

Electronic Commerce and the Symbiotic Relationship Between International and Domestic Law Reform[†]

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I. INTRODUCTION

Since the United Nations Convention on the International Sale of Goods entered into force in the United States, a great deal of attention has been given to comparisons between the provisions of that convention (which forms a part of United States law governing international sales transactions) and the provisions of Article 2 of the Uniform Commercial Code (which governs domestic sales transactions). Moreover, with the final publication of the UNIDROIT Principles on International Commercial Contracts, commercial scholars are again comparing our domestic law with this international body of principles, in an attempt to divine trends and significant advances. Given the desire of many in the United States to “export” domestic law into the international arena, because of the perceived economic benefit to countries that adopt modern commercial law, some have attempted to trace the impact of our domestic Article 2 on the development of these international instruments, an admittedly “risky business.”¹ On the other hand, some writers have tried to trace the impact of these international instruments on our domestic law, and more specifically trace the impact of international pronouncements on the current Article 2 revision process.²

One area that has heretofore escaped examination is electronic commerce, where mutual influence between domestic and international developments has been great and readily traceable. Examination of developments in this new field reveals that new patterns of cooperation and coordination between domestic and international law reform are emerging.

In 1996, the United Nations General Assembly gave its final approval to an instrument formulated over a period of five years by the United Nations Commission on International Trade Law (UNCITRAL),³

1. See E. Allan Farnsworth, *The American Provenance of the UNIDROIT Principles*, 72 TUL. L. REV. 1985 (1998); see also Franco Ferrari, *The Relationship Between the UCC and the CISG and the Construction of Uniform Law*, 29 LOY. L.A. L. REV. 1021, 1028 (1996).

2. See Henry D. Gabriel, *The Inapplicability of the United Nations Convention on the International Sale of Goods as a Model for the Revision of Article 2 of the Uniform Commercial Code*, 72 TUL. L. REV. 1995 (1998); see also Richard E. Speidel, *The Revision of UCC Article 2, Sales in Light of the United Nations Convention on Contracts for the International Sale of Goods*, 16 NW. J. INT'L L. & BUS. 165 (1995); Peter Winship, *The National Conference of Commissioners on Uniform State Laws and the International Unification of Private Law*, 13 U. PA. J. INT'L BUS. L. 227 (1992).

3. The United Nations Commission on International Trade Law (UNCITRAL) is the body within the United Nations primarily charged with proposals for harmonization of international commercial law. It was created in 1966 by General Assembly Resolution 2205 (XXI) in order to enable the United Nations to play a more active role in reducing or

the UNCITRAL Model Law on Electronic Commerce.⁴ This international instrument was drafted over a period when two things were occurring: first, in the United States, efforts were being made to study the impact of the implementation of electronic technologies on business practices and law,⁵ and to determine the need for legislative accommodation of electronic commerce. Second, a more general overhaul of our domestic commercial law, the Uniform Commercial Code, got underway, a process in which technology-based issues were very much in the forefront of the minds of the revisionists. A comparison between these parallel domestic and international developments reveals the extent to which they have been built on similar assumptions and basic principles (such as the principle of nondiscrimination based on the form of the message), and the extent to which there has been mutual influence.

The UNCITRAL Model Law on Electronic Commerce itself was influenced by United States legal developments in its inception, early stages, and final articulation, as well as developments in other countries.⁶ Moreover, the Model Law itself has had significant influence on revision efforts within the United States, even prior to its finalization in 1996. Its influence has been felt on the Uniform Commercial Code, particularly the revision of Article 2 and the drafting of a new Article 2B. In addition, it has been picked up in other nonuniform electronic commerce legislation proposed in some

removing legal obstacles to the flow of international trade. *See generally* UNCITRAL: THE UNITED NATIONS COMMISSION ON INTERNATIONAL TRADE LAW (2d ed. 1991). A list of its completed projects, and their current status, may be found at UNCITRAL's home page. *See* United Nations, International Trade Law Branch of the U.N. Office of Legal Affairs, (last modified Mar. 16, 1998) <<http://www.un.or.at/uncitral>>.

4. *See Report of the United Nations Commission on International Trade Law on the Work of its Twenty-Ninth Session*, U.N. GAOR, 51st Sess., Supp. No. 17, at 70 Annex I (1996), U.N. Doc. A/51/17, reprinted in 36 I.L.M. 197 (1997); United Nations, *UNCITRAL Model Law Electronic Commerce with Guide to Enactment*, (visited Apr. 19, 1998) <<http://www.un.or.at/uncitral/texts/electcom/ml-ec.htm>> [hereinafter UNCITRAL Model Law].

5. *See, e.g.*, Electronic Messaging Services Task Force, *The Commercial Use of Electronic Data Interchange—A Report and Model Trading Partner Agreement*, 45 BUS. LAW. 1645, 1647-48 (1990) [hereinafter *ABA Report*]; Amelia H. Boss, *Developments on the Fringe: Article 2 Revisions, Computer Contracting, and Suretyship*, 46 BUS. LAW. 1803, 1811-16 (1991) [hereinafter *Boss, Developments*]; Jeffrey B. Ritter, *Defining International Electronic Commerce*, 13 NW. J. INT'L L. & BUS. 3, 3-5 (1992).

6. That does not mean, however, that the Model Law is an "American" product. Quite the contrary. In the eyes of the author, the UNCITRAL Model Law is truly an international instrument. As with many international products, it was the result of extensive dialogue between the participating nations and represents a distillation of multiple views.

states;⁷ more specifically, it has been picked up by some states in their promulgation of electronic signature or digital signature legislation. Lastly, its influence is currently visible in another uniform law project undertaken by the National Conference of Commissioners on Uniform State Laws (the National Conference), one of the sponsors of the Code; that project is the draft Uniform Electronic Transactions Act (UETA).⁸

The relationship between domestic and international developments in the area of electronic commerce may best be described as symbiotic: each level feeds on and nourishes the other in a process that will likely continue for some time, as UNCITRAL moves into the area of digital signatures, and the National Conference completes its work on the UETA. The open question, of course, is whether the symbiosis will result in products that are sufficiently similar to advance the goal of uniformity between domestic and international initiatives, allowing electronic commerce to maximize its potential by extending across national boundaries without running into impediments thrown up by incompatible national legal systems.

The thesis of this Article is that the symbiotic relationship between domestic commercial law and international developments generally will be greater in the area of electronic commerce than in the field of sales, and that the UNCITRAL Model Law on Electronic Commerce will have a greater impact on developments in United States domestic commercial law than *either* the UNCITRAL Convention on the International Sale of Goods or the UNIDROIT Principles on International Commercial Contracts. Moreover, the ongoing revision efforts within the Uniform Commercial Code, in conjunction with the other domestic law reform efforts in the areas of

7. The key proposed legislation is that in Illinois and Massachusetts. For a helpful survey of the trends in state enactment of legislation dealing with such matters, see Internet Law and Policy Forum, *Survey of Electronic and Digital Signature Initiatives in the United States* (visited Apr. 19, 1998) <<http://www.ilpf.org/digsig/digrep.htm>> [hereinafter ILPF Survey]. For a pointer to worldwide laws on digital signatures, see Internet Law and Policy Forum, *Digital Signature Resource Center* (last modified Aug. 11, 1997) <<http://www.ilpf.org/digsig/digsig2.htm>>. For charts of national (and international) law on signatures or electronic commerce more generally, see Commonwealth of Massachusetts, *Information Technology Division Legal Department* (visited Apr. 19, 1998) <<http://www.magnet.state.ma.us/itd/legal/matrix10.htm>>. See also McBride Baker & Coles, *Summary of Electronic Commerce and Digital Signature Legislation* (last modified Apr. 8, 1998) <http://www.mbc.com/ds_sum/html>.

8. See *infra* note 38 and accompanying text.

electronic commerce, has had and will continue to have a significant impact on international legal developments.⁹

Part II of this Article will examine the relationship generally between international and domestic law reform, outlining both the manner in which the two interacted previously and how they are currently interacting in the area of electronic commerce. Part III will turn to an examination of the formulation of the UNCITRAL Model Law on Electronic Commerce, and the influence of United States domestic developments. Part IV will examine the relationship from the opposite perspective: the influence of the UNCITRAL Model Law on domestic legal developments. Part V turns to the growing area of digital and electronic signatures legislation, and the relationship between domestic efforts and current UNCITRAL work. Part VI will conclude with an analysis of why the patterns of interaction have changed from harmonization to cooperation and coordination, and why the international and domestic developments are so intertwined.

The symbiotic process described in this Article is not merely a United States phenomenon but rather a global phenomenon. The patterns of interaction between United States domestic law and international law are replicated in other contexts and with other countries. It is hoped, however, that this discussion of United States developments will contribute to our understandings of the dynamics shaping the evolution of domestic and international rules and norms in the context of electronic commerce.

II. THE RELATIONSHIP BETWEEN INTERNATIONAL AND DOMESTIC LAW REFORM

A. *The Four Paradigms*

The notable symbiosis between international and domestic commercial law development in the area of electronic commerce is in large part due to the confluence of two trends: the revision of domestic commercial law on the one hand,¹⁰ and the emergence of

9. In the area of the relationship between the CISG or the UNIDROIT Principles on the one hand, and UCC Article 2 on the other, others have commented that there is difficulty in tracing the effects that Article 2 have had on the CISG or the Principles, or the effects (if any) that the CISG or the Principles have had on the revision effort. *See* Farnsworth, *supra* note 1; Gabriel, *supra* note 2. As this Article will demonstrate, it is much easier to trace the impact of the Model Law on the domestic revision process, or the impact of United States developments on the UNCITRAL process.

10. During the past decade or so, the Uniform Commercial Code has undergone substantial revision, beginning with the promulgation of a new article dealing with leasing contracts, *see* U.C.C. art. 2A (1995) (promulgated in 1987 and revised in 1990), a new article on electronic funds transfers, *see* U.C.C. art. 4A (1995) (promulgated in 1989), and the

efforts for the harmonization of commercial law internationally, on the other. These two trends have interacted in numerous and varied ways over the years in the context of commercial law generally. A quick description of their interaction discloses four paradigms, or patterns of interaction, each with its own dynamics and impact on the law.

The United States went through its premier efforts to codify commercial law in the earlier part of this century, culminating in the promulgation and eventual nationwide enactment of the Uniform Commercial Code. The original drafting process was essentially a domestic one, and the presence of foreign (much less international) influences was minimal.¹¹ This lack of influence is understandable given the times: the emphasis was on unification of the law within the domestic United States (which given the diversity then existent between the states was itself a challenge); the transactions under consideration were domestic; and no distinct, ascertainable body or bodies of international law or internationally recognized legal principles was available for guidance.

Since the enactment of the Uniform Commercial Code, however, the dynamics have changed. First, international rules and norms of commercial practice are becoming increasingly available as the international community has effectively begun formulation of an "International Commercial Code."¹² In 1980, the United Nations

revisions of the articles on negotiable instruments, *see* U.C.C. art. 3 & 4 (1995) (revised in 1990), letters of credit, *see* U.C.C. art. 5 (1995) (revised in 1994), bulk transfers, *see* U.C.C. art. 6 (1995) (revised in 1989), and investment securities, *see* U.C.C. art. 8 (1995) (revised in 1994). Work is continuing to revise the articles on sales, leasing, and secured transactions, as well as to add an article on software contracting and information licensing. This ongoing work is described below.

11. It is true that portions of the Uniform Commercial Code can be traced to both the common law of England and the various codifications of commercial law formulated in England in the latter half of the nineteenth century, such as the Sale of Goods Act; to the extent United States law as a whole traces its heritage to British roots, however, this influence is not "foreign" in the sense of influence by a different legal regime. Karl Llewellyn, the architect of the Uniform Commercial Code, was himself a product of a different legal system, German civil law; while European civil law was often discussed, its solutions had not kept pace with the developing world of commerce and were therefore discarded.

12. The emergence of an international Uniform Commercial Code has been both recognized and advocated in a number of circles, including the United Nations. *See* Amelia H. Boss & Patricia B. Fry, *Divergent or Parallel Tracks: International and Domestic Codification of Commercial Law*, 47 BUS. LAW. 1505, 1506 (1992) ("[A]ctivities are currently under way [sic] on the international level leading to the creation of what might be called an International Uniform Commercial Code.") In May of 1992, the United Nations Commission on International Trade Law (UNCITRAL) held a week-long Congress devoted to the current state and the future of commercial law unification. *See Outline of the Programme of the UNCITRAL Congress: Uniform Commercial Law in the 21st Century* U.N. GAOR, 25th Sess., U.N. Doc. A/CN.9/INF.1 (1992); *see also* Amelia H. Boss, *The Emerging Law of International Electronic Commerce*, 6 TEMP. INT'L & COMP. L.J. 293, 301-

Commission on International Trade Law completed the formulation of the United Nations Convention on Contracts for the International Sale of Goods.¹³ This influential document has been followed by the UNIDROIT¹⁴ Conventions on International Financial Leasing¹⁵ and International Factoring;¹⁶ an UNCITRAL Convention on International Bills of Exchange and Promissory Notes;¹⁷ an UNCITRAL Model Law on International Credit Transfers, including electronic funds transfers;¹⁸ and an UNCITRAL Convention on Independent Bank Guarantees and Letters of Credit.¹⁹ While these instruments taken together may be likened to an “international code,”²⁰ there is also the

04 (1992) [hereinafter Boss, *Emerging Law*]. Indeed, in July of 1997, the White House issued its *Framework for Global Electronic Commerce* which called for the creation of an “international commercial code for the Internet.” See The White House, *A Framework for Global Electronic Commerce*, (visited July 1, 1997) <<http://www.iitf.nist.gov/eleccomm/ecommm.htm>>.

13. See UNITED NATIONS CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS, U.N. Doc. A/CONF.97/18 (1980), reprinted in 19 I.L.M. 671 (1980) [hereinafter C.I.S.G.]. The Convention became effective January 1, 1988. As of April, 1998, fifty-one countries had become parties to the Convention on the International Sale of Goods. Information on adoptions of the Convention, along with the status of all other UNCITRAL instruments, may be found at United Nations, *Current Status of Conventions and Model Laws* (last modified Mar. 9, 1998) <<http://www.un.or.at/uncitral/status/index.htm>>.

14. For a description of UNIDROIT, see *infra* note 22.

15. Diplomatic Conference for the Adoption of the Draft UNIDROIT Conventions on International Factoring and International Financial Leasing (May 28, 1988), 27 I.L.M. 931.

16. Both UNIDROIT conventions were approved by a diplomatic conference of fifty-five nation states in 1988. See *id.* They were signed by the United States in 1990, and are being prepared for submission to the Senate for ratification.

On the specific provisions of the Convention on International Factoring, and their relationship with the Uniform Commercial Code, see Albert F. Reisman, *The Uniform Commercial Code and the Convention on International Factoring*, 22 UCC L.J. 320 (1990).

17. See UNITED NATIONS: CONVENTION ON INTERNATIONAL BILLS OF EXCHANGE AND INTERNATIONAL PROMISSORY NOTES, U.N. Doc. A/43/820 (1988), approved by U.N. General Assembly Resolution 43/165 (Dec. 1988), reprinted in 28 I.L.M. 170 (1989). The convention was signed by the United States in 1990, and is currently being prepared for submission to the Senate for ratification.

18. See UNCITRAL Model Law on International Credit Transfers, in *Report of the United Nations Commission on International Trade Law on the Work of Its Twenty-Fifth Session*, U.N. GAOR, 47th Sess., Supp. No. 17, Annex 1, U.N. Doc. A/47/17 (1992), reprinted in 32 I.L.M. 587 (1993).

19. See *Report of the United Nations Commission on International Trade Law on the Work of its Twenty-Eighth Session*, U.N. GAOR, 50th Sess., Supp. No. 17, at 92, Annex 1, U.N. Doc. A/50/17 (1995).

20. One could argue that the collection of conventions, written at different times and in different fora, without the internal consistency and dependency that characterize a coherent coordinated treatment of the law, lacks true “code” status. See generally William D. Hawkland, *Uniform Commercial “Code” Methodology*, 1962 U. ILL. L. F. 291 (arguing that a true code must be constructed systematically and that the UCC meets this test of a code); Homer Kripke, *The Principles Underlying the Drafting of the Uniform Commercial Code*, 1962 U. ILL. L. F. 321, 328 (1962) (arguing that the UCC is not a codification in the

equivalent of an "international restatement" of the law of contracts, the UNIDROIT Principles on International Commercial Contracts.²¹ Further work is underway within UNCITRAL to develop rules governing the assignments of accounts receivable,²² and another within UNIDROIT on security interests in mobile equipment,²³ as the internationalization of commercial law continues to grow.

