
Electronic Chattel Paper: Invitation Accepted

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Abstract: In 1999, Revised U.C.C. Article 9 governing secured lending was updated to permit the creation of “electronic chattel paper” (“ECP”). Traditional chattel paper is used widely in some sectors of the US economy to finance equipment purchases in part because a chattel paper financiers who perfects by taking possession can achieve priority over a pre-existing secured lender who perfected by filing. Revised U.C.C. § 9-105 defined a new form of “control” over ECP that would be treated as equivalent to possession of traditional chattel paper, permitting chattel paper financiers to retain their super-priority status with electronic documents. Because chattel paper transactions often take place outside regulated financial institutions, and the risks of recognizing ECP were unknown, the drafters of Revised Article 9 decided to set a high technological threshold for showing control of ECP in order to manage novel risks indirectly. Since 1999, lenders have worked slowly and steadily to create the necessary infrastructure for ECP markets. Widespread use of ECP benefits lenders by reducing the cost and increasing the speed of their administrative processes, and also benefits investors by lowering the cost of securitizing loans and leases in the form of ECP. Nissan Motor Acceptance Corp. completed the first securitization of ECP in 2005, but the global financial crisis in 2008-2009 stalled adoption of ECP, especially in the US automobile industry which was hit particularly hard in the resulting recession. By 2010, adoption rates for ECP in chattel paper finance markets were again growing. Amendments to Revised Article 9 finalized in 2010 lower the technological threshold required to establish control, which should further encourage increased use of ECP.

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*Gall's Law: A complex system that works is invariably found to have evolved from a simple system that worked. The inverse proposition also appears to be true: A complex system designed from scratch never works and cannot be made to work. You have to start over, beginning with a working simple system.*¹

I. A CURRENT PRACTICE HYPOTHETICAL

Ethel and Fred Consumer, residents of Seattle, Washington, stopped by their local Edsel dealer to test drive some cars. They fell in love with the Edsel Widget, an all-electric car, and entered into serious negotiations to buy it. Before they could commit to the deal, however, they needed to know how much their monthly payments would be if they financed the new car over five years. Norton, their sales representative, introduced the Consumers to Thelma, a finance and insurance specialist, who showed them on a computer screen a menu of different options, including buying the car for cash, leasing it, or purchase financing with a five-year term. The Consumers authorized Thelma to check their credit and see what kind of financing deals she could get for them from the lenders with whom she worked. Thelma discovered that the Consumers had excellent credit, and submitted applications to different purchase and lease finance companies to find out what kind of financing she could offer them.

In less than a minute, Thelma was able to offer Ethel and Fred several different financing options; the Consumers chose the five year lease. Thelma told them about some additional products and services the dealer offered, including roadside assistance plans and credit/lease payoff gap insurance that would cover any shortfall between what they owed on a purchase financing or lease contract, and an insurance payoff if the car was stolen or totaled. Ethel and Fred decided to add the credit/lease gap coverage to their package, and Thelma updated their application with the finance company they had chosen and got a new monthly payment amount back within minutes. Thelma completed the lease agreement form online with information provided by the Consumers.

Although it was not apparent from the computer screen Thelma was looking at, the lease application software was actually running on a secure, remote server. As she entered data, the lease application software alerted her

1. JOHN GALL, SYSTEMANTICS: HOW SYSTEMS WORK AND ESPECIALLY HOW THEY FAIL 61-63 (Quadrangle, N.Y. Times Book Co. 1977) (1975).

whenever she omitted to enter needed data, entered obviously incorrect or incomplete data, or made a miscalculation such as with the lease residual amount. Had Thelma used paper purchase finance and lease documents, the correction of such errors would be a common, but costly, process that could delay payment from the financing company to the dealer by several days, if not longer.

Once the lease agreement was complete, Thelma printed out a draft hard copy and went through the required disclosures with the Consumers page by page, answering any questions they had. Then she asked them if they would like to sign their lease papers online rather than on paper, assuring them that she would give them a final hard copy printout of everything they signed. Ethel and Fred had never heard of such a thing before, so Thelma showed them that her computer had a peripheral device that captured their signatures; it looked like the signature capture pads used with some point-of-sale credit card readers in retail stores. After Ethel and Fred signed using the signature capture device, Thelma shredded the draft agreement and gave them a complete printout of all the documents, including a signature page with digital images of their signatures.

