct the attention of scholars and businessmen to the real issues: assuring the recipient that the sender of the electronic message is who he or she purports to be, that the text of the message has not been altered or changed thus eliminating the risk of repudiation, and that the recipient wishes, after appropriate investigation, to do business with the sender on the terms of that binding electronic communication.¹⁵²

The goal to be achieved by legislative reforms, the creation of a universal EDI format, new court interpretations, or the wide spread implementation of digital certification, is the facilitation of proof of the formation of contracts, the optimization of the process of identification of the parties to the contract, the allocation of risks of misidentification and miscommunication, and the assurance that the offeree truly manifested an intent to be bound.

In Alaska Airlines v. Stephenson,¹⁵³ the Ninth Circuit, reviewing a statute of frauds question, mused about the role of enforcement attitudes on achieving this goal.

[O]ne well may wonder if the courts from the beginning had vigorously enforced the statute of frauds from its first adoption in England, wouldn't we have less injustice? If people were brought up in the tradition that certain contracts inescapably had to be in writing, wouldn't those affected thereby get their contracts into writing and, on the whole, wouldn't the public be better off? But we have to take the law as we find it. For generations, in hard cases, the courts have been making exceptions to "do justice," granting relief here, calling a halt there. The result is that one with difficulty can predict the result in a given state and the situation becomes more confounded when the query arises as to whose (what state's) law we should apply.

One can well ask the same question concerning electronic communications intended to have contractual consequences: would society not be better served if there was some easy method of verifying who has transmitted an e-mail message proposing contractual relations, and the courts insisted upon its use.

NOTES

The author is a graduate of the University of California, Berkeley (B.A. Political Science, 1966), and Duke University School of Law (J.D. 1969). This paper is adapted from the author's prior article, *Has HAL Signed a Contract: The Statute of Frauds in Cyberspace*, 12 *Santa Clara Computer & High Tech. L.J.* 253 (1996). This earlier work was presented at the May, 1996, Monaco Cyberspace Law Conference sponsored by the European Lawyers Union, and at the February, 1995 Waidring Conference sponsored by the Center for International Legal Studies, Salzburg, Austria. The May 1996 ELU Conference Proceedings are available on the Web at <http://www.lway.mc/groupecx/uae/Horning.html>. The February 1995 Waidring Conference Proceedings have been published by John Wiley & Sons, Ltd. under the title *Commercial Alliances*.

1. The origin of the term "cyberspace" is usually attributed to science fiction writer William Gibson, who used the term in his *Neuromancer* (1984), *Count Zero* (1986), and *Mona Lisa Overdrive* (1988) science fiction trilogy to describe a virtual world.

"The matrix has its roots in primitive arcade games," said the voice-over, "in early graphics programs and military experimentation with cranial jacks." On the Sony, a two-dimensional space war faded behind a forest of mathematically generated ferns, demonstrating the special possibilities of logarithmic spirals; cold blue military footage burned through, lab animals wired into test systems, helmets feeding into fire control circuits of tanks and war planes. "Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts . . . A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding . . ." *Neuromancer* (1984), p. 51.

Other definitions of cyberspace have been given:

"I'm using the term 'cyberspace' much more broadly, as many have lately. I'm using it to encompass the full array of computer-mediated audio and/or video interactions that are already widely dispersed in modern societies — from things as ubiquitous as the ordinary telephone, to things that are still coming on-line like computer bulletin boards and networks like Prodigy, or like the WELL ('Whole Earth 'Lectronic Link'), based here in San Francisco."

* * *



“My topic is how to ‘map’ the text and structure of our Constitution onto the texture and topology of ‘cyberspace.’ That’s the term coined by cyperpunk novelist William Gibson, which many now use to describe the ‘place’ — a place without physical walls or even physical dimensions — where ordinary telephone conversations ‘happen,’ where voice-mail and e-mail messages are stored and sent back and forth, and where computer-generated graphics are transmitted and transformed, all in the form of interactions, some real-time and some delayed, among countless users, and between users and the computer itself.”

Laurence H. Tribe, “The Constitution in Cyberspace: Law and Liberty Beyond the Electronic Frontier,” Proceedings of the First Conference on Computers, Freedom & Privacy (1991).

“Cyberspace, in its present condition, has a lot in common with the 19th Century West. It is vast, unmapped, culturally and legally ambiguous, verbally terse (unless you happen to be a court stenographer), hard to get around in, and up for grabs. Large institutions already claim to own the place, but most of the actual natives are solitary and independent, sometimes to the point of sociopathy. It is, of course, a perfect breeding ground for both outlaws and new ideas about liberty.”

John Perry Barlow, “Crime and Puzzlement: In Advance of the Law on the Electronic Frontier,” Whole Earth Review, September 1990.

2. The Internet has its origins in the work of the Advanced Research Projects Agency of the United States Department of Defense. ARPA, later DARPA, commissioned MIT's Lincoln Laboratory to study computer networking. Lincoln Lab's work resulted in the 1965 report “A Cooperative Network of Time-Sharing Computers,” establishing the basic concepts of computer linking. Later, in December 1968, Bolt Beranek and Newman were awarded an ARPA contract to undertake the actual design of a network later named ARPANet. In September 1969 the first links were established between computers located at UCLA, Stanford Research Institute (later SRI International), University of California at Santa Barbara, and the University of Utah. The first public demonstration of ARPANet was at the International Conference of Computers and Communications held in Washington, D.C. in October 1972. In 1985-86 the National Science Foundation became interested in proliferating the use of computer communications among colleges and universities, and NSFNet was formed as a backbone for computer communications. The



Department of Defense abandoned ARPANet in 1990, and in its place NSFNet and other public agency networks have become the principal backbone of the Internet. See generally, Jeffrey A. Hart, Robert R. Reed & François Bar, The Building of the Internet, Telecommunications Policy (Nov. 1992); Daniel C. Lynch and Marshall T. Rose, Internet System Handbook (1993); Kate Hafner and Matthew Lyon, Where Wizards Stay Up Late: The Origins of the Internet (1996).

3. "The Internet: How it Will Change the Way You Do Business," Business Week, November 14, 1994, pp. 80-86.

The first electronic mail, or e-mail as it is now known, was sent in 1971. See Daniel C. Lynch & Marshall T. Rose, Internet System Handbook (1993), p. 9. The now ubiquitous e-mail address separator @ is attributed to Ray Tomlinson of Bolt, Beranek & Newman. See Hafner and Lyon, *op.cit.supra.*, pp. 192-193.