Taken together, these international instruments provide a framework for the conduct of international commercial transactions.²⁴ In 1992, "the United Nations Commission on International Trade Law (UNCITRAL), recognizing the significant strides which have been made in the international codification of commercial law, held an unprecedented week-long Congress entitled 'Uniform Commercial Law in the 21st Century'"²⁵ devoted to the current state and the future of commercial law unification and heralding the age of the unification of international commercial law.²⁶ Later that year, the United Nations

continental sense). Nonetheless, these instruments were drafted against a backdrop that acknowledged the existence and role of the other instruments, and taken together they offer a ready source of uniform law application on a global basis. For an attempt to trace the use of common terms throughout international instruments, see generally Judith Y. Gliniecki & Ceda G. Ogada, *The Legal Acceptance of Electronic Documents, Writings, Signatures, and Notices in International Transportation Conventions: A Challenge in the Age of Global Electronic Commerce*, 13 NW. J. INT'L L. & BUS. 117 (1992).

One factor that arguably detracts from the comprehensive nature of this "international code" is the lack of universal enactment; the United States, for example, has not ratified many of these instruments. This is an indication that the process of providing such an international code has yet to be completed. At the same time, arbitrators in international commercial cases increasingly draw on these instruments as sources of law, whether or not ratified by a particular state.

21. For a helpful book on the UNIDROIT Principles, see generally MICHAEL JOACHIM BONELL, *AN INTERNATIONAL RESTATEMENT OF CONTRACT LAW: THE UNIDROIT PRINCIPLES OF INTERNATIONAL COMMERCIAL CONTRACTS* (1994). UNIDROIT, or the International Institute for the Unification of Private Law, is an independent intergovernmental organization founded in 1926 and presently composed of fifty-six Member States. The headquarters of the Institute and its Secretariat are located in Rome. *See id.* at 5.

22. *See* REPORT OF THE WORKING GROUP ON INTERNATIONAL CONTRACT PRACTICES ON THE WORK OF ITS TWENTY-SEVENTH SESSION, U.N. Doc. A/CN.9/445 (1997).

23. *See* UNIDROIT, *International Institute for the Unification of Private Law*, (visited Apr. 18, 1998) <<http://ra.irv.vit.no/trade-law/organizations/unidroit.html>>.

24. There are, of course, other instruments that contribute to the development of international commercial law, including those prepared in the context of the Organization of American States. For a discussion of one such instrument, see Harold S. Burman, *International Conflict of Laws, The 1994 Inter-American Convention on the Law Applicable to International Contracts, and Trends for the 1990s*, 28 VAND. J. OF TRANSNAT'L L. 367 (1995).

25. *See* Boss & Fry, *supra* note 12, at 1506; OUTLINE OF THE PROGRAMME OF THE UNCITRAL CONGRESS: UNIFORM COMMERCIAL LAW IN THE 21ST CENTURY, U.N. Doc. A/CN.9/1992.INF. 1(1992).

26. *See supra* note 12 and accompanying text.

General Assembly reaffirmed its commitment to the progressive harmonization and unification of international trade law.²⁷ Indeed, in 1997, the White House picked up the notion of a developing body of international commercial law, calling for the creation of an “International Uniform Commercial Code for the Internet.”²⁸

As these events have developed, there has been increasing awareness of the desirability and need for uniformity between domestic and international law, and continuing calls for cooperation between ongoing efforts.²⁹ Indeed, a study of the events of the past ten years documents that quest for increasing uniformity. The manner in which “uniformity” has been sought, and the degree to which it has been successful, have depended on several distinct patterns, or paradigms, of influence between the domestic and international efforts.

Consider again the early relationship between the domestic Uniform Commercial Code and international instruments. As noted, international considerations were unimportant and insignificant in the original drafting of the Code. In the drafting of the early international commercial law instruments, however, the domestic law of the nation states, including our own Uniform Commercial Code, had to be taken into account in formulating rules that could win international acceptance. Perhaps the key element here is that, when the UNCITRAL Convention on the International Sale of Goods was drafted (really the first major step in building an international commercial framework), most common law and civil law countries already possessed a relatively comprehensive legal regime governing domestic sales contracts.³⁰ The Convention required reconciling these various legal regimes and formulating provisions acceptable to countries of different legal, social, and economic systems.³¹ Similarly,

27. See *Report of the United Nations Commission on International Trade Law on the Work of its Twenty-Fourth Session*, G.A. Res. 4656, U.N. GAOR, 46th Sess., Supp. No.49, U.N. Doc. A/RES/46/56 (1992) (noting that progressive harmonization and unification of international trade law would significantly contribute to universal economic cooperation and to the well-being of all peoples).

28. The White House, *A Framework*, *supra* note 12.

29. See Boss & Fry, *supra* note 12, at 1506-07; James E. Byrne, *Fundamental Issues in the Unification and Harmonization of Letter of Credit Law*, 37 *LOY. L. REV.* 1, 1-6 (1991); Peter Winship, *Domesticating International Commercial Law: Revising U.C.C. Article 2 in Light of the United Nations Sales Convention*, 37 *LOY. L. REV.* 43, 43-45 (1991).

30. There are, of course, exceptions to that statement. There are countries, such as those emerging economies in eastern and central Europe, that even today lack comprehensive commercial law and therefore look to international instruments as a way to fill the void in their domestic law.

31. See UNCITRAL: THE UNITED NATIONS COMMISSION ON INTERNATIONAL TRADE LAW 27, 70 (2d ed. 1991); Alejandro M. Garro, *Reconciliation of Legal Traditions in the U.N. Convention on Contracts for the International Sale of Goods*, 23 *INT'L LAW.* 443, 450

significant differences between common law and civil law countries in their treatment of negotiable instruments, on critical issues such as determining when a transferee of a negotiable note takes free of defenses to payment, presented the major challenge to the drafters of the UNCITRAL Convention on Promissory Notes and Bills of Exchange: forming compromises acceptable to all countries.³² Thus, in these early international codification efforts, the main challenge facing these globalization efforts was the need to reconcile differences existing between the various civil law and common law regimes in the development of international legal rules.³³

In short, the first attempts at harmonization of domestic and international revision efforts illustrate the following paradigm: domestic laws developed independently over time subject to different legal regimes; the international codifications of commercial law that followed by necessity built upon the domestic laws of the nation states (and their differences) in the preparation of international instruments.

As the current wave of domestic law reform efforts began in the United States,³⁴ however, a new pattern of influence, a second paradigm, emerged, as domestic law reform efforts could no longer ignore the international scene. At roughly the same time as we started to revise our law of letters of credit under Article 5 of the Uniform Commercial Code,³⁵ two related international projects were getting underway. The International Chamber of Commerce began its revision of the Uniform Customs and Practices for Documentary Credits;³⁶ in addition, UNCITRAL began the drafting of uniform rules

(1989); John Honnold, *A Uniform Law for International Sales*, 107 U. PA. L. REV. 299, 299-330 (1959).

32. See John A. Spanogle, *Introductory Note to UNITED NATIONS CONVENTION ON INTERNATIONAL BILLS OF EXCHANGE AND INTERNATIONAL PROMISSORY NOTES*, U.N. Doc. A/43/820 (1988), reprinted in 28 I.L.M. 170, 176 (1989); see also John A. Spanogle, *The U.N. Convention on International Bills and Notes (CIBN): A Primer for Attorneys and International Bankers*, 1993 COM. L. ANN. 231.

33. See, e.g., Donald E. King, *Globalization Thinking*, 39 ST. LOUIS U. L.J. 865, 873 (1995) (discussing UNCITRAL Convention on International Bills of Exchange and International Promissory Notes).

34. See *supra* note 10.

35. In August 1989, as the result of a report prepared earlier by an American Bar Association Task Force, an Article 5 Drafting Committee was appointed to revise our letter of credit law. See *An Examination of U.C.C. Article 5*, 45 BUS. LAW. 1521, 1527 (1990). The finished product received final approval of the American Law Institute and the National Conference of Commissioners on Uniform State Laws in 1995, and constitutes the 1995 Official Text of the Code. In great part, the revision process was prompted by a need to bring domestic letter of credit law in line with international developments.

36. In 1993, the International Chamber of Commerce gave its final approval to its revised version of the Uniform Customs and Practices for Documentary Credits. See International Chamber of Commerce Publication 500, effective 1993 [U.C.P. 500]. This

on stand-by letters of credit and bank guarantees.³⁷ Given the growth of international trade, and the great extent to which United States entities are engaged in international letter of credit transactions, coordination of these various efforts became essential. Lack of coordination would potentially subject United States entities (as well as foreign entities) to two different legal regimes. Efforts were made by United States participants in these three processes to coordinate and harmonize the efforts and to minimize any differences, although views undoubtedly differ on the extent to which appropriate harmonization was achieved. This was one of the first times that international and domestic commercial law revisions proceeded concurrently. Because there were existing identifiable bodies of letter of credit law in the United States, in other countries, and on the international level, reflecting in part differences between domestic and international practices, the challenge was to adapt the respective legal systems to achieve harmonization, but to do so while these revision processes were underway.

A third type of synergy, or a third paradigm, can be seen in the current revisions to the sales provisions (Article 2 and its offshoots) of the Uniform Commercial Code.³⁸ These revisions have been motivated, at least in part, by the desire to coordinate the domestic sales law with international sales law.³⁹ In the drafting process, the UNCITRAL Convention on the International Sale of Goods and the UNIDROIT Principles of International Commercial Contracts are being used as resources for consideration in the treatment of problems

replaced the prior version which carried a 1983 publication date. *See* International Chamber of Commerce, Publication 400, effective 1983 [U.C.P. 400].

37. At its twenty-eighth session in May of 1995, the United Nations Commission on International Trade Law gave its final approval to the United Nations Convention on Independent Guarantees and Stand-by Letters of Credit. *See Report of the United Nations Commission on International Trade Law on the Work of its Twenty-Eighth Session*, U.N. GAOR, 50th Sess., Supp. No. 17, at 92, Annex 1, U.N. DOC. A/50/17 (1995).

38. At present, the sponsors the Code have before them a redraft of Article 2, a new project on licensing intellectual property under the title of Article 2B, and conforming revisions to Article 2A on leases. Drafts of all pending revisions of the Uniform Commercial Code may be found at Uniform Law Commissioners, *The National Conference of Commissioners on Uniform State Laws* (last modified Apr. 15, 1998) <<http://www.law.upenn.edu/bll/ulc/ulc.htm>>.

39. One of the "good reasons for revision" cited by the Permanent Editorial Board Study Committee (which was originally charged with recommending whether the sales provisions needed revision) was the existence of "competing and better solutions to sales problems" in the Convention on Contracts for the International Sale of Goods. *PEB Study Group: Uniform Commercial Code, Article 2 Executive Summary*, 46 BUS. LAW. 1869, 1871 (1991) [hereinafter *Executive Summary*].

such as the battle of the forms or the statute of frauds.⁴⁰ Thus, we see domestic commercial law revisions taking into account existing international law instruments.

A fourth paradigm is illustrated by the current work in secured financing, where currently domestic and international projects are proceeding simultaneously.⁴¹ The fundamental principles and theory of domestic United States law on secured transactions developed over many decades in separate statutory enactments eventually culminating in the adoption of current Article 9 of the Uniform Commercial Code; the present rounds of revisions refine rather than question these fundamental principles on which Article 9 is based. Internationally, however, the situation is different. While many countries have secured financing laws (that differ substantially from United States law), by and large the law in the United States is more economically advanced than that in many other countries, in that it is premised upon the need for modern commercial law to support and facilitate new methods of financing. Consequently, while the impact of United States developments on the international level should be significant,⁴² the impact of the international developments domestically will be less until other countries adopt laws more supportive of commercial financing. Indeed, the biggest challenge from the United States perspective is assuring that the legal regimes that are adopted internationally are consistent with the economic objectives of the current Article 9 and secured financing in the United States. Indeed, that was the same challenge faced in the drafting of the UNIDROIT Conventions on International Leasing and International Factoring.

In each of these paradigms (international developments building on domestic; domestic building on international; domestic and international proceeding together equally; or domestic and international law proceeding together unequally), there is a common denominator. In each substantive area, domestic law had significantly developed in the United States and abroad, so that the international efforts were not "on a clean slate." Moreover, in each case, commercial law already existed on one level (international or domestic) and was then taken

40. For a fuller discussion of the relationships between the sales revisions and international law, see Speidel, *supra* note 2, at 1650. The extent to which the final product will reflect international developments remains to be seen.

41. Revisions to Article 9 of the Code on secured transactions should receive final approval in July of 1998. Meanwhile, there are projects pending both before UNCITRAL and UNIDROIT that implicate secured financing. See *supra* notes 22-23 and accompanying text.

42. One must take into account, of course, the understandable reluctance of some countries to automatically assume that what is good for the United States is good for them.

into consideration in revisions or codifications of the law on the other level. The Convention on the International Sale of Goods drew upon and had to accommodate Article 2 of the Uniform Commercial Code; the present revisions of Article 2 must recognize the Convention; the revisions of Article 5 had to accommodate the revisions to U.C.P. 500; and so on. Thus, the focus of the synergy was more on “harmonization” of existing laws than on coordination of lawmaking efforts.

B. Electronic Commerce: The Emergence of a Fifth Paradigm

With the advent of electronic commercial practices, however, the focus shifts from harmonization to coordination, from efforts to bring disparate legal systems together to efforts to create legal systems that are unified in their approach.⁴³ There is no existing body of law governing the particulars of electronic commerce on either a domestic or international level.⁴⁴ Not only is a comprehensive legal treatment of electronic commerce lacking at the national level, either in the United States⁴⁵ or in other countries,⁴⁶ that can form the basis of an international legal scheme, but there is also no international legal scheme that can be the template or guide for domestic revision efforts. There are, of course, legal regimes that govern commercial

43. In articulating these paradigms, the focus has been on the relationships between legal systems and law reform (domestically and internationally); a different potential focus is the relationship between the evolution of commercial practices and the development of law. As will be discussed *infra*, the patterns we see emerging in the relationships between the legal structures and reform processes can in part be explained by the dynamics of the development of commercial practices.

44. Examples of the limitations of traditional law in addressing specific issues in cyberspace abound. See John T. Delacourt, *The International Impact of Internet Regulation*, 38 HARV. INT'L L. J. 207 (1997); David R. Johnson & David Post, *Law and Borders—The Rise of Law in Cyberspace*, 48 STAN. L. REV. 1367 (1996); David Post & David Johnson, *Borders, Spillovers and Complexity: Rulemaking Processes in Cyberspace and Elsewhere* (forthcoming Chicago-Kent Law Rev.); Joel R. Reidenberg, *Governing Networks and Rule-Making in Cyberspace*, 45 EMORY L.J. 911, 912 (1996).

45. See *ABA Report*, *supra* note 5, 1649, 1715-16 (describing failure of Uniform Commercial Code to accommodate electronic communications and need for comprehensive strategy to accommodate electronic communications in law reform).

46. See *The Legal Position of the Member States with Respect to Electronic Data Interchange*, TEDIS FINAL REPORT (Comm'n of the European Communities, Brussels, Belg.), Sept. 1989, at 275 (concluding after a survey of all member states that “few member states have already evinced the intention to adapt their legislation to the now firmly-established use of computers in business”); *The Legal Position of EFTA Member States with Respect to Electronic Data Interchange*, TEDIS FINAL REPORT (Comm'n of the European Communities, Brussels, Belg.), July 1991, at 91 (legislation specifically dealing with electronic data interchange extant in only one country); UNCITRAL Model Law on Electronic Commerce with Guide to Enactment ¶ 3 (1996) (noting the absence of legislation dealing with electronic commerce as a whole).

transactions generally, which may vary domestically and internationally, but none deals in a thorough way specifically with electronic commerce.

The void in existing legal systems has been confronted in one electronic commerce area with great success. Electronic funds transfers was the first area of electronic commercial practices to receive the attention of domestic and international law revisionists on a coordinated basis. Because the payments law of all jurisdictions involved the passage of a piece of paper (e.g., a promissory note, check or bill of exchange), the law was not easily adaptable to mechanized and electronic payments systems that replace the use of paper documents to move money. As a result, in the United States an effort arose to revise existing commercial law to deal with electronic funds transfers; this work built on a 1985 legal guide on wholesale wire transfers prepared by the United Nations Commission on International Trade Law. Shortly thereafter, in 1987, UNCITRAL undertook development of a law of wholesale wire transfers. Each of these projects has since culminated in new legislation (domestic and international) to deal with the impact of electronic commercial practices in the payment arena: in 1989, Article 4A of the Uniform Commercial Code governing wire transfers was promulgated;⁴⁷ in 1992, the Model Law on International Credit Transfers by the United Nations Commission on International Trade Law received approval.⁴⁸ Both efforts were writing on a comparatively clean slate: different legal practices did not have to be accommodated, although differing commercial practices did.⁴⁹ The result was "two laws [that] basically live together in harmony" despite their differences.⁵⁰

47. For a detailed explanation of the purpose of the new article and its operation, see U.C.C. art. 4A (1995) (Prefatory Note). For an excellent series of articles on Article 4A, see *Special Issue on the Uniform Commercial Code*, 45 BUS. LAW. 1389, 1389-1520 (1990).