As soon as the lease agreement was signed and submitted, it was transmitted within the dealer's secure "e-contracting" system to a secure "electronic vault" maintained by another company that met the control requirements of Revised Uniform Commercial Code ("UCC") Article 9 for "control" of "electronic chattel paper." The dealer transferred control over the lease to the finance company on the same day that the lease was signed. As soon as the finance company received notice that it had been given control over the electronic lease agreement, it made an electronic fund transfer into the dealer's bank account. By contrast, had Thelma submitted the lease to the finance company in hard copy, the finance company's overnight delivery service would delay the payment to the dealer's account by at least one day, if not longer.

Although the Consumers' experience in purchasing the Edsel Widget is a hypothetical, it describes a process that is used with increasing frequency by auto purchasers throughout the United States today.

II. INTRODUCTION

Over the last 150 years, American financial markets have engaged in the process of replacing physical transactions with virtual transactions.² In 1999, the drafters of Revised UCC Article 9 extended an invitation to American financiers to update their traditional chattel paper systems with new technology

2. ROY S. FREEDMAN, INTRODUCTION TO FINANCIAL TECHNOLOGY 17-18 (Ayesha Kaljuvee & Jurgen Kaljuvee eds., 2006).

and migrate to electronic documents as part of this process.³ Chattel paper is defined by UCC Article 9 as a record that evidences both a monetary obligation and a security interest in goods, and chattel paper financiers occupy a unique space in American financial markets because of the special priority rule that was added to the original Article 9 to govern their business practices.⁴ In order to get the benefit of that rule, however, they were required to document their transactions on paper, and insure that the financier took possession of the paper as part of the transaction.⁵ Revised Article 9 permitted chattel paper financiers using electronic documents to maintain the super-priority status they had been granted in the original Article 9, provided that they could take “control” of the “electronic chattel paper” (“ECP”).⁶

The movement from hard-copy chattel paper to electronically stored and processed chattel paper would benefit equipment financiers by lowering their administrative costs, and would also benefit investors by lowering the cost of transferring or securitizing chattel paper.⁷ In 1992, when the Article 9 Drafting Committee started its work, auto loan securitization was beginning to take off, and secured lenders were beginning to consider the possibility of securitizing their assets in an “end-to-end” electronic transaction.⁸ The revision of UCC Article 8 that ended in 1994 already established a firm legal foundation for all the forms of “dematerialized” securities transactions that were then in existence.⁹ This suggested to participants in the Article 9 revision process that a legal foundation for dematerialized chattel paper might also be found.

By the time that the first revision of UCC Article 8 was completed in 1978 however, American securities markets had already largely succeeded in dematerializing securities transactions.¹⁰ By contrast, when Article 9 was being revised in the 1990s, ECP did not yet exist, so the drafters would have to imagine what ECP might be and how “control” over it could be achieved. At

3. Jane K. Winn, *Electronic Chattel Paper under Revised Article 9: Updating the Concept of Embodied Rights for Electronic Commerce*, 74 CHI.-KENT L. REV. 1055, 1055 (1999).

4. “Chattel Paper” is defined in U.C.C. § 9-102(a)(11) (2008); the original version of the special priority rule for chattel paper is found in U.C.C. § 9-308 (1952); see also Homer Kripke, *Chattel Paper as a Negotiable Specialty under the Uniform Commercial Code*, 59 YALE L. J. 1209, 1210 (1950).

5. Kripke, *supra* note 4.

6. U.C.C. § 9-308 (1952); U.C.C. § 9-330 (2008).

7. Winn, *supra* note 3, at 1073.

8. James C. Lawson, *Start your engines!*, U.S. BANKER, July 1995, at 59, 59-60.

9. See generally Charles W. Mooney, Jr., *Beyond Negotiability: A New Model for Transfer and Pledge of Interests in Securities Controlled by Intermediaries*, 12 CARDOZO L. REV. 305 (1990).