4. "The Internet: How it Will Change the Way You Do Business," Business Week, November 14, 1994, pp. 80-86.
5. J. Sandberg, "Net Working," Wall Street Journal, November 14, 1994, p. R14; Peter H. Lewis, "U.S. Begins Privatizing Internet's Operations," New York Times, October 24, 1994, p. D1; "The Internet: How It Will Change The Way You Do Business," Business Week, November 14, 1994, pp. 80-86.
6. Some have questioned the methodology used in creating these numbers, and suggest that the actual numbers, while still dramatic, are far lower.

"The Internet is distributed by nature. This is its strongest feature, since no single entity is in control, and its pieces run themselves, cooperating to form the network of networks that is the Internet. However, because no single entity is in control, nobody knows everything about the Internet. Measuring it is especially hard because some parts choose to limit access to themselves to various degrees. So, instead of measurement, we have various forms of surveying and estimation."

See J. Quarterman & S. Carl-Mitchell, "How Big is the Internet Anyway?," Microtimes, November 14, 1994, pp. 64-68.



7. Third MIDS Internet Demographic Survey (February 3, 1996), <http://www.mids.org/id3/pr9510.html>.
8. J. Sandberg, "Net Working," Wall Street Journal, November 14, 1994, p. R14.
9. "The Internet: How it Will Change the Way You Do Business," Business Week, November 14, 1994, pp. 80-86. The article cites a Trane Co. study showing a 25% drop in costs as a result of using Internet connections to administer sales orders and manufacturing schedules. See also, Thomas Petzinger, Jr., "The Front Lines," The Wall Street Journal, November 29, 1996, p. B1, recounting the efforts of Tom Kozak of Panduit Corporation to implement EDI trading partner agreements on an industry-wide basis. According to Mr. Kozak, the costs to an electrical parts distributor of carry inventory can reach as much as 30% of the value of the inventory.
10. See, e.g., A. Michael Froomkin, Flood Control on the Information Ocean: Living with Anonymity, Digital Cash, and Distributed Databases, 15 Pitts. J. Law & Commerce 395 (1996).
11. "When E-Cash Will Take Off," Business Week, Jan. 12, 1995, at 70; John Kavanagh, "Purchases on the Internet 'Could Potentially Exceed \$200bn by Year 2000'," Financial Times, November 1, 1995, at 12. See also, A. Michael Froomkin, Flood Control on the Information Ocean: Living With Anonymity, Digital Cash, and Distributed Databases, 15 Pitts J. Law & Commerce 395 (1996).
12. HAL was the mainframe computer programmed to control the activities of the space station in Stanley Kubrick's classic 1968 science fiction film 2001: A Space Odyssey (screenplay by Stanley Kubrick and Arthur C. Clark). HAL was able to see and hear, and at several points in the movie the astronauts orally command HAL to "open the pod doors" of the EVA units.
13. The Restatement (Second) of Contracts § 24 (1979) defines an offer as "the manifestation of willingness to enter into a bargain, so made as to justify another person in understanding that his assent to that bargain is invited and will conclude it."
14. The determination of whether a certain communication by one party to another is an operative offer, and not merely an inoperative step in the preliminary negotiation, is a



matter of interpretation in the light of all the surrounding circumstances. Corbin on Contracts § 1.11 (1994).

15. In a bargain transaction, only the offeree has the power to accept. The offeror controls not only the terms of the agreement but also who has the power to accept the offer. Id. at 3.2. Acceptance by the offeree fulfills the requirement of a manifestation of mutual assent to an exchange. Restatement (Second) of Contracts, § 22(1).
16. Corbin states that “the term consideration in a broad sense has been used to cover all the reasons deemed sufficient to render a promise enforceable, in other words to express the legal conclusion a promise is enforceable.” 2 Corbin on Contracts § 5.1. See also John D. Calamari & Joseph M. Perillo, Contracts (3d ed. 1987) p. 184; Restatement (Second) of Contracts, § 71.
17. Restatement (Second) of Contracts, § 22, comments a,b and c, and illustration 1.
18. The business community view writing as a required formality that “promotes deliberation, seriousness . . . and shows that the act [of forming an agreement] was a genuine act of volition.” Rabel, The Statute of Frauds and Comparative Legal History, 63 L.Q. Rev. 174, 178 (1947).
19. Most American states require that transfers of real estate be accomplished by writings acknowledged by the seller before a notary public. Wills are likewise usually subject to notarial attestation requirements.
20. The \$10 billion dispute between Texaco and Pennzoil turned upon the significance of a handshake across a hotel conference table. See Pennzoil Co. v Texaco, Inc., 729 S.W.2d 768 (Tex. Civ. App. 1987), cert. den. 485 U.S. 994 (1988).
21. Digital Signature Guidelines, Information Security Committee, Science and Technology Section American Bar Association (1996), p. 4 [hereafter cited as Digital Signature Guidelines]. See also, Friedman, The Necessity of Writings in Contracts Within the Statute of Frauds, 35 U. Toronto L.Rev. 43 (1985); Joseph Perillo, The Statute of Frauds in the Light of Dysfunctions of Form, 43 Fordham L.Rev. 39, 43-68 (1974).



22. “The commentators almost unanimously urge that considerations of policy indicate a restricted application of the statute of frauds, if not its total abolition.” Sunset-Sternau Food Co. v. Bonzi, 60 Cal.2d 834, 838, 36 Cal.Rptr. 741, 389 P.2d 133 (1964).
23. The Statute of Frauds did not render the purported contract void, just unenforceable at law.
24. In Bushell's Case, Vaughan's Rep. 435 (1670), just seven years before passage of the Statute of Frauds, the court thought it proper for a jury to evaluate the case from its own pre-trial understanding of the facts, without any evidence being presented.
25. Buckridge v. Shirley, Treby's Reports (1671), quoted in A. W. B. Simpson, A History of the Common Law of Contract: The Rise of the Action of Assumpsit (1975), p. 603.
26. “North, C.J., was trying an action brought by a cook for goods sold. The defendants produced a receipt which showed that he had been paid up to 1677. ‘The cook started forth from the crowd; and, ‘My Lord,’ said he very quick and earnest, ‘I was paid but to 1676.’ At that moment his lordship concluded the cook said true; for liars do not use to burst out in that unpremeditated manner. . . . He asked the cook again and again, if he was sure; to see if he would stammer or hesitate, as liars will often do; but his answer was blunt and positive as before. Then his lordship, in the *nisi prius* court in London, sitting under a window, turned round, and looked through the paper against the light; and so discovered plainly the last figure in the date of the year was 6, in rasure; but was wrote 7 with ink” – clearly this would not have been discovered if the judge had not been impressed by the demeanour of one who could not have been called as a witness.” VI W. S. Holdsworth, A History of English Law (1927), p. 389 n. 3.
27. The exceptions found in the original Statute of Fraud – earnest money, part payment, acceptance and receipt of the goods – continue to find their way into the modern statutes of frauds. Likewise the courts of Chancery developed the doctrine of part performance taking the contract out of the operation of the statute. The most popular modern “exception” to the statute of frauds is equitable estoppel. See, e.g., Monaco v. Lo Greco, 35 Cal.2d 621, 220 P.2d 737 (1950); Moore v. Day, 123 Cal.App.2d 134, 266 P.2d 51 (1954); Allied Grape Growers v. Bronco Wine Co., 203 Cal.App.3rd 432, 249 Cal.Rptr. 872 (1988); Procyon Corp. v. Components Direct, Inc., 203 Cal.App.3rd 409, 249 Cal.Rptr. 813 (1988).
28. The English version adopted in 1677 did not automatically become part of American law.