48. See UNCITRAL Model Law on International Credit Transfers, in *Report of the United Nations Commission on International Trade Law on the Work of its Twenty-Fifth Session*, U.N. GAOR, 47th Sess., Supp. No. 17, Annex 1, U.N. DOC. A/47/17 (1992), reprinted in 32 I.L.M. 587 (1993).

49. As the drafters of Article 4A noted, "There is no comprehensive body of law that defines the rights and obligations that arise from wire transfers" and "Article 4A is intended to provide the comprehensive body of law that we do not have today." THE AMERICAN LAW INSTITUTE, *Article 4A, Funds Transfers: Preparatory Note*, in UNIFORM COMMERCIAL CODE 1990, OFFICIAL TEXT WITH COMMENTS 514, 516 (12th ed. 1990).

50. In 1994, the Permanent Editorial Board of the Uniform Commercial Code adopted its Commentary No. 13, entitled "The Place of Article 4A in a World of Electronic Funds Transfers," which details the similarities and differences between Article 4A and the Model Law. It concludes by adding the following to the Prefatory Note to Article 4A: "The Model Law and Article 4A basically live together in harmony, but to the extent there are differences, they must be recognized and, to the extent possible, avoided or adjusted by

The challenge in the broader area of electronic commerce is in many respects the same as it was for the area of electronic funds transfers. As was expressed in the keynote speech on electronic commerce at the UNCITRAL Congress on international commercial law:

As of yet, none of the developing and developed countries, common law and civil law countries, and countries of different cultural and legal heritages, have developed a comprehensive legal structure governing electronic commerce. Thus, the challenge is to take countries of divergent economic capabilities, legal heritage, telecommunications infrastructures, and needs, and bring them together to develop common analyses of, and approaches to, problems never encountered previously.⁵¹

Themes emerge in the electronic funds transfer area from both the Model Law on International Credit Transfers and Article 4A, which resonate and are of great importance in the broader field of electronic commerce. First, the design of the rules do not mandate a particular technology; although they are designed to accommodate high-speed, mechanical transactions where intervention of humans into the process may be minimal, they would apply even to the use of paper payment orders (with important, but limited, exceptions). Second, the rules are subject to contrary agreement by the parties. And last, the rules are not regulatory, but rather supportive of electronic commerce.⁵² These attributes of both laws have turned out to be the essential building blocks of rules accommodating electronic commerce as a whole.

At the same time, in the broader area of electronic commerce, there are crucial differences from the funds transfer area. Unlike the funds transfer area, where banking practices had developed along regional lines, electronic commercial practices are still developing and evolving, and doing so on a global basis; consequently, the challenge is to develop an international set of rules sufficiently flexible to support the evolution of newer commercial practices yet providing the legal certainty necessary to support electronic commerce in its current forms. Moreover, in the funds transfers area, the international and

agreement.” U.C.C. art. 4A (1995) (Prefatory Note). For excellent comparisons of the Model Law on International Credit Transfers and Article 4A, see Raj Bhala, *The Inverted Pyramid of Wire Transfer Law*, 82 KY. L.J. 347 (1993-4); Carl Felsenfeld, *The Compatibility of the UNCITRAL Model Law on International Credit Transfers with Article 4A of the UCC*, 60 FOR DHAM L. REV. 53 (1992).

51. Boss, *Emerging Law*, *supra* note 12, at 300-01.

52. The negotiation of both documents, however, did involve substantial participation by regulatory and supervisory authorities.

domestic developments did not occur simultaneously: Article 4A was completed first, recognizing modern evolving banking practices; the international banking community had an interest in assuring that the international developments did not undermine this type of newer laws supporting electronic funds transfers. Although the first paradigm appears to encompass funds transfers development (domestic developments preceding international developments), the area of electronic commerce is ripe for the emergence of a new paradigm of symbiosis.

Under this set of circumstances, with the evolution of global electronic commercial practices at a time when none of the nation states have laws tailored for electronic commerce, a coordinated effort is most desirable and feasible. As countries everywhere are struggling with the unique issues posed by electronic commercial practices, coordination can result in unified responses to the legal issues, rather than the proliferation of competing and contradictory legal schemes.⁵³ Achieving uniformity or consensus, or a coordinated approach, is easier to accomplish if states are not required to replace existing legal systems or doctrine, but are given a product to fill an existing void.

A number of identifiable factors have contributed to the symbiosis that exists between international and domestic legal developments in the area of electronic commerce. The relative state of development of law, the timing of the processes, the globalization of commerce and the evolution of new commercial practices are all contributing factors. Before opining on the probable causes of the symbiosis, however, it is important to examine the manner and extent to which such symbiosis has occurred. The next two parts of this Article examine the main efforts, internationally and domestically in the United States, to respond to the challenges of electronic commerce through law reform. In particular, they consider both the impact of United States domestic developments on the formulation of the UNCITRAL Model Law on Electronic Commerce, and in turn the impact of the Model Law on subsequent legal developments within United States commercial law. A subsequent part examines the current state of law reform internationally and in the United States, beyond the Model Law.

53. We cannot discount, however, the desire of some countries to acquire a competitive advantage through the adoption of laws that either favor their nationals or provide an incentive to attract foreign investment. In the international arena, there is always a tension between protectionism and competitiveness, on the one hand, and uniformity on the other.

III. HISTORY OF THE DRAFTING OF THE UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE

A. *The Evolution of the Model Law and the Influence of United States Developments*

The history of the UNCITRAL Model Law on Electronic Commerce dates back nearly fifteen years. In 1984, UNCITRAL considered a report of its Secretary-General on the legal aspects of automatic data processing,⁵⁴ and decided to place the subject on its programme of work as a priority item.⁵⁵ The following year, upon receipt of a report from the secretariat,⁵⁶ UNCITRAL adopted a recommendation encouraging governments to review the legal rules affecting the use of electronic technologies in commerce, but declined to undertake any project for the unification of rules in the field.⁵⁷ This recommendation was endorsed by the United Nations General Assembly.⁵⁸ UNCITRAL continued to monitor the area of electronic data interchange,⁵⁹ and in 1986 decided to undertake work in another

54. See CO-ORDINATION OF WORK: LEGAL ASPECTS OF AUTOMATIC DATA PROCESSING: REPORT OF THE SECRETARY-GENERAL, U.N. Doc. A/CN.9/254 (1984). That report identified several legal issues involving electronic communications technology: the legal value of computer records as evidence, the requirements of a writing and their application in an electronic environment, authentication of the source and veracity of electronic transmissions, general conditions applied in electronic transactions, liability for erroneous or unauthorized transmissions, and electronic transmissions of bills of lading which have traditionally been represented by a piece of paper.

55. See *Report of the United Nations Commission on International Trade Law on the Work of its Seventeenth Session*, U.N. GAOR, Supp. No. 17, at ¶ 136, U.N. Doc. A/39/17 (1984).

56. See LEGAL VALUE OF COMPUTER RECORDS: REPORT OF THE SECRETARY GENERAL, U.N. Doc. A/CN.9/265 (1985). The report concluded that the problems involved with the use of electronic data as evidence in litigation were not major, yet emphasized that the more serious obstacle to the use of electronic data transmission in international trade came from legal requirements that certain transactions be in paper form, or be "signed" by one or more of the parties. See LEGAL IMPLICATIONS OF AUTOMATIC DATA PROCESSING: REPORT OF THE SECRETARY-GENERAL at ¶ 5, 6, U.N. Doc. A/CN.9/279 (1986).

57. See *Report of the United Nations Commission on International Trade Law on the Work of its Seventeenth Session*, U.N. GAOR, Supp. No. 17, at ¶ 136, U.N. Doc. A/39/17 (1984). UNCITRAL specifically called for: (1) review of evidentiary requirements affecting the use of electronic data in litigation, (2) review of legal requirements of a "writing" for the enforceability or validity of a transaction, (3) review of "signing" or other "paper-based method[s] of authentication," and (4) legal requirements for submissions to governments to be in writing and manually signed. It further recommended that other international organizations involved in formulating international legal principles governing trade to make appropriate accommodations for electronic trade. See *id.*; LEGAL VALUE OF COMPUTER RECORDS: REPORT OF THE SECRETARY-GENERAL at ¶ 82, U.N. Doc. A/CN.9/265 (1985).

58. See G.A. Res. 40/71, ¶ 5, & 40, U.N. GAOR Supp. No. 17, at ¶ 5(b), U.N. Doc. A/40/17 (1985). The General Assembly called for action "to ensure legal security in the context of the widest possible use of automated data processing in international trade." *Id.*

area of electronic communications technology: the use of electronic funds transfers. It delegated that work to the UNCITRAL Working Group on International Payments; this work began in 1987 and was completed in 1992.⁶⁰

During these intervening five years, the use of electronic technologies in commerce increased. Various organizations (including trade groups, domestic bar associations such as the American Bar Association, and governmental entities) following the lead of the Nordic Legal Community and the International Chamber of Commerce,⁶¹ began to study the legal issues surrounding the implementation of electronic data interchange (EDI). In the United States, much of this work was initially carried out within the American Bar Association's Section on Business Law, which in 1987 created a special Electronic Messaging Services Task Force to study issues raised by changes in commercial practices brought about by technology.⁶² In 1990, the American Bar Association published the seminal work in the United States on electronic commercial practices: *The Commercial Use of Electronic Data Interchange Agreements: A Report and Model Trading Partner Agreement*.⁶³ This work was widely distributed, both domestically and internationally, and had an impact on domestic and international developments for two reasons.

59. Further reports on the legal issues involved were received by UNCITRAL in 1986 and 1987. See LEGAL IMPLICATIONS OF AUTOMATIC DATA PROCESSING: REPORT OF THE SECRETARY-GENERAL, U.N. Doc. A/CN.9/279 (1986); LEGAL IMPLICATIONS OF AUTOMATIC DATA PROCESSING: REPORT OF THE SECRETARY-GENERAL, U.N. Doc. A/CN.9/292 (1987).

60. See *supra* note 16 and accompanying text.

61. See *infra* note 63.

62. See Amelia H. Boss et al., *Scope of the Uniform Commercial Code: Advances in Technology and Survey of Computer Contracting Cases*, 44 BUS. LAW. 1671, 1672-75 (1989); Amelia H. Boss & William J. Woodward, *Scope of the Uniform Commercial Code: Survey of Computer Contracting Cases*, 43 BUS. LAW. 1513, 1520 (1988). The first product emerged in 1988. See American Bar Ass'n, *Electronic Messaging, A Report of the Ad Hoc Subcommittee on the Scope of the U.C.C. 5* (1988) (Electronic Messaging Services Task Force). The Electronic Messaging Task Force was under the auspices of the Subcommittees on Electronic Commercial Practices and on Scope of the Uniform Commercial Code, within the Commercial Code Committee of the American Bar Association's Section of Business Law; it has since grown into the Committee on Cyberspace Law. See American Bar Association, *Committee on Cyberspace Law* (visited Apr. 19, 1998) <<http://www.abanet.org/buslaw/cyber/home.html>>. The Section on Science and Technology of the American Bar Association later entered the field with an active program in the area of electronic commerce. See *infra* notes 151-153 and accompanying text.

63. This report, together with a Model Electronic Data Interchange Trading Partner Agreement, see *supra* note 4, were prepared by the Electronic Messaging Task Force discussed in the preceding footnote. In the drafting of that agreement and report, domestic developments were taken into consideration, but a conscious decision was made *not* to consult international efforts. It should be noted, however, that similar work on electronic commerce was proceeding in other countries at the same time.

First, it became both a source of information and strategies on how to accommodate electronic communications technologies in commercial practice as well as a template for the development of other model interchange agreements. Many entities in the few years following the publication of the ABA Model Agreement followed suit by developing and proposing for use model interchange agreements that could be adopted by trading partners implementing electronic data interchange,⁶⁴ recognizing that such interchange agreements accomplished many purposes: establishing technical requirements necessary for on-line communication, removing legal uncertainties from the use of electronic technologies, establishing the security procedures to be used and allocating the risk of potential loss, establishing the rules guarding access to and use of data, and setting out the terms and conditions applicable to concluded transactions.⁶⁵ Of course, model agreements other than the ABA Model Agreement also received widespread circulation internationally; the result was a gradual blending of the best features of all the products. Second, several of the key people within the Electronic Messaging Services Task Force went on to become influential contributors to the international debates.⁶⁶

64. The ABA Model Trading Partner Agreement, although influential, was by no means the first interchange agreement to be proposed. The idea of an interchange agreement was raised on the international level very early on by the Nordic Legal Community. That initial idea first resulted in the adoption by the International Chamber of Commerce (ICC) in 1987 of the Uniform Rules for Conduct for International Trade Data by Teletransmission (UNCID). The UNCID Rules are a small set of nonmandatory rules on which EDI users and suppliers of network services may base communications agreements. The theory is that the UNCID Rules may be incorporated into any agreement between parties using electronic communications technologies.

Following the publication of the UNCID Rules, numerous model interchange agreements were developed—by EDI user groups representing specific industries (such as Odette, representing the automotive industry, or the International Maritime Committee, CMI, representing the maritime industry), by electronic data interchange industry groups (such as the UK EDI Association and the EDI Council of Canada), by attorney groups (such as the American Bar Association), and by multinational organizations (such as the European Commission through its TEDIS programme). See Amelia H. Boss, *Electronic Data Interchange Agreements: Private Contracting Toward a Global Environment*, 13 NW. J. INT'L L. & BUS. 31 (1992); AMELIA H. BOSS & JEFFREY B. RITTER, *ELECTRONIC DATA INTERCHANGE AGREEMENTS: A GUIDE AND SOURCEBOOK* (Int'l Chamber of Commerce 1993).

65. See authorities cited *supra* note 64 for a discussion of these agreements.

66. Michael Baum, a member of the Task Force, went on to become the official representative of the International Chamber of Commerce to UNCITRAL on electronic commerce matters; Jeffrey B. Ritter, co-reporter for the *ABA Report*, served for several years as the official representative to UNCITRAL on behalf of the Economic Commission for Europe; the other co-reporter for the *ABA Report*, the author, served as the United States Delegate to UNCITRAL during the drafting of the Model Law.

In 1990, the ABA Model Trading Partner Agreement made its official debut on the international scene,⁶⁷ with its presentation to another United Nations group working on electronic commerce issues, the Working Party on the Facilitation of International Trade Procedures (Working Party or W.P.4),⁶⁸ focusing attention on the legal issues surrounding electronic data exchange. The reaction to the presentation was mixed. Some participants recognized the validity of the points being made, and the need for an international solution to the legal issues. At the same time, it was rightly noted that similar work was being done outside the United States as well. Subsequently, other countries submitted model interchange agreements to the Working Party,⁶⁹ culminating in the adoption a year later of a programme of work that included, as one of its items, the development of a standard interchange agreement to facilitate electronic trade on an international level.⁷⁰

67. See, e.g., LEGAL ASPECTS OF ELECTRONIC DATA INTER CHANGE, MODEL FORM OF ELECTRONIC DATA INTER CHANGE AGREEMENT, TRANSMITTED BY THE DELEGATION OF THE UNITED STATES, U.N. Doc. TRADE/WP.4/R.652 (1989). The ABA Model Agreement was frequently criticized on the grounds that it was a domestic, rather than an international agreement, focusing as it did on the peculiarities of requirements under United States law. Other interchange agreements that were developed also had a "regional" flavor: for example, the agreement developed by the Commission of the European Union contained data privacy provisions promoting the EU's position on those issues.

68. The United Nations Working Party on the Facilitation of International Trade Procedures (also known as the Working Party or W.P.4), which operates in Geneva under the auspices of the United Nations Economic Commission for Europe, is the international body responsible for the development of international standards for electronic data interchange. As the name of the Working Party indicates, W.P.4 was established to facilitate international trade procedures, and initially did so through the development of international forms for documents used in transport and shipping, and the formulation of standardized commodity descriptions. The Working Party has since shifted its primary attention to issues of electronic data interchange and is now known as CEFACT, the Center for Electronic Facilitation of Administration, Commerce and Transport.

69. See LEGAL ASPECTS OF ELECTRONIC DATA INTER CHANGE, MODEL FORM OF ELECTRONIC DATA INTER CHANGE AGREEMENT, TRANSMITTED BY THE DELEGATION OF THE UNITED KINGDOM, U.N. Doc. TRADE/WP.4/R.706 (1990); LEGAL ASPECTS OF ELECTRONIC DATA INTER CHANGE, MODEL FORM OF ELECTRONIC DATA INTER CHANGE AGREEMENT TRANSMITTED BY THE DELEGATION OF CANADA, U.N. Doc. TRADE/WP.4/R.732 (1990).

70. See LEGAL ASPECTS OF TRADE DATA INTER CHANGE, PROPOSED PROGRAMME OF WORK RELATING TO LEGAL ISSUES TRANSMITTED BY THE AD HOC TEAM ON LEGAL QUESTIONS, 4.1.3 U.N. Doc. TRADE/WP.4/R.697 (1990) [hereinafter *W.P.4 Programme of Work*]. The Model Interchange Agreement was completed in 1995. See DRAFT UN/ECE RECOMMENDATION, THE COMMERCIAL USE OF INTER CHANGE AGREEMENTS FOR ELECTRONIC DATA INTER CHANGE, U.N. Doc. TRADE/WP.4/R.1133 (1995). Indeed, in 1991, two new legal rapporteurs were appointed, including Jeffrey B. Ritter, a private sector advisor to the United States delegation to the Working Party and the co-reporter of the *ABA Report*. Anne Troye of the Commission of the European Communities was the second newly appointed legal rapporteur. The incumbent rapporteur was Bernard Wheble of the United Kingdom. These rapporteurs established a Legal Rapporteur Team, which included representatives of

In 1990, the UNCITRAL received a further report on electronic data interchange.⁷¹ The report discussed activities elsewhere: the TEDIS study of legal obstacles to the use of electronic data interchange within the European Communities,⁷² rules prepared under the auspices of the International Chamber of Commerce,⁷³ and the preparation of model it included a detailed discussion of the American Bar Association's study of electronic data interchange and their model trading partner agreement.⁷⁴ The report recommended a further study of developments in other organizations, as well as an analysis of communications agreements in many countries;⁷⁵ "existing and proposed model communication agreements with a view to recommending whether a model agreement should be available for world-wide use and, if so, whether the Commission should undertake its preparation."⁷⁶ At its twenty-third session, held in June 1990, UNCITRAL requested its secretariat to continue its examination of the legal issues related to the formation of contracts by electronic means, and to prepare for the 1991 session a report analyzing existing and proposed model communications agreements and recommending whether UNCITRAL should undertake the preparation of a model agreement for international use.

seventy participating nations, international organizations, and nongovernmental organizations. One member of the legal rapporteur team was Renana Sorieul, a member of the UNCITRAL Secretariat and a key person behind the development of the UNCITRAL Model Law.

71. See ELECTRONIC DATA INTERCHANGE, PRELIMINARY STUDY OF LEGAL ISSUES RELATED TO THE FORMATION OF CONTRACTS BY ELECTRONIC MEANS: REPORT OF THE SECRETARY-GENERAL, U.N. Doc. A/CN.9/333 (1990) [hereinafter UNCITRAL 1990 EDI Report]. The report was in response to a request from the Commission which noted that there was no refined legal structure governing the legal enforceability and viability of electronic transactions, and that harmonization in the area could help reduce legal uncertainties. See *id.* at ¶ 46 & 47. It was decided at the twenty-second session in 1989 that the preliminary report would be submitted by the Secretariat to the twenty-third session of the Commission. See 44 U.N. GAOR, Supp. No. 17, at ¶ 289, U.N. Doc. A/44/17 (1989).

72. See *Official Journal of the European Communities*, L285, Oct. 8, 1987.

73. See INTERNATIONAL CHAMBER OF COMMERCE, UNCID—UNIFORM RULES OF CONDUCT FOR INTERCHANGE OF TRADE DATA BY TELETRANSMISSION, ICC Pub. No. 452 (1987).

74. See *ABA Report*, *supra* note 5.

75. The report cited efforts to develop model trading partner agreements in the United Kingdom by the EDI Association of the United Kingdom (UK-EDIA); in the United States by the American Bar Association (see the discussion of the ABA Model Agreement *infra*); within the Commission of the European Communities; and within the maritime community (the "Rules for the Electronic Transfer of Rights to Goods in Transit," prepared by the Comité Maritime International (CMI) (1990)). See UNCITRAL 1990 EDI Report, *supra* note 71, at ¶ 87, 42-47, 89.

76. UNCITRAL 1990 EDI Report, *supra* note 71, at ¶ 90.

Ultimately, this original proposal for the preparation of a model interchange agreement was abandoned by UNCITRAL for several reasons. First, other entities, including W.P.4 and the European Commission, were already working on international model interchange agreements; work by UNCITRAL on yet another interchange agreement would risk duplication and possible competition between these various international venues.⁷⁷ Second, the inability of interchange agreements to remove all legal barriers to the conduct of global electronic commerce, recognized by both the supporters as well as opponents of their use, underscored the need for the establishment of a predictable and stable legal environment for the conduct of electronic trade. Last but not least, there was the recognition that although other international fora such as W.P.4 might competently develop a model interchange agreement, UNCITRAL was uniquely situated to undertake the formulation of positive legal rules (either in convention form or model law form) to assist countries in addressing the needs of electronic commerce in a harmonized manner, thereby eliminating barriers to international trade.⁷⁸

In 1992, UNCITRAL renamed the "Working Group on Electronic Data Interchange" and charged it with the preparation of legal rules on the subject.⁷⁹ The Working Group initially limited its discussions to electronic data exchange, but eventually proposed rules dealing more generally with electronic commerce. Upon completion of the deliberations of the Working Group, UNCITRAL considered the Model Law at its annual meetings in 1995 and 1996, giving its final approval to the Model Law on Electronic Commerce on June 14, 1996. The Model Law was in turn adopted by the United Nations General Assembly in December of 1996.⁸⁰

77. There were, of course, minor political dynamics occurring on the sidelines. For example, there were concerns about the possible domination of the work within the Working Party by the European Union, or by developed (as opposed to developing) countries, compared to the broader representation within UNCITRAL.

78. See, e.g., REPORT OF THE WORKING GROUP ON INTERNATIONAL PAYMENTS ON THE WORK OF ITS TWENTY-FOURTH SESSION, ¶ 27, U.N. Doc. A/CN.9/360, (1992).

79. The Working Group on International Payments, which had been responsible for the Model Law on International Funds Transfers, was renamed the Working Group on Electronic Data Interchange in 1992. See *Report of the United Nations Commission on International Trade Law on the work of its Twenty-Eighth Session*, U.N. GAOR, 50th Sess., Supp. No. 17, at ¶ 203, U.N. Doc. A/50/17 (1995).

80. See *supra* note 4 and accompanying text.

B. Choice of a Model Law by UNCITRAL

The choice of a “model law” for treatment of electronic commerce issues is noteworthy. Over 100 years ago, the National Conference of Commissioners on Uniform State Laws was created with the mission of drafting legislation for adoption by all fifty states, thus achieving uniformity across the country. Before that, each state enacted its own sets of laws contributing to a national patchwork of inconsistencies and confusion. Of all the model acts that the Conference has prepared over the years, by far the best known is the Uniform Commercial Code, which has been enacted, with minor modifications, by all fifty states. Like the National Conference, the goal of UNCITRAL is to promote harmonization of the law between nations through the preparation of legal instruments for international use, thereby reducing barriers to trade. Both bodies consist of official representatives of their governments,⁸¹ who participate in a consensus-building process to harmonize or unify the laws of their constituencies. In preparing a “model law” for enactment by countries as part of their domestic law, UNCITRAL is in effect operating like the National Conference, but on an international (rather than national) level.

The National Conference distinguishes between uniform acts, which it expects all states to enact without change, and model acts, where the principles are more important than the text and modest changes by enacting states are anticipated. The Uniform Commercial Code is a uniform act. On the international level, there are also different forms of instruments that UNCITRAL could adopt. The first is a convention or treaty: a country, upon becoming a party to the convention or treaty, would become bound without necessarily having to change its domestic laws. A second form is that of a model law, uniform legal rules designed to serve as models for legislation by States. Other techniques to promote harmonization of international trade law include model treaty provisions, uniform rules for parties to adopt, and legal guides. The original charge to the UNCITRAL Working Group, the preparation of “legal rules,” was flexible enough to allow the Working Group to use whichever form was deemed appropriate. Indeed, up until the time its work was finally completed, UNCITRAL was still contemplating whether it would produce only a set of model rules, rather than a more coherent and principled text of a

81. In the case of the National Conference, these representatives are commissioners appointed by their states. In the case of UNCITRAL, they are delegates chosen by their countries. In either case, the representatives may be government employees or private sector members.

uniform law. Given the novelty of electronic commerce issues, the differences between the existing legal frameworks of the nation states, and the minimalist rules that it finally articulated, however, UNCITRAL ultimately did not venture to create a text that would bind the hands of the enacting state, choosing instead a model law approach.⁸²

The Model Law is intended to provide essential procedures and principles for facilitating the use of modern techniques for recording and communicating information in various types of circumstances. However, it is a "framework" law that does not itself set forth all the rules and regulations that may be necessary to implement those techniques in an enacting State.⁸³

States considering the Model Law have the option of either enacting the Model Law as a single statute or incorporating the Model Law's various provisions into specific parts of the country's domestic law. Indeed, as will be seen, it appears as if the latter tactic is already being implemented in some countries. Within the United States, efforts to accommodate electronic commerce within the Uniform Commercial Code, as demonstrated by the preparation of a new Article 2B to address transfers of software and licensing of information (much of which is done electronically), have been influenced in part by the new Model Law, and provisions of the Model Law have been adapted into this new licensing legislation. The Model Law has similarly influenced the ongoing drafting of a new Uniform Electronic Transactions Act, along with proposed legislation in many individual states.⁸⁴ In neighboring Canada, terms of the Model Law while still in draft were used as the basis for regulations permitting electronic filing of speeding tickets issued in a photoradar system.⁸⁵ More recently, amendments to the British Columbia Offence Act echo articles 6 through 8 of the Model Law.⁸⁶ The Uniform Law Conference of Canada has a project underway much like the Uniform Electronic Transactions Act being formulated within the United States.⁸⁷ Farther

82. The consensus that has arisen on the correctness of the Model Law's principles has led some countries to propose more recently that its terms be turned into a convention, to increase the level of international harmony. So we see that the field remains in evolution.

83. UNCITRAL Model Law on Electronic Commerce with Guide to Enactment, ¶ 13 (1996) [hereinafter UNCITRAL Guide].

84. See *infra* notes 121-151, 166-169 and accompanying text.

85. See John D. Gregory, *Electronic Documents in Ontario's Photoradar System*, 6 J. MOTOR VEHICLE L. 277, 281 (1995).

86. See R.S.B.C. 1997 c. 28 § 13.

87. See *Proceedings of the Uniform Law Conference of Canada, 1997*, Appendix B. Symbiosis is at work here as well. Members of the Uniform Law Conference of Canada have been attending the UETA meetings, and participants in the UETA process, including its

away, an Electronic Commerce Expert Group in Australia has issued a report to the Attorney General recommending the adoption of legislation premised upon issues similar to those identified in the UNCITRAL Model Law on Electronic Commerce,⁸⁸ and there are plans in Colombia as well to implement provisions of the Model Law. On June 29, 1998, the country of Singapore became the first country to enact the Model Law in its passage of its Electronic Transactions Act;⁸⁹ additionally, however, the legislation borrows liberally as well from other United States precedent.⁹⁰

The Model Law will undoubtedly have an impact far exceeding the number of specific adoptions it attains. The Model Law is the first legal instrument in statutory form attempting to accommodate and support electronic commerce, although, as noted above, products such as the ABA Model Agreement and other model agreements provided the foundation for such an instrument by identifying and discussing the legal issues. Articulation of the legal issues by a body of the stature of the United Nations Commission on International Trade Law will perform the important function of educating people about some of the legal ramifications of the use of electronic technologies. Second, apart from the pure educational value, the Model Law serves as a framework for countries who wish to draft their own law on electronic commerce, rather than adopt in full the work of the United Nations. In some countries, such as Sweden, the Model Law may be used as a guide for reviewing existing legislation to determine whether it satisfies the principles laid out in the Model Law without further changes. Third, even in the absence of positive domestic law adopting the provisions of the Model Law, it is possible that when disputes arise in the international context and are referred to a decisionmaker, that decisionmaker could treat the Model Law as authoritative (even if not

chair Professor Fry and the author, participate in the Canadian Uniform Law Conference's discussions. A former president of the Uniform Law Conference, and the force behind its work in the field of electronic commerce, John D. Gregory, also serves as member of the Canadian delegation to UNCITRAL in the deliberations on digital signatures.

88. See Commonwealth of Australia, *Electronic Commerce: Building the Legal Framework*, (visited March 31, 1998), <<http://www.law.gov.au/aghomes/advisory/eceg/ecegreport.html>>. The chair of the Expert Group, Ms. Jenny Clift, of the Information and Security Law Division of the Attorney General's Department, served as the Australian delegate to UNCITRAL during the drafting of the Model Law.

89. Singapore Electronic Transactions Act 1998, passed June 29, 1998. A copy of the bill in first reading form may be downloaded from at Electronic Commerce Hotbed (last visited July 9, 1998) <<http://www.ech.ncb.gov.sg/view/ech/ETBbill.zip>>.

90. A Comparative Table of Provisions accompanying the bill reveals that many of its provisions are drawn from the Illinois Electronic Commerce and Security Act and the Utah Digital Signature Act. See *supra* notes 154, 166-169 and accompanying text.

binding) in the application of the relevant domestic legal principles. Thus, the Model Law may be viewed as the first step towards the evolution of a coherent body of statutory law governing electronic commerce.

IV. THE INFLUENCE OF THE UNCITRAL MODEL LAW ON UNITED STATES COMMERCIAL LAW

A. *Uniform Commercial Code Revision Efforts*

In 1988, a study group commissioned by the Permanent Editorial Board of the Uniform Commercial Code to examine the sale of goods provisions of Article 2 of the Code concluded that revision of the article was appropriate and timely in light of technology-driven changes in commercial practices.⁹¹ During the same time period, proposals were made to accommodate the growing area of software contracting in statutory form, either within the Uniform Commercial Code or elsewhere.⁹² These two technology-driven efforts were combined early in the Article 2 revision process (through a “hub-and-spoke” approach that represented a miniature exercise in coordination of differing bodies of law), as the Article 2 Drafting Committee dealt with issues involving software contracting and electronic commerce in addition to pure sales issues. In 1995, in response to requests from industry to separate the licensing from the sales issues, a separate drafting committee was formed to promulgate a new Article 2B of the Code to deal with software contracting and information licensing. This new Article 2B on licensing was to parallel the provisions of Article 2 on sales. Moreover, because of its technology focus, the Article 2B Committee was charged with the primary responsibility of devising electronic contracting provisions (and electronic commerce provisions generally) which would become the template for comparable provisions in Article 2 and elsewhere in the Code.⁹³

91. See *Executive Summary*, *supra* note 39, at 1871; see Boss, *Developments*, *supra* note 5, at 1806, 1811-16, 1823.

92. For the history of the efforts to codify the law of software contracting, see Boss, *Developments*, *supra* note 5, at 1811. The original study that ultimately led to the establishment of a drafting committee on software contracting and information licensing and the formulation of Article 2B came out of the same subcommittee from which the *ABA Report* on electronic data interchange emerged, the Subcommittee on Scope of the Uniform Commercial Code. See *ABA Report*, *supra* note 5. Raymond Nimmer, who authored the original report for that subcommittee, eventually became the reporter for the Article 2B Drafting Committee.

93. As the work on Article 2 and Article 2B progressed, work was undertaken to make conforming amendments to Article 2A on leasing, and an Article 1 Drafting Committee

Although the Article 2B Drafting Committee did not have its first meeting until January of 1996, it is anticipated that the draft will be completed and presented for enactment by the states by late 1999.