“The common law of England is not to be taken in all respects to be that of America. Our ancestors brought with them its general principles, and claimed it as their birthright; but they brought with them and adopted only that portion which was applicable to their condition.” Van Ness v. Pacard, 27 U.S. 137, 144, 2 Pet. 137, 7 L. Ed. 374 (1829).

American law on the subject in fact preceded developments in England. In 1647 the Rhode Island legislature passed a statute requiring that conveyances by deeds be in writing. W. Walsh, History of Anglo-American Law, (2 Ed. 1947), p.93, n.28.

29. For example, California Civil Code section 1624 applies to contracts that are not subject to the provisions of the California version of the Uniform Commercial Code. It provides that:

“The following contracts are invalid, unless they, or some note or memorandum thereof, are in writing and subscribed by the party to be charged or by the party's agent:

- (a) An agreement that by its terms is not to be performed within a year from the making thereof.
- (b) A special promise to answer for the debt, default, or miscarriage of another, except in the cases provided for in Section 2794.
- (c) An agreement for the leasing for a longer period than one year, or for the sale of real property, or of an interest therein; such an agreement, if made by an agent of the party sought to be charged, is invalid, unless the authority of the agent is in writing, subscribed by the party sought to be charged.
- (d) An agreement authorizing or employing an agent, broker, or any other person to purchase or sell real estate, or to lease real estate for a longer period than one year, or to procure, introduce, or find a purchaser or seller of real estate or a lessee or lessor of real estate where the lease is for a longer period than one year, for compensation or a commission.
- (e) An agreement which by its terms is not to be performed during the lifetime of the promisor.

- (f) An agreement by a purchaser of real property to pay an indebtedness secured by a mortgage or deed of trust upon the property purchased, unless assumption of the indebtedness by the purchaser is specifically provided for in the conveyance of the property.
- (g) A contract, promise, undertaking, or commitment to loan money or to grant or extend credit, in an amount greater than one hundred thousand dollars (\$100,000), not primarily for personal, family, or household purposes, made by a person engaged in the business of lending or arranging for the lending of money or extending credit. For purposes of this section, a contract, promise, undertaking or commitment to loan money secured solely by residential property consisting of one to four dwelling units shall be deemed to be for personal, family, or household purposes.

This section does not apply to leases subject to Division 10 (commencing with Section 10101) of the Commercial Code.”

In addition to the general statute of frauds, and the UCC provisions covering “transactions in goods,” most American jurisdictions have adopted the provisions of Sections 2A-201, 8-319 and 9-203 of the Uniform Commercial Code, requiring writings, as a prerequisite for enforcement of contracts, for the lease of personal property, purchase and sale of securities, or creation of a security interest in collateral not in the possession of the secured party.

30. “Goods,” as defined in California Uniform Commercial Code § 2105(1), mean:

- (1) “Goods” means all things (including specially manufactured goods) which are movable at the time of identification to the contract for sale other than the money in which the price is to be paid, investment securities (Division 8) and things in action. “Goods” also includes the unborn young of animals and growing crops and other identified things attached to realty as described in the section on goods to be severed from realty (Section 2107).



- (2) Goods must be both existing and identified before any interest in them can pass. Goods which are not both existing and identified are “future” goods. A purported present sale of future goods or of any interest therein operates as a contract to sell.
 - (3) There may be a sale of a part interest in existing identified goods.
 - (4) An undivided share in an identified bulk of fungible goods is sufficiently identified to be sold although the quantity of the bulk is not determined. Any agreed proportion of such a bulk or any quantity thereof agreed upon by number, weight or other measure may to the extent of the seller's interest in the bulk be sold to the buyer who then becomes an owner in common.
 - (5) “Lot” means a parcel or a single article which is the subject matter of a separate sale or delivery, whether or not it is sufficient to perform the contract.
 - (6) “Commercial unit” means such a unit of goods as by commercial usage is a single whole for purposes of sale and division of which materially impairs its character or value on the market or in use. A commercial unit may be a single article (as a machine) or a set of articles (as a suite of furniture or an assortment of sizes) or a quantity (as a bale, gross, or carload) or any other unit treated in use or in the relevant market as a single whole.
31. “It is now necessary to repeal, change or at least reinterpret” many customs and requirements that retard legitimate implementation of electronic commerce. Benjamin Wright, The Law of Electronic Commerce § 16.1 (2d ed. 1996).
32. See, e.g., Rob Van Esch, Interchange Agreements, 1 EDI L.R. 3 (1994).
33. See generally, Michael S. Baum & Henry H. Perrit, Jr., Electronic Contracting, Publishing, and EDI Law (1991); Benjamin Wright, EDI and American Law (1989); Amelia H. Boss & Jeffrey B. Ritter, Electronic Data Interchange Agreements: A Guide and Sourcebook (1993).

EDI data conforms to an EDI standard format agreed to by trading partners. EDI standards specify message standards, which concern data format, content and meaning, and to some degree protocols for communication, which concern how data is transferred from one



computer to another. The standard can be either public, such as ANSI X12, TDCC, EDIFACT, or it can be proprietary. Industry committees set public EDI standards; a single company or a limited group of companies establishes proprietary standards.

34. See Thomas L. Lockhart & Patrick A. Miles, Jr., No More Pulp Fiction: Proposed UCC Article 2 Revisions Embrace Paperless Electronic Transactions, 75 Mich. B. J. 516 (1996).

For model EDI trading partner agreements, see Baum & Perrit, *op.cit.supra*; Boss & Ritter, *op. cit. supra*; Bernard D. Reams, Jr., Electronic Contracting Law: EDI and Business Transactions 1996-1997 Edition (1996).