Initially, Article 2B was guarded in its approach to electronic contracting issues. Thus, the February 1996 draft dealt with the electronic contracting in a minimalist way, most of it by definition. Article 2B adopted the use of the term “record” in place of the traditional reference to a “writing;”⁹⁴ it redefined the word “signed” to clarify that an electronic record might be “signed” by the use of any symbol or action adopted with a present intent to authenticate the writing;⁹⁵ it redefined “conspicuous” in the context of an electronic environment to accommodate machine-readable messages;⁹⁶ and it included a definition, drawn from the UNCITRAL Model Law in its draft form, of an electronic message.⁹⁷ In addition to these definitions, it provided basic treatment of electronic contract formation,⁹⁸ and

on general provisions of the Code was appointed in part to harmonize the work going on within the other drafting committees.

94. See U.C.C. § 2B-102(35) (Revised Draft Feb. 1996). That draft included the following: “‘Record’ means information that is inscribed on a tangible medium or that is stored in an electronic or other medium and is retrievable in perceivable form.” *Id.* This term was one developed over time expressly to deal with electronic records, and had been developed and refined by the American Bar Association and the National Conference of Commissioners on Uniform State Laws as a generic term for use throughout proposed legislation. It has since become standard language in products of the National Conference. See Patricia B. Fry, *X Marks the Spot: New Technologies Compel New Concepts for Commercial Law*, 26 LOY. L.A. L. REV. 607 (1993) (detailing history of the concept of “record”).

95. See *id.* § 2B-102(2). In later drafts, there is no redefinition of the term “sign”; rather, a new term “authenticate” is used and defined to include the use of any symbol or sound, or the use of encryption, with intent to identify the party, adopt a record or term, or attest to the integrity of a record. See U.C.C. § 2B-102(a)(3) (Revised Draft July 1998).

96. See U.C.C. § 2B-102(8) (Revised Draft Feb. 1996). That draft states:

Conspicuous . . . means so displayed or presented that a reasonable person against whom it is to operate would likely have noticed it or, in the case of an electronic message intended to evoke a response without the need for review by an individual, in a form that would enable the recipient or the recipient’s computer to take it into account or react to it without review of the message by an individual.

Id. The Uniform Commercial Code, unlike statutes in other countries, uses the requirement of conspicuousness as a means to assure that a party assenting to a term is or should be aware of the conspicuous term.

97. See *id.* § 2B-102(16) (“‘Electronic Message’ means a record generated or communicated by electronic, optical or other analogous means for transmission from one information system to another. The term includes electronic data interchange.”) The reporter’s notes to this section acknowledged that the source of the definition was the pending UNCITRAL model law.

98. See *id.* § 2B-205(b). That draft provided that a contract might be formed despite the absence of review by any individual of the initial message or response; and that electronic messages are effective upon receipt. Compare Model Law Article 11, giving electronic messages validity in the context of contract formation. The Guide to Enactment points out

included provisions accommodating electronic performance and termination,⁹⁹ and regulation of performance.¹⁰⁰ In addition, the February 1996 draft included a provision on intermediaries in electronic messages, imposing liability on the person who chooses an intermediary for losses arising from that intermediary's error or omissions to the extent those errors or omissions caused reasonable reliance on the part of another party.¹⁰¹

The contribution of the UNCITRAL Model Law on Electronic Commerce to the provisions of Article 2B were evident from the start. For example, its new definition of "signed"¹⁰² can clearly be traced to the Model Law. Similarly, the definition of electronic message initially tracked that of a data message in the Model Law¹⁰³ as did the draft's treatment of risk of error in message transmission.¹⁰⁴ A new term, "information processing system," was introduced which again parallels that in the Model Law.¹⁰⁵ In the September 1996 draft, two new provisions were introduced that had their genesis in the Model Law. The first provision on record retention was drawn from article 10 of the Model Law, providing that records may be retained in an electronic form so long as they are capable of subsequent reference

that this article was intended to address the uncertainties arising when computers generated messages without human intervention. See UNCITRAL Guide, *supra* note 83, at ¶ 76. Efforts, however, to adopt a receipt rule for the effectiveness of electronic messages were unsuccessful in the Model Law discussions.

99. See U.C.C. § 2B-631 (Revised Draft Feb. 1996). This provision is without a Model Law counterpart.

100. See *id.* § 2B-323. This provision is without a Model Law counterpart.

101. See *id.* § 2B-322(a). The Reporter's note to this section recognized the UNCITRAL Draft Model Law on EDI as its source.

102. "Signed" is explained thus:

In the case of an electronic record, the record is signed as a matter of law if a method of authentication identifying the party and that party's approval of the information contained therein is used and that method (i) has been agreed on between the parties or (ii) was as reliable as appropriate for the purpose for which the record was generated or communicated in light of all the circumstances.

U.C.C. §§ 2B-102(38) (Revised Draft Dec. 1995).

103. The Reporter's Note to UCC § 2B-102(16) (Revised Draft Feb. 1996) acknowledges that the source of the definition was the pending UNCITRAL Model Law. Later, adjustments were made to the definition to assure better integration with the other defined terms and provisions of the draft.

104. Under the proposed provision, the sender of an electronic message was bound by its contents as received (thus taking the risk of errors in transmission) "unless the party receiving the message should have discovered the error by the exercise of reasonable care or the receiving party failed to employ an authentication system agreed to by the parties." U.C.C. § 2B-322(b) (Revised Draft Feb. 1996). The reporter's notes for this section recognize, as the "uniform law source" for the provision, the draft UNCITRAL Model Law on EDI. See *id.*

105. Compare U.C.C. § 2B-102(a)(25) (Revised Draft July 1998) with UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 2(f).

and represent the information with reasonable accuracy.¹⁰⁶ A second section on acknowledgment of electronic messages was added with the caveat that it was to be developed “in light of model EDI law provisions and commercial practice[s].”¹⁰⁷ At its November 1996 meeting, the Drafting Committee voted to delete the record retention provisions as not essential to Article 2B; the acknowledgment provision, however, survived a vote to delete.¹⁰⁸

Of the substantive provisions directly traceable to the Model Law, the most important is undoubtedly the provision on legal recognition of electronic records and authentications: A record or authentication may not be denied legal effect, validity, or enforceability solely on the ground that is in electronic form.¹⁰⁹

Although the reporter’s note to this section identifies its derivation as “digital signature legislation and electronic signature law in several states,”¹¹⁰ the language in that state legislation is drawn from the Model Law, and the language is virtually identical. This one provision states the fundamental principle of electronic commerce, that electronic messages should not be discriminated against.¹¹¹

The other important and controversial issue on which Article 2B drew heavily on the draft UNCITRAL Model Law was its provisions on attribution of electronic messages. The attribution provisions of both Article 2B and the Model Law deal with when a person who has purportedly sent a message is bound by that message. Although the reporter’s notes to this section originally stated that it was based on “current drafts of pending proposals dealing with similar problems involving EDI transactions in an international environment. See UNCITRAL Draft Model Law on EDI (1995),”¹¹² those proposals were in turn based on Article 5 of the UNCITRAL Model Law on International Credit Funds Transfers, which in turn drew heavily from Article 4A’s attribution sections.¹¹³ In turn, all of these provisions

106. See U.C.C. § 2B-322 (Revised Draft Sept. 1996); UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 10 (1996).

107. Compare UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 14 with U.C.C. § 2B-323 (Revised Draft Sept. 1996).

108. See U.C.C. § 2B-120 (Revised Draft July 1998). Both of these provisions are, however, in the Uniform Electronic Transactions Act, where they may be more justified than in the narrower context of Article 2B.

109. See U.C.C. § 2B-113 (Revised Draft July 1998). Compare *id.* with UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 5.

110. U.C.C. § 2B-113 (Revised Draft July 1988).

111. See UNCITRAL Guide, *supra* note 83, ¶ 45.

112. U.C.C. § 2B-607, Reporter’s Note (Revised Draft Dec. 1995).

113. U.C.C. § 4A-202, Reporter’s Note (Revised Draft Dec. 1995).

have influenced another key electronic commerce initiative, the Uniform Electronic Transactions Act.

With regard to this substantive provision, however, Article 2B has added many refinements to the original rule in the Model Law. A brief description of the evolution of the attribution procedures, beginning with Article 4A and tracing the evolution through the international instruments on funds transfer and electronic commerce, then back to Article 2B, shows the symbiosis which has been occurring.

Article 4A and the Model Law on International Funds Transfers provided that a purported sender of a payment order was bound (i) if it authorized the payment order or was bound to it under agency law, or (ii) if the recipient followed security procedures agreed to by the parties and accepted the payment order in good faith.¹¹⁴ Even if security procedures were followed, however, the purported sender could avoid responsibility for the message if it could prove that the message was not caused, directly or indirectly, by a person who obtained confidential information or access to transmission facilities from the purported sender, i.e., that the actual sender was an interloper.¹¹⁵

These concepts went through a subtle but significant change in the Model Law. First, the Model Law introduced the notion that a person is bound if a message is sent "by an information system programmed by, or on behalf of, the originator to operate automatically."¹¹⁶ That concept was refined in Article 2B into the notion of an "electronic agent."¹¹⁷ The "electronic agent" is emerging as an important concept to address the uncertainties surrounding whether computer responses are sufficient to bind individuals to contractual undertakings, thereby accommodating electronic commerce. Second, the Model Law on Electronic Commerce added an additional basis for the imposition of liability on a purported sender in the absence of an agreed-upon security procedure: where the message resulted from the actions of a person "whose relationship with the originator (or its agent) enabled that person to gain access to a method used by the originator to identify data messages as its own."¹¹⁸

114. See U.C.C. § 4A-202 (1996); UNCITRAL MODEL LAW ON INTERNATIONAL FUNDS TRANSFERS art. 5.

115. See U.C.C. § 4A-203 (1996); UNCITRAL MODEL LAW ON INTERNATIONAL CREDIT TRANSFERS art. 5.

116. UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 13(2)(b).

117. See U.C.C. § 2B-102(a)(19) (Revised Draft July 1998).

118. UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 13 (3)(b) (1996).

This potentially expands the liability of a purported sender in two ways. If an agreed security procedure was in place, but the message could clearly be shown to have originated from a hacker who had no connection to the purported sender, the purported sender would escape liability under the funds transfers law, but would still be liable under the Model Law. Moreover, if no agreed security procedure were in place, a purported sender would never be liable for a message, even if the message could clearly be shown to have originated from someone with a close relationship with the purported sender; under the Model Law, however, such a purported sender would be bound.¹¹⁹ In essence, the Model Law took what had been an exception to liability in prior texts and turned it into an affirmative imposition of liability, essentially on the ground that the message was the result of the negligence of the purported sender.¹²⁰

Despite the official observation that the new attribution provision of the Model Law was based on negligence principles, it is clear that the Model Law did not require any element of negligence; all that was necessary was a showing that the person who sent the message obtained the ability to do directly or indirectly from the purported sender. As a result, early drafts of Article 2B began to tinker with this attribution rule.¹²¹ Gradually, the original provision of the Model Law was modified to include two new elements. The first requirement for establishing liability remained the same: the message must have resulted from acts of a person who obtained from a source controlled by the alleged sender access numbers or codes.¹²² In addition, however, it must be established that the purported sender had failed to exercise reasonable care, that such failure to use reasonable care enabled that access to occur, and that the recipient reasonably relied upon the message believing that it came from the purported sender.¹²³ Moreover, in a recognition that the theory being used was not simple

119. The purported sender could avoid liability under the Model Law only by showing that the addressee had received notice of the unauthorized message in time to act, or knew or had reason to know it was unauthorized. *See id.* art. 13(4).

120. *See* UNCITRAL Guide, *supra* note 83, ¶ 87.

121. The February 1996 draft contained three alternatives. In the first alternative, a person is only bound by an unauthorized message sent by someone who obtained access to identifying codes or the like from a source controlled by the alleged sender, the alleged sender's failure to exercise reasonable care enabled the access to occur, and the recipient reasonably relied to its detriment on the appearances thus created. In the second alternative, the purported sender did not adequately control its relationship with the actual sender to prevent reliance on a false message. The third option was not to have a rule on this point at all. *See* U.C.C. § 2B-114(3) (Revised Draft Feb. 1996).

122. *See* U.C.C. § 2B-116(c)(3) (Revised Draft Mar. 1998).

123. *See id.* § 2B-116(c)(1)-(2).

negligence, but more in the nature of reliance-based estoppel, the purported sender is not *bound by* the message in a contractual sense, but is liable for reliance losses.¹²⁴

This concept of negligence took root in later discussions within UNCITRAL upon taking up the new area of electronic and digital signatures, where it was proposed that a purported sender be bound by messages containing its digital signature absent proof that the use was unauthorized and could not have been avoided by the exercise of reasonable care. An alternative was proposed attributing an electronic signature to a person, whether or not authorized, if the negligence of that person enabled the use to occur, and the recipient relied to its detriment on the source of the message.¹²⁵

At some point, however, there was a realization within the Article 2B process that the concept of negligence was being stretched too far as a basis for imposition of liability absent some existing relationship or agreement by the parties. In its latest formulation, there is a presumption that the message is that of the purported sender only if a commercially reasonable attribution procedure is used,¹²⁶ which in turn requires a procedure "established by law, regulation, or agreement, or otherwise adopted by the parties."¹²⁷ A person may rebut the presumption of attribution, but if it does so, it may still be held liable if its failure to use reasonable care allowed the unauthorized use to occur.¹²⁸

The attribution provisions, then, are a wonderful illustration of symbiosis at work: a provision that began in our domestic law was adopted in an international instrument, modified in a second international instrument, picked up again and further refined in our domestic law. The process of refinement may not, however, be complete. Article 2B, for example, although approaching completion, is not yet finished; its provisions may still undergo refinement leading to further changes from or improvements in those provisions based on the Model Law. Moreover, as UNCITRAL and the domestic law

124. An illustration demonstrates the difference. Assume that the fraudulent message is an order for a specially manufactured item, at a cost of \$1,000. The recipient begins manufacture of the item, and when it has invested \$50 in beginning performance, the fraud is discovered. The purported sender is not bound by the message (and thereby responsible for the entire \$1,000 order), but is liable for the \$50 already invested as reliance damages.

125. See *Draft Uniform Rules on Electronic Signatures, Note by the Secretariat*, A/CN.9/WG.IV/WP.73 (Dec. 1997), art. 3 and ¶ 36; *Draft Uniform Rules on Electronic Signatures, Note by the Secretariat*, A/CN.9/WG.IV/WP.76 (May 1997), art. 4, var. B.

126. U.C.C. § 2B-116(a)(2) (Revised Draft July 1998).

127. U.C.C. § 2B-102(a)(2) (Revised Draft July 1998).

128. U.C.C. § 2B-116(c) (Revised Draft July 1998).

reform process turn their attention to electronic and digital signatures, the controversies swirling around attribution issues and the symbiosis continue.

B. The Uniform Electronic Transactions Act

In 1996, recognizing that the contracting issues raised by electronic commerce were far broader than those covered by the Code, the National Conference of Commissioners on Uniform State Laws established a Drafting Committee on Electronic Communications in Contractual Transactions, later renamed the Drafting Committee on the Uniform Electronic Transactions Act (UETA).¹²⁹ The charge to that committee was “to draft such revisions to general contract law as are necessary or desirable to support transaction processes utilizing existing and future electronic or computerized technologies.”¹³⁰

The project was in part a response to submissions from groups within the American Bar Association to the National Conference asserting the need for uniform laws for electronic commerce. There were several factors that propelled the creation of such a committee, including recognition that electronic contracting provisions were needed for transactions other than those covered by Article 2B of the Uniform Commercial Code, the provisions needed were more than what was contemplated by Article 2B,¹³¹ and because a number of

129. The drafts of the Uniform Electronic Transactions Act, along with drafts of all projects of the National Conference of Commissioners on Uniform State Laws, including the revisions of Articles 2 and 2B, may be found at the Conference’s official web site repository at the University of Pennsylvania, <<http://www.law.upenn.edu/bl/ulc/ulc.htm>>. There are currently two web sites devoted to discussions of the ETA. One is the ETA Forum—A Public Forum on the Proposed Uniform Electronic Transactions Act, which can be found at <<http://www.webcom.com/legaled/ETAForum>>. The second is a joint web site cosponsored by the American Bar Association Section of Business Law and the ABA Section of Science and Technology, Electronic Transactions Act, NCCUSL Discussion Site and Reference Materials <<http://www.abanet.org/nccusl/home.html>>.

130. National Conference of Commissioners on Uniform State Laws, Drafting Committee for Electronic Communications in Contractual Transactions, *Memorandum to Scope and Program Committee* (Jan. 3, 1997) (as approved by the Scope and Program Committee and the Executive Committee of the Conference). The chair of the Drafting Committee is Professor Patricia B. Fry of the University of North Dakota Law School. The reporter is Professor D. Benjamin Beard of the University of Idaho College of Law. Both individuals have had substantial involvement with the United States activity contributing to the UNCITRAL Model Law, and Professor Fry also serves as a member of the Article 2B Drafting Committee.

131. The work undertaken by the Article 2B Drafting Committee, codification of the law of software contracting and information licensing, was so ambitious that the Drafting Committee realistically had relatively little time to focus specifically on the electronic contracting provisions; moreover, the focus on licensing brought to the table a large constituency not interested in the electronic contracting issues.

state initiatives in the area of electronic and digital signatures were proceeding in disharmony and undermining uniformity. The new drafting committee began working on these issues at roughly the same time that UNCITRAL was specifically addressing digital signatures.

In April 1997, the reporter for the UETA circulated a memorandum outlining the preliminary issues confronting the committee,¹³² along with selected model provisions drawn from other pieces of legislation. These first model provisions were drawn to a great extent from the UNCITRAL Model Law on Electronic Commerce¹³³ and were continued in the subsequent drafts of August 15, 1997,¹³⁴ November 25, 1997,¹³⁵ and March 25, 1998.

An initial issue that needed to be confronted was the scope of the proposed new act. The April 1997 memorandum noted that, while draft legislation in several states covered all writings and signatures, in effect the charge given to the drafting committee was to cover the use of electronic messages in the contracting process.¹³⁶ Recognizing the limitations of that charge, the reporter's memorandum cited with approval the approach to scope contained in the UNCITRAL Model Law. The Model Law covers "any kind of information in the form of a data message [a record] used in the context of commercial activities."¹³⁷ The coverage of "commercial" as opposed to

132. Reporter's Memorandum dated April 1997 from Professor Benjamin Beard to the Uniform Electronic Communications in Contractual Transactions Drafting Committee [hereinafter Apr. 1997 Memorandum] <<http://www.law.upenn.edu/bll/ulc/uecicta/ecomemo.htm>>.

133. According to the accompanying memorandum from the UECIC Reporter dated April 10, 1997, the provisions were

drawn principally from the following sources: 1) The United Nations Commission on International Trade Law, Model Law on Electronic Commerce; 2) the Illinois Electronic Writings and Signature Act, November 4, 1996 Draft; 3) The Oklahoma Bankers Association Technology Committee, Digital Writing and Signature Statute, Second Discussion Draft, June 17, 1996; 4) Uniform Commercial Code Article 2B—Licenses, January 20, 1997 Draft; and 5) The Uniform Commercial Code Official Text—1995.

Id.

134. See Uniform Electronic Transactions Act (Revised Draft Aug. 15, 1997) [hereinafter UETA (Revised Draft Aug. 1997)].

135. See Uniform Electronic Transactions Act (Revised Draft Nov. 25, 1997) [hereinafter UETA (Revised Draft Nov. 1997)].

136. Indeed, the UETA Drafting Committee's memorandum of January 3, 1997 to the Scope and Program Committee of the National Conference of Commissioners on Uniform State Laws, which was later approved and formed the basis for the charge to the new drafting committee, stated that the "fundamental idea of this project is to draft such revisions *to general contract law* as are necessary or desirable to support transaction processes utilizing existing and future electronic or computerized technologies."

137. Apr. 1997 Memorandum, *supra* note 132. Interestingly, the reporter's memorandum quoted two provisions, one from the Oklahoma proposed draft (dealing with

“contractual” activities gives a broader scope to the Model Law, but stops short of covering documents used for regulatory or administrative purposes.¹³⁸ The August 15, 1997 and November 15, 1997 drafts adopted this intermediate approach exemplified in the UNCITRAL Model Law, restricting the scope of the UETA to “records generated, stored, processed, communicated, or used for any purpose in any commercial . . . transaction.”¹³⁹ At its January 1998 meeting, the drafting committee voted to maintain this approach, while at the same time moving the reference to “commercial transactions” to a comment.

Part 2 of the UETA as contained in the April 1997 and August 1997 drafts (on electronic records and signatures generally)¹⁴⁰ borrowed heavily from the UNCITRAL Model Law, and in particular Chapter 2 of the Model Law, although the ancestry of some of these provisions was not initially acknowledged.¹⁴¹ The first section in that part on the legal validity of electronic records tracks virtually verbatim the UNCITRAL Model Law Article 5: A record may not be denied

writing requirements) and one from the Illinois draft (dealing with legal recognition of electronic documents). *See id.* In each instance, the state provisions were drawn directly from the UNCITRAL Model Law. *See id.*

138. *See id.* The memorandum quoted the following footnote from the UNCITRAL Model Law in support of the possibility of covering more than just contractual relationships:

The term “commercial” should be given a wide interpretation so as to cover matters arising from all relationships of a commercial nature, whether contractual or not. Relationships of a commercial nature include, but are not limited to, the following transactions: any trade transaction for the supply or exchange of goods or services; distribution agreement; commercial representation or agency; factoring; leasing; construction of works; consulting; engineering; licensing; investment; financing; banking; insurance; exploitation agreement or concession; joint venture and other forms of industrial or business cooperation; carriage of goods or passengers by air, sea, rail or road.

Id.

139. UETA § 104 (Revised Draft Aug. 1997); UETA § 103 (Revised Draft Nov. 1997). The reporter’s notes to this section invite a broad interpretation to the word “commercial” along the lines set forth in the UNCITRAL Model Law. *See id.* The change in scope in the UETA was made possible by action of the Scope and Program Committee of the National Conference of Commissioners on Uniform State Laws, which in July 1997 extended the drafting committee’s charge beyond mere contracts, at the same time changing the name of the committee from the Drafting Committee for Electronic Communications in Contractual Transactions to the Drafting Committee on the Uniform Electronic Transactions Act.

140. Subsequent drafts divided these provisions into two parts: one on electronic records and one on electronic signatures. *See* Uniform Electronic Transactions Act Parts 2 & 3 (Revised Draft Mar. 1998) [hereinafter UETA (Revised Draft Mar. 1988)].

141. Although the April 1997 draft did not show the UNCITRAL parentage of the provisions in Part 2, that oversight was remedied in subsequent drafts.

legal effect, validity, or enforceability solely because it is in the form of an electronic record.¹⁴²

Thus, the UETA begins with the fundamental principle that guided the drafting of the UNCITRAL Model Law, that data messages or electronic records should not be discriminated against, and that there should be parity of treatment between electronic and paper documents.¹⁴³

Similarly, the UETA provisions on writings¹⁴⁴ and signatures¹⁴⁵ and originals,¹⁴⁶ along with the provision on admissibility of electronic

142. See UETA § 201(a) (Revised Draft Nov. 1997). The only differences from the UNCITRAL Model Law is the use of the term "record" in place of "information" and the use of "electronic record" rather than "data message": "Information shall not be denied legal effect, validity or enforceability solely on the grounds that it is in the form of a data message." UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 5 (1996). Although the April 1997 draft cited the source of UETA § 201 as the Illinois draft, the Illinois draft was in turn drawn from the UNCITRAL Model Law. This proposal has been retained in the draft to be presented to the National Conference in July of 1998. See UETA § 201(a) (Revised Draft July 1998).

143. See UNCITRAL Guide, *supra* note 83, ¶46.

144. "Where a rule of law requires information to be in writing or to be presented in writing, or provides for certain consequences if it is not, an electronic record satisfies that rule of law if the information contained therein is accessible so as to be usable for subsequent reference." Uniform Electronic Transactions Act § 202(a) [Alternative 1] (Revised Draft Apr. 1997) [hereinafter UETA (Revised Draft Apr. 1997)]. Compare UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 6. Realizing that the concept of accessibility and subsequent reference were indeed captured in the UETA's definition of a "record," later versions of this section provided simply that "an electronic record satisfies the requirement." UETA § 202(a) (Revised Draft July 1998).

145. The UETA originally stated:

Where a rule of law requires a signature or provides for certain consequences in the absence of a signature, that rule is satisfied in relation to an electronic record if: (1) a method is used to identify that person and to indicate that person's approval of the information contained in the electronic record; and (2) that method is as reliable as was appropriate for the purpose for which the electronic record was generated or communicated, in the light of all the circumstances, including any relevant agreement.

UETA § 203(a) [Alternative 2] (Revised Draft Apr. 1997). Compare UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 7 (1996). By the time of the November 25, 1997 draft, this section had gone through serious revision, in part in response to the problem of accommodating electronic and digital signatures. The July 1998 draft, however, retains the rule in a much simplified version. See UETA § 301(b) (Revised Draft July 1998).

146. The UETA originally stated:

Where a rule of law requires information to be presented or retained in its original form, or provides consequences for the information not being presented or retained in its original form, that requirement is met by an electronic record if: (1) there exists a reliable assurance as to the integrity of the information from the time when it was first generated in its final form, as an electronic record or otherwise; and (2) where it is required that information be presented, that information is capable of being displayed to the person to whom it is to be presented.

records¹⁴⁷ and record retention,¹⁴⁸ track the UNCITRAL Model Law.¹⁴⁹ The introductory language and sentence structure are a dead giveaway.¹⁵⁰ The UETA, like the UNCITRAL Model Law, recognizes that “legal requirements prescribing the use of traditional paper-based documentation constitute the main obstacle to the development of modern means of communication.”¹⁵¹

Part 4 of the UETA on electronic contracts was drawn directly from Chapter 3 of the UNCITRAL Model Law, picking up virtually verbatim its provisions on formation and validity,¹⁵² and effectiveness

UETA § 206 (Revised Draft Apr. 1997). Compare UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 8 (1996). The concept has been retained. See UETA § 205(b) (Revised Draft July 1998).

147. The UETA stated:

In any legal proceeding, nothing in the application of the rules of evidence shall apply so as to deny the admissibility of an electronic record [or electronic signature] into evidence: (1) on the sole ground that it is an electronic record [or electronic signature]; or (2) on the grounds that it is not in its original form or is not an original.

UETA § 207(a) (Revised Draft Apr. 1997); see also UETA § 404 (Revised Draft July 1998). Compare UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 9 (1996).

148. The UETA stated:

Where the law requires that certain documents, records or information be retained, that requirement is met by retaining electronic records, provided that the following conditions are satisfied: (1) the information contained therein is accessible so as to be usable for subsequent reference; and (2) the electronic record is retained in the format in which it was generated, sent or received, or in a format which can be demonstrated to represent accurately the information generated, sent or received; and (3) such information, if any, is retained as enables the identification of the original and destination of an electronic record and the date and time when it was sent or received.

UETA § 208(a) (Revised Draft Apr. 1997); see also UETA § 206 (Revised Draft July 1998). Compare UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 10 (1996).

149. Nonetheless, the notes to the UETA identify the Illinois draft as the source of these provisions. See generally UETA (Revised Draft Apr. 1997). While it may well be true that the reporter of the UETA borrowed these provisions from the Illinois draft, the Illinois draft undoubtedly borrowed these provisions originally from the UNCITRAL Model Law. It is interesting that the Illinois draft, and in turn the UETA draft, relied on earlier versions of the UNCITRAL Model Law, not the version finally approved by the United Nations General Assembly in 1996. This illustrates the extent to which the drafting process is constantly in flux.

150. The language is “Where a rule of law requires . . . or provides for certain consequences [if the requirement is not met], that rule is satisfied if. . . .” This formulation of the provisions appeared in early drafts of the UNCITRAL Model Law, but was changed in the final formulation which speaks of “where *the law* requires” and addresses the consequence if the requirement is not met in a separate paragraph. See, e.g., UETA § 201(b) (Revised Draft Mar. 1998).

151. UNCITRAL Guide, *supra* note 83, ¶ 15.

152. “Where a data message [record] is used in the formation of a contract, that contract shall not be denied validity or enforceability on the sole ground that a data message [record] was used for that purpose.” UETA § 401 (Revised Draft Apr. 1997) (drawing from

between the parties.¹⁵³ Additionally, the Model Law provisions on acknowledgment of receipt,¹⁵⁴ and time and place of dispatch and receipt or electronic messages¹⁵⁵ were carried over into the UETA.¹⁵⁶

The relationship between the UETA and the UNCITRAL Model Law may prove to be controversial in two areas. The first is the issue of attribution, an issue discussed above in the context of Article 2B. The provisions of the April 1997 UETA draft on attribution were drawn from the UNCITRAL Model Law;¹⁵⁷ later versions of the attribution section gave as the source Article 2B,¹⁵⁸ however, a reflection of the realization that these two products of the National Conference should eventually have identical provisions. The second potentially controversial area, dealt with in Part 3 of the UETA, attempts to deal with the legal effects of the use of certain technological means of authentication, e.g., digital signatures, by giving them heightened legal effect. Although the questions of signature requirements and attribution are already dealt with in the Model Law, recent developments in the area of digital signature technology and digital signature legislation have focussed attention on whether those provisions do enough. In large part, the efforts to draft Part 3 (which are a response to the nonuniformity of digital signature legislation) are being mirrored on the international level within UNCITRAL in its efforts to deal with digital signatures and other electronic means of authentication. Undoubtedly, as will be discussed in Part V, the symbiosis will continue in this area.

V. THE SYMBIOSIS CONTINUES: DIGITAL SIGNATURES IN THE UNITED STATES AND UNCITRAL

The "fifth paradigm," symbiotic development, has continued past the completion of the Model Law on Electronic Commerce and its

UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 11 (1996); *see also* UETA § 401(c) (Revised Draft July 1998).

153. "As between the originator and the addressee of a data message [record], a declaration of will or other statement shall not be denied legal effect, validity or enforceability solely on the grounds that it is in the form of a data message [record]." *Id.* § 402 (drawing from UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 12 (1996)).

154. *Compare* UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 14 (1996).

155. *See id.* art. 15.

156. *See* UETA § 402 (Revised Draft Nov. 1997); *see also* UETA §§ 402, 403 (Revised Draft July 1998). In earlier drafts, parts of this section dealing with receipt were included in the definition of receipt.

157. *See* UETA § 403 (Revised Draft Apr. 1997); *compare* UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE art. 13 (1996).

158. *See* Reporter's Notes to UETA § 403 (Revised Draft Aug. 1997); Reporter's Notes to UETA § 202 (Revised Draft Nov. 1997).

echoes in the Uniform Commercial Code revisions and the UETA. The principal action has been in the area of digital signatures. Because of the increasing interest in legislating in support of electronic commerce, the work has been more intense than when the Model Law was drafted, and the influences in both directions have been numerous and frequent.

A. *The Role of State Law*

After the Model Law, it is fair to say that the focus of attention in the United States turned from writing requirements to signatures: how did one associate a person's or entity's identity with an electronic record? A related but fundamental issue is how to ensure the integrity of a message. Article 7 of the Model Law provided that a signature requirement could be met electronically by a method that identified the signer and indicated the signer's approval of the record, if the method did so appropriately reliably for the purpose of the signature. This rule, while helpful, left a lot to the judgment of the parties involved in electronic commerce; at the time of contracting, uncertainty would still exist as to whether the signature would be effective under law. In part, the issue required a technological solution (assuring ability to prove the identity of the sender and the integrity of the message), but in part the issue needed a legal solution as to what the law would accept.

During the early 1990s, a group of lawyers and engineers conferred under the auspices of the Section of Science and Technology of the American Bar Association to consider the legal impact of digital signatures, a type of technology involving the use of public key cryptography.¹⁵⁹ Although digital signatures and public key cryptography were viewed by many as the "technological" solution to proving identity and integrity,¹⁶⁰ legal issues still remained. By 1996, the ABA had published that group's Digital Signature Guidelines,¹⁶¹ setting out policy issues that needed to be faced to implement a legal structure to support the use of digital signatures. The explicit

159. A key player in this process was Michael Baum, one of the original members of the Electronic Messaging Services Task Force, and the representative of the International Chamber of Commerce at the UNCITRAL deliberations.

160. For an on-line tutorial on the use of digital signatures, see American Bar Association, *ABA Network* <<http://www.abanet.org/scitech/ec/isc/dsg-tutorial.htm>>; see also Stewart Baker, *International Developments Affecting Digital Signatures*, <<http://www.steptoe.com/digsig2.html>>.

161. The Guidelines are available for downloading at: American Bar Association, *ABA Network* <<http://www.abanet.org/scitech/ec/isc/dsgfree/html>>. An overview appears at American Bar Association, *ABA Network*, <<http://www.abanet.org/scitech/ec/isc/dsg-toc.htm>>.

understanding was that the technology of public key cryptography with certificates in aid was such a good link between the signer and the record that the Model Law's test of appropriate reliability could be presumed to be met in every case.

This work was picked up first at the state level, rather than by the national law reform bodies such as the National Conference. The reason for state interest was twofold: first, an element of competition to be the center of high-technology commerce inspired a race for leadership rather than cooperation; second, the broad array of potential uses for signatures reached well beyond the scope of any particular drafting exercise then underway in the National Conference.