35. See American Bar Association Electronic Messaging Services Task Force, The Commercial Use of Electronic Data Interchange -- A Report and Model Trading partner Agreement, 45 Bus Law 1645, 1649 (1990) [hereinafter Task Force]; see also D. Baker & R. Brandel, The Law of Electronic Fund Transfer Systems (1988) (concerning electronic fund transfer messages and electronic securities trading).
36. See generally, Task Force. See also, European Commission Recommendation Relating to the Legal Aspects of Electronic Data Interchange, 94/820/EC (October 19, 1994); Robert W. McKeon, Electronic Data Interchange: Uses and Legal Aspects in the Commercial Arena, 12 J. Computer & Info. Law 511 (1994); Halima S. Dzient, James G. Graziano & Christopher J. Daley, The Quest for the Paperless Office Electronic Contracting: State of the Art Possibility but Legal Impossibility?, 5 Computer & High Tech. L. J. 75 (1989); Mary Catherine Green, Letters of Credit and the Computerization of Maritime Trade, 3 Fla. Int. L. J. 221 (1988).
37. See Baum & Perrit, *op.cit.supra*. Many believe EDI transactions will inevitably become the dominant method of conducting business communication. See Boss, The International Commercial Use of Electronic Data Interchange and Electronic Communications Technologies, 46 Bus. Lawyer 1787 (1991).
38. The components of a transaction set are "data segments," which are roughly equivalent to line items in conventional documents, and "data elements," which are the smallest units of information in EDI standards. The message standard and data communication protocols used with EDI commonly provide for set, segment and character counting, and

other error checking routines, to promote complete and accurate computer to computer communication. Benjamin Wright, *op.cit.supra*, at xvi.

39. Michael S. Baum & Henry H. Perrit, Jr., *op.cit.supra*, at p. 6.
40. See generally, Raymond T. Nimmer, Electronic Contracting: Legal Issues, 16 John Marshall J. Computer & Info. Law 211 (1996).
41. The EDI trading partner agreement should reflect the commitment of the trading partners that the use of computer to computer communications technology will not render their transactions legally invalid or unenforceable. Task Force at 1657.
42. See Corinthian Pharmaceutical v Lederle Laboratories, 724 F.Supp. 605 (S.D.Ind. 1989), where the Court held that an order submitted to Lederle through electronic communications was not "accepted" by the communication back from Lederle's computer acknowledging receipt of the order and assigning a tracking number.
43. Task Force at 1679.
44. Id.
45. Contract disputes take time to rise to the surface in the court system, which is why the hypothetical is set two X86 generations ago. This hypothetical is conveniently lifted from the author's earlier work. See note 1, *supra*.
46. See, e.g., "The Ceiling of America," The Economist, December 17, 1994, p. 63.
47. See, E. Markowitz & A. Fang, "DRAM Price Puts Stress on Vendors," Computer Reseller News, July 19, 1993, p. 2; "Semi Vendors Bracing for Likely Tag Hikes," Electronic News, July 19, 1993, p. 1; J. Coates, "Real Chip Shortage or Just a Panic," Chicago Tribune, August 6, 1993, p. C1; "DRAM Chip Prices to Fluctuate in '94?," Computer Reseller News, September 6, 1993, p. 101; T. Pobuda, "Memory Loss Hits Distributors in Wake of Sumitomo Fire," Computer Dealer News, September 7, 1993, p. 2; J. McDonough, "RAM Prices are on the Rise," Windows Sources, November 1993, p. 25.
48. See "Intel Wins 486 Microcode Copyright Issue," Business Wire, October 11, 1994 [copy available on NEXIS]; "AMD-Intel Agree on Terms of Preliminary Injunction in ICE Case," Business Wire, October 21, 1994 [copy available on NEXIS]; J. Markoff,

“Advanced Micro Says Court Gives It Round in Intel Fight,” New York Times, October 22, 1994, p. 39.

49. The predecessor Uniform Sales Act had a similar \$500 limit. As a historic footnote, 10 Pounds Sterling in 1677 was a sum of far greater value than \$500 today. Jonathan Swift's Gulliver's Travels, written in 1726, makes reference to a 30 Pound Sterling grant to maintain Gulliver's schooling for a year as a medical student at the University of Leyden.
50. UCC Section 2201(2) provides that a writing from one party to an alleged contract, binding upon that party, binds the other party to the referenced contract if the receiving party does not object within the specified period to the received document. In Procyon Corp. v. Components Direct, Inc., 203 Cal.App.3rd 409, 249 Cal.Rptr. 813 (1988) the Court of Appeal held that a letter of credit signed by the buyer's bank and delivered to the seller at the buyer's request was a writing between merchants sufficient as against the buyer, thus binding the non-objecting seller to the contract under UCC Section 2201(2).
51. Cf. Procyon, op. cit. supra.
52. To the extent that a transaction involving computer technology involves a sale of personal property, not involving the sale of “goods” to which Section 2201 provides the applicable rule, Section 1206 of the Uniform Commercial Code provides an alternate statute of frauds.

“Except in the cases described in subdivision (2) of this section a contract for the sale of personal property is not enforceable by way of action or defense beyond five thousand dollars (\$5,000) in amount of value of remedy unless there is some writing which indicates that a contract for sale has been made between the parties at a defined or stated price, reasonably identifies the subject matter, and is signed by the party against whom enforcement is sought or by his authorized agent.”

53. General Talking Pictures Corp. v. Western Electric Co., 304 U.S. 175, 181, 82 L. Ed. 81, 1273, 58 S. Ct. 849 (1938). A license has been also been described as the “lowest form of property transfer.” Cohen v. Paramount Pictures Corp., 845 F.2d 851 (9th Cir. 1988). See also Spindelfabrik Suessen-Schurr Stahlecker & Grill GmbH v. Schubert & Salzer Maschinenfabrik Aktiengesellschaft, 829 F.2d 1075, 1081 (Fed. Cir. 1987), cert. den., 484 U.S. 1063, 98 L.Ed.2d 987, 108 S.Ct. 1022 (1988).
54. 925 F.2d 670, 675 (3d Cir. 1991). See generally, Computer Programs as Goods Under the U.C.C., 77 Mich. L. Rev. 1149 (1979).
55. The copyright law requirement of a written agreement establishing the transfer of property rights in a copyright has a counterpart in the patent law. See 35 U.S.C. § 261.
56. 16 F.3d 355 (9th Cir. 1994).
57. Effects Assoc., Inc. v. Cohen, 908 F.2d 555 (9th Cir. 1990), cert. den. 498 U.S. 1103, 112 L.Ed. 2d 1086, 111 S. Ct. 1003 (1991).
58. Konigsberg Int'l. v. Rice, 16 F.3d 355, at 356-357 [internal citations omitted]. Judge Kozinski found that state law notions of equitable estoppel, part performance, and the like had no application to the statute of frauds contained in Copyright Act Section 204.

“Rice's letter was written three and a half years after the alleged oral agreement, a year and a half after its alleged term would have expired and 6 months into a contentious lawsuit. Thus, it was not substantially contemporaneous with the oral agreement. Nor was it a product of the parties' negotiations; it came far too late to provide any reference point for the parties' license disputes. In short, Rice's letter – though ill-advised – was not the type of writing contemplated by section 204 as sufficient to effect a transfer of the copyright to THE MUMMY.