Utah, the home to high-technology companies with an interest in the topic, was the first to act, enacting in 1996 the Digital Signature Act, which made a digital signature a complete substitute for a manual signature, provided the digital signature was accompanied by a certificate showing the identity of the holder of the private key and that certificate was issued by a state-licensed certification authority.¹⁶² Utah made a digital signature a complete substitute for a manual signature, if the digital signature was accompanied by a certificate showing the identity of the holder of the private key and that certificate was issued by a certification authority (CA) licensed by the State. The purpose of the act was to promote electronic commerce among parties previously unknown to each other, and to limit liabilities of parties for errors in identification.

About the time the Utah Act was being enacted, UNCITRAL was completing the Model Law and considering further tasks for its Working Group on Electronic Commerce. From among a number of proposals,¹⁶³ the Commission chose digital signatures and certification authorities. The Commission was, to some extent, influenced by the apparent trend in the United States, a line leading from the ABA Guidelines to Utah, to Washington, to proposed legislation in other states.¹⁶⁴ Other countries, in an apparent effort to be leaders in the area of electronic commerce, adopted digital signature legislation; thus, these United States developments were globalized as countries such as Germany¹⁶⁵ and Malaysia¹⁶⁶ adopted digital signature legislation and

162. See UTAH CODE ANN. tit. 46, Ch. 3 (1996).

163. See U.N. Doc. A/CN.9/437, ¶¶ 156-157. The digital signature work was launched in *Official Records of the General Assembly, Fifty-First Session, Supplement No. 17*, U.N. Doc. A/51/17 ¶¶ 223-224.

164. For a summary and links to all digital signature legislation, see *supra* note 7.

165. An English text of the German law is available at <<http://ourworld.compuserve.com/homepages/ckuner/>>.

166. See Malaysia Digital Signature Bill 1997, <<http://www.cert.org.my/bill.htm>>.

other countries quickly took up the cry. The Secretariat of UNCITRAL duly prepared a working paper for the consideration of the Working Group at its February 1997 meeting.¹⁶⁷ The language of that working paper noted that “provisions . . . of the Model Law are contained in digital signature legislation being prepared in certain countries, while the Model Law is also referred to in such texts as the ABA Digital Signature Guidelines.”¹⁶⁸

Nevertheless, the UNCITRAL text, and the discussion in the working group meeting, continued to adhere, in principle, to a rule expressed in developing the Model Law: that rules of law should be “technology neutral,” i.e. they should work with whatever technology science and the markets might develop.¹⁶⁹ This has, however, remained an area of contention, some critics suggesting that the focus on digital signature is neither technology- nor implementation-neutral.

A second influential United States state to engage in supporting electronic signatures was California. California, however, did not follow the Utah statute in its adhesion to public key cryptography. Rather, it drafted a technology-neutral law, in the spirit of the Model Law. It provided that a digital signature¹⁷⁰ would have the same legal effect as a manual signature if it had these attributes: it is unique to the person using it; it is capable of verification; it is under the sole control of the person using it; it is linked to the data in such a manner that, if the data are changed, the digital signature is invalidated; and it conforms to regulations adopted by the Secretary of State.¹⁷¹ Later regulations permitted both digital signatures using a CA and signature

167. See *Planning of Future Work on Electronic Commerce: Digital Signatures, Certification Authorities and Related Legal Issues*, U.N. Doc. A/CN.9/WG.IV/WP.71 (AWP.71). A copy of this document can be found at United Nations, *International Trade Law Branch of the U.N. Office of Legal Affairs* (last modified March 16, 1998) <http://www.un.or.at/uncitral/sessions/wg_ec/wp-71.htm>.

168. *Id.* at ¶ 50.

169. See U.N. Doc. A/CN.9/446, ¶ 4, United Nations, *International Trade Law Branch of the U.N. Office of Legal Affairs* (last modified March 16, 1998) <<http://www.un.or.at/uncitral/sessions/unc/unc-31/acn9-446.htm>>.

170. California used the expression “digital signature” to cover more than just signatures using public key cryptography, i.e. it applied to other electronic signatures.

171. See CAL. GOV'T CODE § 16.5 (West 1995). The first four criteria were first established in a decision of the Comptroller General of the United States in *Matter of National Institute of Standards and Technology (NIST)—Use of Electronic Data Interchange Technology to Create Valid Obligations*, Comp. Gen. File VB-245714 (Dec. 13, 1991) <<http://www.webcom.com/software.issues/dosc-org/cg-opinion.pdf>>.

dynamics.¹⁷² The California approach has proven to be more popular in the United States than the Utah focus on digital signatures alone.¹⁷³

Perhaps the most thoughtful and closely observed law reform exercise at present is in Illinois, where a large working group under the sponsorship of the Attorney General has prepared the Illinois Electronic Commerce Security Act.¹⁷⁴ The Illinois bill, in an attempt to be technology-neutral, speaks of a "secure electronic signature" rather than just a digital signature. The criteria for a secure electronic signature echo the language of the Comptroller General as picked up in California, though they go on to permit other commercially reasonable security methods to qualify as well. The bill does not deal with licensing or liability of certification authorities,¹⁷⁵ a point on which the Utah act was heavily criticized, but deals only with criteria for trustworthiness of linkages of identity and record.¹⁷⁶ Using a secure electronic signature creates a presumption that the signature is that of the person to whom it correlates. This is one key concept from the UNCITRAL Model Law, article 7. The other key concept, that it was affixed with the intention of approving the electronic record, disappeared between the last draft bill in December 1997 and the bill as introduced.¹⁷⁷

The then-current draft of the Illinois bill was presented in September 1997 to a meeting of experts assisting the UNCITRAL Secretariat in revising its initial draft model rules on digital signatures.¹⁷⁸ Its influence on UNCITRAL's working paper prepared by the UNCITRAL secretariat and considered by the Working Group in January 1998 was clear.¹⁷⁹ For the first time, the UNCITRAL work

172. Signature dynamics is associated with PenOp, a system of signing manually using computer-recorded strokes. See PenOp, *Welcome to PenOp, the World's Leading Electronic Handwritten Signature* (last modified April 1, 1998) <<http://www.penop.com>>.

173. See ILPF Survey, *supra* note 7.

174. The Act was introduced into the state legislature in February 1998, as House Bill 3180, and passed the General Assembly on May 20, 1998. See <<http://www.mbc.com/cecc-fin.htm>>. More important, the committee published an annotated draft bill every couple of months during the preceding year, generating a great deal of attention both nationally and internationally. The chair of the group that produced the bill, Thomas Smedinghoff, joined the United States delegation to UNCITRAL in 1997.

175. It does impose rules on CAs.

176. The Act does allow the Secretary of State to prescribe signatures that qualify as secure, but nothing in the text or commentary suggests that this is intended to authorize a licensing scheme. See <<http://www.mbc.com/cecc-fin.htm>>.

177. The Illinois Act, section 10-120, deals with identity, not intention.

178. The initial draft of the rules drew heavily on European sources.

179. *Draft Uniform Rules on Electronic Signatures, Note by the Secretariat, A/CN.9/WG.IV/WP.73* (Dec. 1997), United Nations, *International Trade Law Branch of the U.N. Office of Legal Affairs* (last modified March 16, 1998) <http://www.un.or.at/uncitral/sessions/wg_ec/wp-73.htm>. For a report of that meeting, see U.N. Doc.

encountered the concept of a secure electronic signature. The influence of Utah, Germany, and other member states that adhered to the notion of a regulatory structure for public key infrastructures, remained in provisions on licensing and liability of certification authorities, provisions that had fallen out of the Illinois draft legislation.

Thus, we can see the relationship between international and domestic events in microcosm. The Model Law, which was influenced by United States developments, in turn influences efforts in Illinois. And, once drafted, the Illinois legislation influences the work at UNCITRAL. Along the way, developments from other countries are blended in. It is symbiosis at work.

B. International Meets National, and Vice Versa

As noted earlier, the imminent adoption of the Model Law by UNCITRAL encouraged a number of people in the American Bar Association and the National Conference to undertake a broader look at electronic transactions going beyond those transactions covered by the Uniform Commercial Code: the UETA project was the result. The first preliminary draft of the UETA was prepared in the spring of 1997 and considered at an organizing meeting of the drafting committee in Dallas in May.¹⁸⁰ It reflected some of the thinking in both UNCITRAL's deliberation and the Utah Act, offering strong presumptions that certified digital signatures bound the purported signer (the person named in the certificate) to the electronic record. Similar provisions appeared in the August 1997 draft.

The September meeting of the drafting committee, however, expressed serious skepticism about the appropriateness of the presumptions, for many reasons ranging from concerns about the implementation of digital signature technology,¹⁸¹ to the lack of acknowledged standards of care of a private key, to uncertain certification practices by CAs, to unfairness of the presumptions to less sophisticated parties. In a nutshell, a number of people cast doubt on the UETA's ability to add as much legal assurance to the "appropriateness" standard of article 7 of the Model Law as Utah and UNCITRAL were attempting to do. Underlying these developments

A/CN.9/446, 11 February 1998, <<http://www.un.or.at/uncitral/sessions/unc/unc-31/acn9-446.htm>>.

180. See Uniform Law Commissioners, *Drafts of Uniform and Model Acts Official Site* (last modified Apr. 15, 1998) <<http://www.law.upenn.edu/bll/ulc/uecicta/ecom.htm>>.

181. See Cem Kaner, *The Insecurity of the Digital Signature*, (last modified Dec. 23, 1997) at <<http://www.badssoftware.com/digsig.htm>>.

was recognition of the fact that market practices were not sufficiently developed to permit evaluation of the presumptions. The November 1997 draft of the UETA weakened the presumptions drastically; it had borrowed concepts from Illinois, as had UNCITRAL at about the same time. Continued concern about the presumptions led to the inclusion in the March 1998 draft of the UETA three alternative definitions of a presumption, ranging from a “bursting bubble” approach (where the proffering of any credible evidence destroys the presumption), to a shifting of the burden of persuasion.¹⁸²

By the time of the release of the July 1998 draft of the UETA, presumption language was eliminated. No heightened effect was given to a message or record because of its status as either a digital or “secure” signature. Instead, all electronic records were dealt with under the attribution provision. Under that draft, a message would be attributed to a person if another person, through the application of a commercially reasonable security procedure, concluded that it was that of the purported sender.¹⁸³ In turn, a security procedure was defined as a procedure required by law, established by agreement, or knowingly adopted by each party.¹⁸⁴ The main difference between the UETA and Article 2B¹⁸⁵ is that the UETA states as a rule of law that a message is attributable to someone if verified through the application of a reasonable security procedure. Article 2B, on the other hand, states that this is merely a presumption, which may be rebutted.¹⁸⁶

The meeting of the UNCITRAL working group in January 1998 moved some distance in the same direction, although unlike the UETA it did not totally abandon the presumption approach. In part, the discussions ran parallel to those at the UETA meetings, though representatives of some countries still preferred a more regulatory scheme that would support stronger presumptions. The May draft of the proposed UNCITRAL rules, which recognized a category of “enhanced” or “secure” signatures,¹⁸⁷ created a presumption that the signature was that of the holder with two alternatives. Under the first

182. See UETA § 102(a)(15) (Revised Draft Mar. 1998).

183. See *id.* § 202.

184. See *id.* § 102(a)(17).

185. There are, of course, minor differences in phraseology. The UETA speaks of “security procedures” while Article 2B speaks of “attribution procedures”; the UETA requires the procedure to be “knowingly adopted by each party” while Article 2B speaks of them being “otherwise adopted by the parties.” The differences were probably not intended to be substantive, but could give rise to confusion.

186. In addition, Article 2B would continue to impose liability even though the presumption is rebutted if the purported sender failed to use reasonable care. See discussion *supra* note 128 and accompanying text.

187. A concept borrowed from the Illinois Electronic Commerce Security Act.

alternative, the presumption could be rebutted by proof that the signature was affixed without authorization; this alternative created a real presumption. Under the second alternative, the presumption only arose if it was established that the purported sender failed to exercise reasonable care; this alternative did not set out the manner in which the presumption could be rebutted. Although questions were raised concerning the propriety of a presumption, the UNCITRAL Working Group at its July meeting decided to retain the concept, creating a presumption upon use of an “enhanced” signature unless it is established that the signature was applied without authorization. One could argue, therefore, that the current UNCITRAL text is more closely aligned with Article 2B, in that both use rebuttable presumptions, than is the current draft of the UETA. It is fair to say, however, that both the international working group and the national UETA drafting committee are considering each other’s latest texts and are alert to new trends in analysis or consensus.

The recent history of the law applicable to secure electronic signatures—the part that takes us beyond the Model Law—demonstrates that the symbiosis continues; moreover, the pace has picked up considerably.¹⁸⁸ There are, of course, pressures at both levels that constrain total interdependence. The Conference is influenced by state legislation and subject to state pressures (which are frequently parochial), although some advocate that states should not go beyond the Model Law until the UETA is ready. UNCITRAL is influenced, naturally enough, by other member countries with different orientations and agendas. As these processes continue, it is hoped that the ultimate result of this symbiosis will be products sufficiently aligned to provide the uniformity necessary for the conduct of electronic commerce.

VI. COMPARATIVE SYMBIOSIS: SALES AND ELECTRONIC COMMERCE

The history of the drafting of the Model Law on Electronic Commerce, the revisions to the Uniform Commercial Code, the Uniform Electronic Transactions Act, and state laws on digital and electronic signatures clearly demonstrates the symbiotic character of their interlocking development. Early in this Article it was submitted that the area of electronic commerce has been the most fruitful for such interdependence. Why has there been a greater symbiotic

188. Indeed, rarely a month goes when one body or the other is not having a drafting meeting. The rapidity of the process increases the pressure to be aware of current developments.

relationship between domestic and international developments in the area of electronic commerce than in the area of sales generally? What accounts for the Model Law's significant influence on domestic developments? There is no sole explanation or reason for all this; rather, a confluence of several factors arguably explains the closer ties in the electronic commerce field.

The first important factor is the relative state of development of electronic commerce as opposed to the state of development of the law of sales. Sales law as a generic body of jurisprudence is not new on the domestic United States scene, nor is it a relative newcomer in foreign jurisdictions or the international arena.¹⁸⁹ The history of the development of our sales law is rich.¹⁹⁰ While Article 2 sales and contract principles were well developed prior to the formulation of the CISG and UNIDROIT, other countries also had developed bodies of law such that the impact of our sales law on the international level was somewhat limited.¹⁹¹ Since Article 2 was enacted, there has been substantial jurisprudential writing and case law in the United States, illuminating problems in present articulations of United States sales law and pointing the way to possible solutions. Thus, there has effectively been less of a vacuum to be filled by resort to international principles. Moreover, significant scholarship and case law has the tendency to result in entrenched views, as domestic scholarly debate results in the perception that the issues and thinking are crystallized; the adoption of "foreign" or international perspectives or approaches to either critique our existing legal regime or to assist in its revision is therefore less likely.¹⁹² In addition, the international instruments were

189. Beginning in the 1930s, there was concerted effort through UNIDROIT to formulate general sales principles. Indeed, those efforts formed the foundation on which the CISG was constructed.

190. Initially, the United States inherited its sales law from the common law of contracts in England. In 1898, however, states adopted the Uniform Sales Law, based to a great degree on the British Sale of Goods Act. This body of law underwent significant developments in the 1940s and 1950s, with the attempt to adopt a revised Uniform Sales Law. Ultimately, Article 2 was considered a significant advance in the area of commercial law, adopting to a large extent a *lex mercatoria* approach rather than simply building on the common law.

191. Others have addressed the question of how the CISG might be used to reform domestic sales law. See Peter Winship, *Domesticating International Commercial Law: Revising U.C.C. Article 2 in Light of the United Nations Sales Convention*, 37 LOY. L. REV. 43, 45 n.12 (1991). Finland and Sweden did indeed revise their domestic sales law in light of the Convention. See *id.* at 46 n.13; see also *Canada's Place in the Private International Order*, <<http://www.law.alberta.ca/alpi/ulc/priority/epil.htm>>.

192. Professor Peter Winship early in the revision of Article 2 lamented what he perceived as a failure of the revisers to systematically study the CISG and devise a strategy for determining when to adopt solutions used in the CISG. See Winship, *supra* note 191, at 43-45.

viewed as attempts to distill common principles for developed, industrialized countries as well as less-developed countries, and thus these instruments arguably lacked the comparative sophistication of our domestic laws. Consequently, the developed state of sales law has resulted in minimal impact of international developments (e.g., the Convention on the International Sale of Goods or the UNIDROIT Principles on International Commercial Contracts) on the recent revisions.¹⁹³ In the area of international commercial arbitration, however, where there is no body of otherwise binding law, both documents are regularly cited as a source of international principles.