* * *

In sum, Konigsberg, Sanitsky and Rice did lunch, not contracts.” Konigsberg Int'l. v. Rice, 16 F.3d 355, at 357-358.

59. Article 1(1)(a). Article 1(1)(b), allowing application of the Convention where the rules of private international law would lead to the application of the law of a contracting state, is

not in effect in the United States or Singapore as a result of the reservation contained in the instruments of ratification. Contracts for the supply of services or labor, for goods where the contracting party supplies predominately labor or services, or goods to be manufactured or produced by a party from materials substantially supplied by the other party, are excluded from UNCISG by Articles 3(1) and 3(2). See generally, A. Fakes, “The Application of the United Nations Convention on Contracts for the International Sale of Goods to Computer, Software, and Database Transactions,” 3 Software Law Journal 559, 561-562 (1990).

60. Article 6.

61. Article 29.

62. The provisions of Article 11 do not apply where a party has his place of business in a contracting state that has made a declaration under Article 96 of the Convention. Article 96 provides that a contracting state

“whose legislation requires contracts of sale to be concluded in or evidenced by writing may at any time make a declaration in accordance with Article 12 that any provision in Article 11, Article 29, or Part II of this Convention, that allows a contract of sale or its modification or termination by agreement or any offer, acceptance, or other indication of intention to be made in any form other than in writing, does not apply where any party has his place of business in that state.”

Countries having made such reservations include Argentina, Chile, China, Hungary, and the Russian Federation.

63. Although Singapore was a signatory to the original 1980 Vienna text, and ratified the Convention on February 16, 1995, the Convention did not come into effect in Singapore until March 1, 1996.

64. It is possible that a court could find the contract governed by the law of Singapore, on choice of law principles. Singapore law has not been reviewed to determine whether there is a Singapore “statute of frauds” applicable to the transaction.

65. The words of the prophet Balaam, “What hath God wrought,” were chosen by Annie Ellsworth, daughter of the United States Commissioner of Patents, for transmission at the



official May 24, 1844, opening of Morse's Washington to Baltimore telegraph line. See L. Sprague de Camp, The Heroes of American Invention, p. 71 (Barnes & Noble edition, 1993).

66. 29 Vt. 127 (1856).

67. 36 N.Y. 307, 93 Am. Dec. 262 (1867).

68. Joseph Denunzio Fruit Co. v. Crane, 79 F.Supp. 117, 120 (S.D.Cal. 1948), motion for new trial granted, 89 F.Supp. 962 (S.D.Cal. 1950), rev'd, 188 F.2d 569 (9th Cir. 1951), cert. den., 345 U.S. 820, 96 L.Ed 620, 72 S.Ct. 37 (1951) and 344 U.S. 829, 97 L.Ed. 645, 73 S.Ct. 32 (1952). It is not so well established, however, that the aberrational decision does not come along, as in Pike Indus. v. Middlebury Assocs., 136 Vt. 588, 398 A.2d 280 (1979), cert. den., 455 U.S. 947, 71 L.Ed.2d 660, 102 S.Ct. 1446 (1982). In Pike the Vermont Supreme Court has difficulty explaining how the sending of a telegram stating "We direct you to bill [guarantor] directly for the work performed and you are authorized to perform all necessary overtime to complete your work by October 20, 1974" was insufficient under the statute of frauds.

69. Ryan v. United States, 136 U.S. 68, 83, 34 L.Ed. 447, 10 S.Ct. 913 (1890). To the same effect, see, e.g., Cook v. Young, 269 S.W.2d 457 (Tex. Civ. App. 1954); Breckinridge v. Crocker, 78 Cal. 529, 21 P. 179 (1889); Crabtree v. Elizabeth Arden Sales Corp., 305 N.Y. 48, 110 N.E. 2d 551 (1953).

70. 66 Cal.App.2d 609, 152 P.2d 774 (1944).

71. 127 Cal. 643, 60 P. 418 (1900). See also Clipper Maritime Ltd. v. Shirlstar Container Transport [1987] 1 Lloyd's Rep. 546 (Q.B. 1987).

72. Howley v. Whipple, 48 N.H. 487, 488 (1869).

73. Dunning & Smith v. Roberts, 35 Barb. 463, 468 (N.Y.App.Div. 1862).

74. Op.cit.supra.

75. UCC § 1201(39).

76. UCC § 1201(46).

77. 547 P.2d 1207 (Alaska 1976).

78. “We now move to the question of whether there was a valid subscription. The telegram to which the seller defendant's name has been affixed may be considered as having been signed by the defendant Donald W. Hill within the meaning of the statute of frauds. `The signing of a paper-writing or instrument is the affixing of one's name thereto, with the purpose or intent to identify the paper or instrument, or to give it effect as one's act. This is usually accomplished when a person affixes his name in his own handwriting; in such case the very fact clearly evidences the intent of the signer. Affixing one's handwritten signature, however, is not the only method by which a paper writing may be considered as being signed within the meaning of the statute of frauds. As long ago as Lord Ellenborough's opinion in *Schneider and Another against Norris*, 2 M. & S. 286, 105 Eng. Rep. 388 (1814), it has been recognized that a printed name may constitute a sufficient signing under the statute of frauds, provided that it is recognized by the party sought to be charged. The courts of this country have generally recognized that principle.

The above view has been adopted in the Restatement of Contracts §210 (1932), which provides that the signature to a memorandum under the statute may be in writing or printed and need not be subscribed at the foot of the memorandum, but must be made or adopted with the declared or apparent intent of authenticating the memorandum as that of the signer.” Hansen v. Hill, 215 Neb. 573, 340 N.W.2d 8 (1983).

See also, e.g., Joseph Martinelli & Co. v. L. Gillarde Co., 73 F.Supp. 293 (D. Mass. 1947), vacated, 168 F.2d 276 (1st Cir. 1948), modified, 169 F.2d 60 (1st Cir. 1948), cert. den., 335 U.S. 885, 93 L.Ed. 424, 69 S.Ct. 237 (1948). 78.

79. “The signature may take many forms and be located anywhere in the writing, so long as it conveys an intention to authenticate the writing... Whether a particular `signature' was intended to authenticate a document is a question of fact.” Vess Beverages, Inc. v. Paddington Corp., 886 F.2d 208, 213 (8th Cir. 1989).

80. State v. Watts, 289 N.C. 445, 222 S.E.2d 389, 391 (1976).

81. 6 Hill (NY) 443, 41 Am.Dec. 755 (1844).

82. Bibb v. Allen, 149 U.S. 481, 37 L.Ed 819, 13 S.Ct. 950 (1893).

83. Spielman v. Manufacturers Hanover Trust Co., 60 N.Y.2d 221, 456 N.E.2d 1192, 469 N.Y.S.2d 69 (1983).
84. Associated Hardware Supply Co. v. Big Wheel Distributing Co., 355 F.2d 114 (3rd Cir. 1965).
85. See Pearlberg v. Levisohn, 112 Misc. 95, 182 N.Y.S. 615 (1920).
86. Crabtree v. Elizabeth Arden Sales Corp., 305 N.Y. 48, 110 N.E.2d 551 (1953).
87. See, e.g., Zacharie v. Franklin, 37 U.S. 151, 9 L.Ed. 1035 (1838).
88. 135 Mich.App. 87, 352 N.W.2d 349 (1984).
89. 348 F.Supp. 1212 (D. Colo. 1972). See also Londono v. Gainesville, 768 F.2d 1223, at 1227 (11th Cir. 1985) ["As for the first contention, the tape recording of the City Commission's action at the meeting satisfies the statute of frauds requirements of a signed writing"]; contra, Swink & Co. v. Carroll McEntee & McGinley, Inc., 266 Ark. 279, 584 S.W.2d 393 (1979).
90. California Uniform Commercial Code Section 8319 provides:

“(1) A contract for the sale of securities is not enforceable by way of action or defense unless any of the following conditions exist:

(a) There is some writing signed by the party against whom enforcement is sought or by his or her authorized agent or broker, sufficient to indicate that a contract has been made for sale of a stated quantity of described securities at a defined or stated price.

(b) Delivery of a certificated security or transfer instruction has been accepted, transfer of an uncertificated security has been registered and the transferee has failed to send written objection to the issuer within 10 days after receipt of the initial transaction statement confirming the registration, or payment has been made, but the contract is enforceable under this provision only to the extent of the delivery, registration, or payment.

(c) Within a reasonable time a writing in confirmation of the sale or purchase and sufficient against the sender under paragraph (a) has been received by the party against whom enforcement is sought and he or she has failed to send written objection to its contents within 10 days after its receipt.

(2) A contract relating to the purchase or sale of securities between a broker acting as an agent and his or her principal is not subject to the provisions of this section.”

91. 388 Pa. Super. 37, 564 A.2d 990 (1989).

92. 564 A.2d 990, at 992 n. 2.

93. [1955] 2 All ER 493 (Ct. App. 1955).

94. [1982] 1 All ER 293 (House of Lords 1982).

95. [1991] 3 N.Z.L.R. 297 (High Court 1991).

96. 28 A.C.W.S. 3d 551 (Nova Scotia County Court 1991).

97. 17 A.C.W.S. 3d 1035 (Ontario Ct. App. 1989).

98. (Q.B. October 21, 1991) [opinion available on Lexis]. In Clipper Maritime Ltd. v. Shirlstar Container Transport, [1987] 1 Lloyd's Rep. 546 (Q.B. 1987) Justice Staughton questioned whether the statute of frauds would “still be applicable in the world of telex, telephone and fax.”

99. See J. Coopersmith, “Facsimile's False Start,” IEEE Spectrum (February 1993), p. 46. See also, T. Hunkin, “Just Give Me the Fax,” New Scientist (February 1993), p. 33.

100. J. Coopersmith, “Facsimile's False Start,” IEEE Spectrum (February 1993), p. 48.

101. 87 N.Y.2d 524, 655 N.E.2d 704, 631 N.Y.S.2d 607 (1996).

102. Id. at 528.

103. Id. at 527 (quoting Chief Justice Cardozo in Mesibov, Glinert & Levy v. Cohen Bros. Mfg. Co., 245 N.Y. 305, 310 (1956)).

104. Id. at 528.
105. Memorandum Opinion, 1991 U.S.App. Lexis 11790 (6th Cir. 1991).
106. Id. at 1010.
107. 141 Misc.2d 566, 534 N.Y.S.2d 83 (1988). But see, Salley v. Board of Governors, 136 F.R.D. 417 (M.D.N.C. 1991) finding that service of discovery papers by facsimile was not authorized by the Federal Rules of Civil Procedure as then written, and was thus ineffective service.
108. 25 B.C.L.R. (2d) 377 (1988).
109. The Beatty court's conclusion that a proxy transmitted by facsimile is in effect a photocopy of the original was implicitly rejected by the Georgia Court of Appeals in Department of Transportation v Norris, 222 Ga.App. 361, 474 S.E.2d 216 (1996), where the Court held that a

facsimile transmission does not satisfy the statutory requirement [of the Georgia Code concerning timely presentation of claims against the state] that notice be “given in writing.” Such a transmission is an audio signal via a telephone line containing information from which a writing may be accurately duplicated, but the transmission of beeps and chirps along a telephone line is not a writing, as that term is customarily used. Indeed, the facsimile transmission may be created, transmitted, received, stored and read without a writing, in the conventional sense, or hard copy in the technical vernacular, having ever been created.
110. The intent of the parties is always an important fact to be discerned when evaluating the import of any document or communication. Thus in Smith v International Paper Company, 87 F.3d 245 (8th Cir. 1996), the Court of Appeals held that an e-mail message concerning the retention of employees following the sale under discussion did not satisfy the Statute of Frauds because it merely sought to clarify a supposed term of the offer, rather than constituting an “acceptance” of the offer.
111. 608 F.2d 43, 47 (2d Cir. 1979).

112. Id. See also Western International Forest Products Inc. v. Shinan Bank, 860 F. Supp. 151 (S.D.N.Y. 1994), discussing whether a facsimile is an original under UCP 400, Article 22(c).
113. “Writing” means handwriting, typewriting, printing, photostating, photographing, and every other means of recording upon any tangible thing any form of communication or representation, including letters, words, pictures, sounds, or symbols, or combinations thereof. (California Evid. Code § 250.)
- A tape recording of a telephone conversation, for example, is a “writing” within the meaning of California Evidence Code § 250. See People v. Estrada, 93 Cal.App.3d 76, 155 Cal.Rptr. 731 (1979). Motion pictures and phonograph records are also “writings.” See People v. Enskat, 20 Cal.App.3d Supp. 1, 98 Cal.Rptr. 646 (1971); People v. Manson, 61 Cal.App.3d 102, 132 Cal.Rptr. 265 (1976), cert. den. 430 U.S. 986, 52 L.Ed.2d 382, 97 S.Ct. 1986 (1977).
114. “Original” means the writing itself or any counterpart intended to have the same effect by a person executing or issuing it. An “original” of a photograph includes the negative or any print therefrom. If data are stored in a computer or similar device, any printout or other output readable by sight, shown to reflect the data accurately, is an “original.” (California Evid. Code § 255.)
115. A “duplicate” is a counterpart produced by the same impression as the original, or from the same matrix, or by means of photography, including enlargements and miniatures, or by mechanical or electronic rerecording, or by chemical reproduction, or by other equivalent technique which accurately reproduces the original. (California Evid. Code § 260.)
116. California Evid. Code § 1500 et seq. See, e.g., Smith v. Easton, 54 Md. 138 (1880) [proof that original destroyed permitted use of recipient's copy]; AT&T v. United Research Labs., 1994 U.S. Dist Lexis 16125 (E.D.Pa. 1994)[destruction of originals authorized the use of secondary evidence].