By contrast, the law of electronic commerce is a relative newcomer on the legal scene. There is no body of developed law or precedent in the United States or internationally dealing specifically with electronic commerce issues, the scholarship in the field is nascent and by no means substantial, and there are no preconceived notions as to the correct approach to issues in the field. Nor is there any developed body of cases interpreting existing law, statutes, and principles as applied to electronic commerce. As a result, it is easier for the domestic drafting process to look beyond domestic developments for enlightenment. Of course, whenever there is a “void,” there are countries who would prefer to be first in filling that void, thereby assuring their own competitive advantage and adoption of their key principles;¹⁹⁴ the value of international and domestic coordination is the removal of these artificially created barriers.¹⁹⁵

193. See Gabriel, *supra* note 2, for additional observations on why the Article 2 revision process has failed to fully embrace international developments.

194. A clear example emerges from the European Union. When Germany adopted its digital signature law, concerns were expressed that it favored German certification authorities and erected barriers for electronic commerce. The European Community has responded with a directive that would require Germany to recognize foreign certificate authorities—but only those that are licensed within the European Union. See Communication from the Commission to the European Parliament, The Council, the Economic and Social Committee and the Committee of the Regions, Proposal for a European Parliament and Council Directive on a Common Framework for Electronic Signatures, COM(1998)297 final (May 13, 1998), available at <<http://www.mbc.com/legis/eu-digsig-dir.html>>. This result may place all certification authorities in the European Union on the same footing, but may have the result of discriminating against those certification authorities in the United States and other non-EU countries, depending upon its implementation. One of the hard-fought battles that is being waged within the UNCITRAL Working Group is the extent to which consensus can be reached on cross-border recognition principals that would eliminate this competitive advantage.

195. Of course, global uniformity and the removal of trade barriers may also result in competitive advantages, of sorts. Arguably, the creation and fostering of a global market will increase the return of United States investments in technology; thus, globalizing rules is itself economically motivated.

A second, related factor contributing to the symbiotic process is the timing of the revision efforts. The UNCITRAL Model Law was written during a period when issues involving electronic commerce were being studied and discussed in the United States as well as abroad.¹⁹⁶ These United States discussions and developments (like the *ABA Model Trading Partner Agreement*) were a source of discussion on the international level, and the international developments were a source of discussion within the United States. Indeed, although UNCITRAL has completed its Model Law, in its continuing work in the area of electronic and digital signatures, attention is being paid to the development of such legislation by individual states in the United States and to the Uniform Electronic Transactions Act as well. Although it is true that UNCITRAL completed its Model Law before law reform in the United States, the processes are still continuing and learning from one another.

The relative states of the law and timing, however, are not the full explanation. Another very important factor contributing to the symbiotic relationship between international and domestic efforts in the field is the perception and reality of the need for international (as opposed to simply domestic) uniformity to accommodate trade. Electronic commerce is international in scope. The Internet, as an example of the technology, demands uniformity for interoperability. To a large extent, uniformity is achieved through the adoption of uniform technical standards and uniform commercial practices;¹⁹⁷ the instances of nonlegal uniformity make legal uniformity both necessary and achievable. Indeed, the White House recognized the global nature of electronic commerce in its 1997 *Framework* paper, where the internationality of the issues and the need for international solutions was stressed. The transnational nature of electronic commerce, which is not limited to traditional jurisdictional borders,¹⁹⁸ makes imperative the development of international rules and norms, or, at a minimum, domestic legal rules and norms that are uniform globally. In addition,

196. The legal issues involved in electronic commerce became the "hot topic" in Europe, where the European Union began examining the issues in its TEDIS Programme (Trade Electronic Data Interchange Systems), as well as in Asia, where countries such as Malaysia, China, Korea, and Japan took up the study.

197. In the area of digital signatures, for example, there have been private sector attempts within the International Chamber of Commerce to achieve uniformity through the promulgation of "industry guidelines;" those guidelines in turn have drawn on many of the same sources at work in the symbiosis between international and domestic developments. See International Chamber of Commerce, GUIDEC: General Usage for International Digitally Ensured Commerce, available at (last visited July 10, 1998) <<http://www.uscib.org/frame6a.htm>>.

198. See authorities cited *supra* note 45.

the lack of existing domestic law governing electronic commerce, the evolving nature of electronic commercial practices that are not limited territorially, and the difficulties of establishing a comprehensive legal scheme that can effectively govern cyberspace, raise issues about the effectiveness of traditional state-based rulemaking regimes in dealing with the issues presented by electronic commerce.¹⁹⁹

The global nature of electronic commerce raises the role of commercial practices in the development of the law. In many areas (such as sales), commercial practices developed over decades; the law merchant developed as a result of these commercial practices, and only when those practices were solidified was it possible to develop a comprehensive statutory scheme. In the area of electronic commerce, however, the rapidity of development of commercial practices is astonishing. This rapidity and expansive growth emphasizes the absence of supportive legal structures. Yet until there is an ascertainable body of “law merchant” applicable to electronic commerce, a comprehensive statutory scheme may be premature. The Clinton Administration’s *Framework for Global Electronic Commerce* recognized this fundamental principle when it emphasized that “governments should encourage industry self-regulation wherever appropriate and support the effort of private sector organizations to develop mechanisms to facilitate the successful operation of the Internet.”²⁰⁰ The private sector should lead, and governments (and the law) should follow in order to allow market developments to create and realize the full efficiencies possible with electronic commerce. Moreover, given the global nature of the evolving electronic commercial practices, to the extent government intervention is appropriate to “support and enforce a predictable, minimalist, consistent and simple legal environment for commerce, that legal framework must be a global legal framework.”²⁰¹

The increased symbiosis in the area of electronic commerce is evidenced by increased efforts at cooperation and coordination between domestic and international projects. Attempts at achieving maximum coordination between domestic and international law reform efforts are a relatively recent phenomena. Indeed, maximum

199. The American Bar Association has commenced an ambitious project to develop the legal materials and emerging international principles relating to the jurisdictional principles that will govern transactions in cyberspace. The project aims to produce, from a broad base of international contributions, a comprehensive report at the ABA Annual Meeting in August 2000. For further information, see American Bar Association, *ABA Network* <<http://www.abanet.org/buslaw/cyber>>.

200. The White House, *A Framework*, *supra* note 12, at 4.

201. *Id.* at 5.

coordination and uniformity requires several factors: parallel processes (if one effort, e.g., domestic, goes first, that effort may influence the second later in time, but there will not be as much give-and-take between the processes necessary for consensus building); people committed to coordination and cooperation; awareness between participants at both levels of the deliberations of the other level; and logistical maneuvering to encourage and facilitate cooperation.

“Cooperation” and “coordination” were not necessarily issues in the drafting of the CISG. Prior to the CISG, United States participation in international lawmaking efforts was minimal. A turning point was indeed reached with the CISG and the involvement of the United States delegate, John Honnold, who went on to become the Secretary General of UNCITRAL.²⁰²

Over the past decade, there has been an increased emphasis on cooperation and coordination between international and domestic efforts, accentuated by the existence of parallel drafting processes.²⁰³ In areas such as letters of credit and electronic funds transfers, which like the field of electronic commerce were characterized by the international nature of the trade, there was extreme pressure to achieve a level of harmonization. As Harold Burman, Executive Director of the Secretary of State’s Advisory Committee on Private International Law in the Department of State, noted:

In the United States both uniform state laws and unification of private law at the international level must accommodate the same interest groups in the commercial law field, such as industry groups, import-export interests, bar and trade associations, etc. In this respect, harmonization of commercial law must balance the same private sector interests whether the form is treaty or state law. This has brought about modest collaborative efforts between the Secretary of State’s Office of the Legal Adviser, which provides an international connection for American private law interests, and the principal domestic law formulating bodies, including the Uniform Law Commissioners, the American Bar Association, the American Law Institute and others. In the author’s view, this process should be enhanced, and should include active participation by these bodies and other private sector associations, in the development of the international agenda, and

202. See Professor Allan Farnsworth’s observations elsewhere in this symposium where he recounts the differences between the reception given to him during deliberation on the Convention on the International Sale of Goods and that which he experienced during work on the UNIDROIT Principles. See Farnsworth, *supra* note 1.

203. For a discussion of relatively early efforts to bring international and domestic revision efforts into line, see generally Boss & Fry, *supra* note 12.

coordination between that and domestic agendas, whether the latter be revisions to the UCC, Restatements or otherwise.²⁰⁴

United States input into the deliberations at UNCITRAL is coordinated out of the State Department's Office of the Legal Advisor on Private International Law. Over the years, this office²⁰⁵ has made significant efforts to increase coordination and input not only within the area of electronic commerce, but in all areas where international developments have paralleled uniform drafting efforts on the domestic level. First, many of the people chosen as part of United States delegations have been active in domestic law reform.²⁰⁶ Second, drafts of the international UNCITRAL efforts have been circulated to the leadership of the National Conference and the American Law Institute; similarly, the Office of the Legal Advisor receives all Uniform Commercial Code drafts as well as those of other uniform efforts. Third, there has been a charge to all Uniform Commercial Code Drafting Committees to include in official comments to the various provisions discussion of how international law or instruments treat the issues dealt with under the Code.²⁰⁷ Fourth, those involved in

204. Harold S. Burman, *Harmonization of International Commercial Law: U.S. Accession to the United Nations Limitations Convention*, 1995 COM. L. ANN. 277, 293-94. Mr. Burman continues:

While good reason may exist for formulating or revising domestic commercial law in a manner separate and different from that of other countries, nonharmonization and its attendant commercial unpredictability at the international level should occur at this stage only by choice, and not inadvertently as has often been the case in the past.

Id. at 294.

205. Through the admirable work of two prominent people, Peter Pfund and Harold Burman.

206. At least one member of the delegations to the Working Group on Electronic Commerce in its deliberations on the Model Law (the author) was a member of both the Article 2 and Article 2B Drafting Committees. In the current deliberations within the UNCITRAL Working Group on Electronic Commerce on uniform rules for digital signature, two members of the United States delegation (the author and Thomas Smedinghoff, the principal author of the Illinois draft digital signature legislation) are also American Bar Association advisors to the National Conference's Drafting Committee on the Uniform Electronic Transactions Act.

This experience is mirrored elsewhere. UNCITRAL currently has a Working Group on International Contract Practices, which is completing work on a Convention On Receivables Financing, a project drawing upon basic principles of secured financing articulated in Article 9 of the Uniform Commercial Code. At the same time, there is an Article 9 Drafting Committee working on domestic revisions to our law of secured transaction; several members of the United States delegation to UNCITRAL are either members of or advisors to the Article 9 Drafting Committee. Similarly, the same process applies with regard to a project within UNIDROIT to prepare a convention on security interests in mobile equipment.

207. The first instance was the incorporation of a footnote to Article 4A of the Uniform Commercial Code discussing the relationship between 4A and the UNCITRAL Model Law on International Credit Transfers.

the international efforts frequently attend domestic drafting committee meetings, and those involved in the domestic process are regularly invited to advisory committee meetings held by the Office of the Legal Adviser on international proposals.²⁰⁸ Last, drafts of revisions being undertaken in the United States are being increasingly circulated internationally, e.g., at UNCITRAL and to its delegates,²⁰⁹ and international drafts are made available domestically.²¹⁰ These efforts are in many ways made easier because of the existence of the parallel domestic and international revision schemes.

Technology itself, moreover, has empowered the symbiosis. It has made possible the rapid communication, on a global basis, of new legal developments. A new regulation effecting electronic commerce may be announced "far away" in Singapore; within minutes, the technology allows that regulation to be posted on a web site, and postings to mailing lists and bulletin boards frequented by persons interested in the matter spreads the word like wildfire. A visit to any web site supporting domestic law reform will reveal hyperlinks to developments occurring throughout the world.²¹¹ Moreover, electronic communications technologies enable persons involved in the law revision process to share and discuss ideas with others throughout the world.

The increased cooperation and coordination between domestic and international developments is in large part due to the similarities of interests on both the international and domestic levels. Because

208. Frequently, the meetings of the State Department's Advisory Committee on Private International Law or of its various working groups are held in conjunction with domestic drafting committee meetings. These public meetings at times draw broad-based attendance, including attendance from other national delegations and international nongovernmental organizations.

209. Admittedly, the distribution of United States products is a delicate issue, and the reactions have the potential to be quite ambivalent. On the one hand, international participants are eager to learn about recent developments within the United States; on the other hand, participants are wary of attempts by technologically advanced countries such as the United States, Japan, and Malaysia to impose their own approaches and products on to international bodies. Yet, in the area of electronic commerce, particularly, it is fair to say that such concerns have been of less importance. A further difficulty, however, in the circulation of United States drafts (which are in English) to United Nations bodies is the language barrier.

210. This is true of UNCITRAL drafts, but for the most part drafts of domestic legislation from foreign countries, though sometimes discussed, are less often circulated, although this is changing with the increase in electronic communications.

211. For example, a new American Bar Association Joint Subcommittee on Electronic Financial Services, which is following developments in the area of electronic payments law, hosts a web site with links not only to domestic developments such as the UETA, federal agency pronouncements, and congressional developments, but links as well to such materials as a Japanese report on electronic commerce. See <<http://www.abanet.org/buslaw/efss>>.

electronic commerce is global in nature, the same parties with an interest in domestic law reform are concerned about international law reform. Indeed, the presence of commercial interests in the law reform process is increasing as the lawmaking process becomes more visible and open, and as governments consult more. When the Uniform Commercial Code was first written, the presence of industry representatives at the drafting table was minimal; in the international sales codification efforts, the primary United States spokespersons were law professors. In the current Code revision process, however, industry representatives sit at the drafting table; similarly, industry representatives are demanding to be heard in the international arena as well. At both the state and international levels, they voice the same concern: the need to reflect existing and emerging business practices.

In sum, the confluence of all these factors created an environment that necessitated and fostered the symbiosis in the area of electronic commerce.

VII. CONCLUSION

The evolution of a symbiotic relationship between domestic and international legal developments in the area of electronic commerce raises the question of whether the older paradigms are dead. Will it be possible for the new legal systems, domestic or international, of the United States or other nations, to evolve other than symbiotically? Will symbiosis occur among nation states in the absence of an effective international venue? Where and how will an "international electronic UCC" be crafted?

Many of the ingredients that contributed to the symbiosis in the area of electronic commerce are present in other areas: the increase in international trade, the use of electronic media for the virtually instantaneous global distribution of information concerning new legal structures, and the recognition of the values of uniform rules. At the same time, there are factors that militate against symbiosis: regional concerns about the need for protectionism or the need to attain a competitive position in the marketplace, fear of the motives of foreign powers seeking uniformity, the desire to foster regional values, and the desire to promote (and own) one's own ideas.

Competitive and protectionist tendencies cannot be ignored. Despite the seeming acceptability today of international lawmaking, for example, some countries (e.g., in the field of electronic technologies) are terrified of the technological supremacy of the developed countries, and are attempting to neutralize their ability to set

the rules (or to assure equal participation in their formulation). The United States interest in enhancing commercial law stems from the view that increased international trade will benefit all involved parties. Restrictions on cross-border trade is of concern. When France, for example, required that all web site advertising in France had to be in French,²¹² the impact on foreign entities was serious. The competitiveness in the area (as demonstrated in the digital signature area, as well as in data privacy) is genuine.

The key may well be the development of commercial practices. As long as commercial practices are shaped on a domestic level, the pressure to preserve local autonomy will be great. But as commercial practices are increasingly international in character, the pressure for symbiosis of some sort will increase. Indeed, as businesses begin to compete on a global basis, the need for certainty, predictability, and uniformity may well be met first by self-regulation through bilateral or multilateral agreements, system rules, and industry codes. Until global practices have developed and matured, it can be argued that it is not rational for international or domestic venues to be attempting to "harmonize" the law through articulation of detailed rules; rather, the law should create a generic and basic legal platform that would support the development of global practices.

Yet, even when the time is ripe for the development of rules on a global basis, in harmony with domestic rules and private sector practices and codes, there must be competent, available international lawmaking venues that can be responsive the needs of commerce. Will venues such as UNCITRAL and UNIDROIT be up to the task? Or will we see an increase in private rulemaking and self-regulation? Only time will tell. Until then, the process of symbiosis continues.

212. See Decree No. 94-865 of Aug. 4, 1994, J.O., Aug. 5, 1994, at 1449 (Fr.).