The treatment of computer records for purposes of the best evidence rule was the subject of a specific California statute passed in 1983.

“Notwithstanding the provisions of Section 1500, a printed representation of computer information or a computer program which is being used by or stored on a computer or computer readable storage media shall be admissible to prove the existence and content of the computer information or computer program.

Computer recorded information or computer programs, or copies of computer recorded information or computer programs, shall not be rendered inadmissible by the best evidence rule. Printed representations of computer information and computer programs will be presumed to be accurate representations of the computer information or computer programs that they purport to represent. This presumption, however, will be a presumption affecting the burden of producing evidence only. If any party to a judicial proceeding introduces evidence that such a printed representation is inaccurate or unreliable, the party introducing it into evidence will have the burden of proving, by a preponderance of evidence, that the printed representation is the best available evidence of the existence and content of the computer information or computer programs that it purports to represent.” (California Evid. Code § 1500.5.)

117. Most computer records will be offered into evidence under the business records exception to the hearsay rule. Federal Rules of Evidence 803(6); California Evidence Code § 1271. See, e.g., Aguimatang v. California State Lottery, 234 Cal.App.3rd 769, 286 Cal.Rptr. 57 (1991).
118. See California Evid. Code § 1401. In Crabtree v. Elizabeth Arden Sales Corp., 305 N.Y. 48, 110 N.E.2d 551 (1933), the New York Court of Appeal held that it was proper to resort to parol evidence to show the connection between the document and its author, and the manifestation of the purported author's intent to be bound by the stated terms.
119. See, e.g., Mayer v Angelica, 790 F.2d 1315 (7th Cir. 1986).
120. Rule 901(b), Federal Rules of Civil Procedure.
121. United States v. Briscoe, 896 F.2d 1476 (7th Cir. 1990), cert. den., 498 U.S. 863 (1990). United States v. Russo, 480 F.2d 1228, 1241 (6th Cir. 1973), cert. den. 414 U.S. 1157, 39 L.Ed 2d 109, 94 S.Ct. 915 (1974) (quoting United States v. De Georgia, 420 F.2d 889, 895 (9th Cir. 1969)). See also United States v. Catabran, 836 F.2d 453 (9th Cir. 1988); United States v. Miller, 771 F.2d 1219 (9th Cir. 1985). The foundation testimony should convince the trier of fact that the document has not been forged or

altered, but need not conclusively demonstrate the non-existence of possible alteration or forgery.

As with all documents, the possibility of forgery and alteration of electronic documents exists. The ultimate question of the reliability of the document, and its “authenticity,” is a matter for the jury or other trier of fact, a situation which some scholars and critics have lamented given the relative ease with which an electronic document can be forged or altered and the relative difficulty of proof of forgery or alteration. See generally, Christopher Reed, *Authenticating Electronic Mail Messages — Some Evidential Problems*, 4 *Software L. J.* 161 (1991); Andrew Johnston-Laird, *Smoking Guns and Spinning Disks*, 11 *Computer Lawyer* 1 (August 1994); Rudolph J. Peritz, *Computer Data and Reliability: A Call for Authentication of Business Records Under the Federal Rules of Evidence*, 80 *Nw. U. L. Rev.* 956 (1986); Stanley A. Kurzban, *Authentication of Computer-Generated Evidence in the United States Federal Courts*, 35 *J. Law & Tech.* 437 (1995).

122. United States v. Ramsey, 785 F.2d 184, 192 (7th Cir. 1986), cert. den. 476 U.S. 1186, 91 L.Ed.2d 552, 106 S.Ct. 2924 (1986). See also, United States v. Hernandez, 913 F.2d 1506 (10th Cir. 1990), cert. den. 499 U.S. 908, 113 L.Ed.2d 220, 111 S.Ct. 1111 (1991).
123. See Continental Baking Co. v. Katz, 68 Cal.2d, 512, 525, 67 Cal.Rptr. 761, 439 P.2d 889 (1968) [“We understand that in some legal systems it is assumed that documents are what they purport to be, unless shown to be otherwise. With us it is the other way around. Generally speaking, documents must be authenticated in some fashion before they are admissible in evidence.”]; Ford v. United States, 10 F.2d 339, 1349-50 (9th Cir. 1926), aff’d, 273 U.S. 593, 71 L.Ed 793, 47 S.Ct. 531 (1927) [“There is no presumption that a telegram is sent by the party who purports to sent it. Before it can be received in evidence, there must be some proof connecting it with its alleged author.”]
124. See, e.g., McAllister v. George, 73 Cal.App.3d 258, 140 Cal.Rptr. 702 (1977); Milner Hotels, Inc. v. Mecklenburg Hotel, Inc., 42 N.C.App. 179, 256 S.E.2d 310 (1979).
125. Failure to preserve archived copies of electronic messages may result in criticism of those who testify from memory of the events unaided, or unhindered, by their then-recorded communications. See Candle Services Ltd. v. Warren Reid Meadowcraft [Q.B. January 27, 1995][Opinion available on Lexis].

126. In some respects the electronic version of the Fred Smith e-mail message is superior in evidentiary character to the paper version. The electronic version, as saved on the hard drive when received and stored on the nightly or weekly backup tape, contains a time and date indicating the details of the receipt and saving of the message. See Armstrong v. Executive Office of President, 1 F.3d 1274 (D.C.Cir. 1993).
127. 204 Va. 385, 131 S.E.2d 293 (1963)
128. 116 Cal.App.2d 485; 253 P.2d 1034 (1953). See also, e.g., People v. Dinkins, 242 Cal.App.2d 892, 52 Cal.Rptr. 134 (1966); Wilson v. Eddy 2 Cal.App.3d 613, 82 Cal.Rptr. 826 (1969); Georgia, Florida & Alabama Ry. Co. v. Blish Milling Co., 241 U.S. 190, 60 L.Ed 948, 36 S.Ct. 541 (1916); Halstead v. Minnesota Tribune Co., 147 Minn. 294, 180 N.W. 556 (1920) [copy of telegram of acceptance received by plaintiff in reply to his offer to work for defendant on terms stated by plaintiff, coupled with proof of destruction of the original message at the sending office and the parties actual entry into employment relationship, conclusive proof of authentication of telegram of acceptance]; La Mar Hosiery Mills, Inc. v. Credit & Commodity Corp., 28 Misc. 2d 764, 216 N.Y.S. 2d 186 (1961) [telegram of guaranty bearing name of guarantor held to be authentic when defendant admits causing telegraph company to type its name on the original, since defendant authorized its name to be affixed upon it.]
129. 43 F. 3d 443 (9th Cir. 1994).
130. See Strauss v Microsoft Corporation, 1995 U.S. Dist. Lexis 7433 (S.D.N.Y. 1995) holding that e-mail messages sent to an employee may be offered in evidence in a sex discrimination case, over a similar probative value - prejudicial nature objection, to demonstrate that the claim of Microsoft, of a valid business reason for the failure to promote the plaintiff, was a pretext masking the true discriminatory reason.
131. Fed. Rules Evid. 803(6).
132. See, e.g., United States v. Hyde, 448 F. 2d 815 (5th Cir. 1971), cert. den., 404 U.S. 1058, 92 S. Ct., 736, 30 L. Ed 2d 745 (1972) [upholding admissibility of notes made by a company official while participating in an extortion ring]; United States v. Moran, 151 F. 2d 661 (2d Cir. 1945) [memorandum of a telephone conversation made by a bank employee]; United States v. Linn, 880 F. 2d 209 (4th Cir. 1989) [hotel director of communications properly authenticated hotel telephone billing records, generated by a

computer system, showing calls made to particular telephone number from the defendant's hotel room at a particular time]; United States v. Wables, 731 F. 2d 440 (7th Cir. 1984) [witness need not be personally familiar with the entries, only the procedures under which the records were kept]; United States v. Gregg, 829 F. 2d 1430 (8th Cir. 1987), cert. den. 486 U.S. 1022, 108 S. Ct. 1994, 100 L. Ed 2d 226 (1988) [a series of incoming file messages, seized from trash cans, were held to be admissible as business records in a prosecution for illegal export activities].

133. Rule 901(b)(9), Federal Rules of Evidence.

134. Digital Signature Guidelines § 1.11.

“Digital signature.

A transformation of a message using an asymmetric cryptosystem and a hash function such that a person having the initial message and the signer's public key can accurately determine

(1) whether the transformation was created using the private key that corresponds to the signer's public key, and

(2) whether the initial message has been altered since the transformation was made.”

135. The other special feature of PKE is liberating the participants from the burden of, and dangers of, separately distributing secret keys. See generally, RSA Laboratories, “FAQ 3.0 on Cryptography,” <http://www.rsa.com/rsalabs/newfaq> (August 2, 1996 Build).

136. Public key cryptography also facilitates the achievement of other essential goals of a communication system. For example, a message encrypted with the public key of the intended recipient can only read after the message is decrypted using the recipient's corresponding private key. Thus public key encryption can insured the confidentiality of business communications.

137. See generally, A. Michael Froomkin, The Essential Role of Trusted Third Parties in Electronic Commerce, 75 U. Oregon L. Rev. 49 (1996).

138. See Peter N. Weiss, Security Requirements and Evidentiary Issues in the Interchange of Electronic Documents: Steps Towards Developing a Security Policy, 12 J. Marshall J. Computer & Info. L. 425 (1993).
139. Among those states are Washington (S.B. 6423, enacted March 29, 1996), Florida (Fla.Stat §§ 282.71 et seq., enacted May 25, 1996), Arizona (H.B. 2444, enacted April 1996), and Wyoming (Wyoming Statutes, Section 9-1-306 (1995)). California's more modest effort is codified in California Government Code § 16.5 and California Corporations Code § 25612.5 (1995). Hawaii passed legislation creating a study commission to consider the use of digitally signed documents by the court system (S.B. 2401, enacted June 17, 1996).
140. Utah Code §§ 46-3-101 et. seq. (1996). The original legislation, 1995 Utah S.B. 82 (1995), was significantly amended by 1996 Utah S.B. 188 (1996).
141. Utah Code § 46-3-201(5).
142. Utah Code § 46-3-406(1).
143. Utah Code § 46-3-401(1).
144. Utah Code § 46-3-403(1).
145. Utah Code § 46-3-403.
146. Utah Code §§ 46-3-401(2), 403(2).
147. Law Reform (Enforcement of Contracts) Act, 2 & 3 Eliz. II, c. 34. The repeal legislation left in place the Statute of Frauds for real estate and suretyship transactions.
148. Section 2-201, Uniform Commercial Code (October 1, 1995 Draft), <http://www.kentlaw.edu/ulc/uniform/uccart1/ucc2c237.html>, and <http://www.kentlaw.edu/ulc/uniform/uccart2/chapt2/ucc21019.html>. The revised statute contains a revised definition of signed (UCC 2-102(a)(42)), adapted from The UNCITRAL Model Law on Legal Aspects of Electronic Data Interchange (EDI) and Related Means of Communication. As to the UNCITRAL Model Law, see Richard Hill and Ian Walden, The Draft UNCITRAL Model Law of Electronic Commerce: issues and Solutions, <http://www.batnet.com/oikoumene/arbunc.html>.

149. Principles of International Commercial Contracts, International Institute for the Unification of Private Law (Unidroit) (1994).
150. The Commentary to Article 1.2 notes that this Principle can be overridden by applicable local law which may impose special requirements, such as writings, with respect to certain types of contracts and certain contract clauses. The parties to the agreement or negotiation are of course free to insist that no agreement is effective until a writing is created and signed. UNIDROIT Principles, Article 2.13.
151. In the draft UCC Article 2B provisions intended to establish a Commercial Code for licensing transactions, the draftsmen have given a new electronic oriented definition of “authenticated.”
- “Authenticated” includes any symbol or action that is adopted or performed by a party or its electronic agent with the present intent to authenticate or manifest assent to a record, a performance, or a message. Actions or symbols adopted or performed by an electronic agent are with present intent to authenticate a record or message on behalf of a party if the party designed, programmed or selected the electronic agent with an intent that the agent produce that result and the electronic agent performs in a manner consistent with its intended programming. A record or message is authenticated is conclusively presumed as a matter of law if the parties agreed to an authentication procedure and the symbol or action taken complies with that procedure. Otherwise, authentication may be proved in any manner, including by a showing that a procedure existed by which a party must of necessity have taken an action or executed a symbol in order to have proceeded further in the use or processing of the information. (Uniform Commercial Code, Revised Article 2B, Licenses, § 2B-102(a)(2) (February 2, 1996 Draft).
152. See Digital Signature Guidelines.
153. 217 F.2d 295, at 298 (9th Cir. 1954).