10. Martin J. Aronstein, *Security Interests in Securities: How Code Revision Reflects Modern Security-Holding Practices*, 10 UCC L.J. 289, 290 (1978).

the very end of the Article 9 revision process, a provision governing control of ECP was finally added.¹¹ It defined “control” in what the drafters hoped was a rigorous but technology-neutral manner, so that a competitive market for ECP services could develop with multiple providers, and also without undue risks to borrowers and lenders from the process of “dematerializing” loan documents.¹² The drafters recognized that if they inadvertently set the threshold too high, then it would create barriers to the adoption of ECP instead of encouraging it, but if they set it too low, then later it might be difficult to manage the risks of unfettered innovation in financial markets. For several years after Revised Article 9 went into effect, there was little evidence of a market for ECP developing, leading some observers to suspect that Revised section 9-105 might have overshot the mark.¹³

By 2010, it was becoming clear that the ECP experiment in Revised Article 9 had succeeded in some financial markets, and that its importance is likely to grow further. This article will review the market developments fueling interest in the notion of “electronic chattel paper,” and the quandary facing the drafters of Revised Article 9 in trying to recognize an industry practice that did not yet exist. It will also describe the growth of ECP markets over the last decade, including the development of new financial services industry practices regarding the control of ECP. In 2010, the American Law Institute (ALI) and the National Conference of Commissioners on Uniform State Laws (NCCUSL) amended Revised section 9-105 to make it easier for lenders to demonstrate that they had control of ECP. When this amendment has been enacted into state law, it should also contribute to the continued growth of markets for ECP.

III. ARTICLE 9 REVISIONS: CHATTEL PAPER

A. *Recent History of Chattel Paper*

When the original Article 9 was being drafted during the 1940s and 1950s, its drafters discovered that sometimes financing agreements in the form of conditional sales agreements or bailment-leases received similar treatment to negotiable instruments, even though they did not meet all the technical

11. See U.C.C. § 9-105 (2008).

12. In 1997, the drafters could look to the sudden collapse following the recent rapid growth of the market for subprime auto loans originated by independent finance companies rather than banks or the auto manufacturers’ own captive finance companies as an example of the risks of rapid innovation in the chattel paper market. See Jesse Snyder, *It’s Crunch Time in Subprime*, COLLECTIONS & CREDIT RISK, Mar. 28, 1997, at 71.

13. See, e.g., JULIAN B. McDONNELL, SECURED TRANSACTIONS UNDER THE UNIFORM COMMERCIAL CODE § 28A.03 (2010).

requirements of negotiability.¹⁴ For example, in automobile financing, it was common for a financing agency to buy loans originated by an automobile dealer, take possession of the loan agreements, notify the borrower of the assignment, and handle the process of collecting payments. In recognition of this common industry practice, the drafters of the original Article 9 established a special rule that allowed financiers to perfect by taking possession of "chattel paper," as these conditional sales agreements and bailment-leases were known.¹⁵ Allowing chattel paper financiers to perfect by possession would be little use, however, unless they could get priority over another category of lender recognized for the first time in Article 9, the lender with a "blanket" security interest over all the borrower's assets.¹⁶ Because Article 9 authorized the creation of a floating lien that could encumber after-acquired property, a chattel paper financier taking paper from an auto dealer that had already granted such floating lien to another lender could find itself subordinated to that lender.¹⁷ So the drafters of the original Article 9 also provided that a chattel paper financier who perfected by possession would have priority over lenders with floating liens who had perfected only by filing.¹⁸

While chattel paper could always be drawn up in a way that it met all the technical requirements of negotiability, the drafters of original Article 9 noted that much of the chattel paper actually in use did not meet them.¹⁹ They therefore decided that chattel paper under Article 9 should not have to qualify as a negotiable instrument in order for its purchaser to enjoy a super-priority over prior lenders who perfected by filing.²⁰ Article 9 required instead that chattel paper financiers show that they are in possession of whatever constitutes the chattel paper.²¹ Thus the super-priority rule in Article 9 has certain structural similarities to the rules governing holders of negotiable instruments under UCC Article 3 or holders of negotiable documents of title under UCC Article 7 because certain privileges are granted to someone in possession of a

14. 2 GRANT GILMORE, SECURITY INTERESTS IN PERSONAL PROPERTY § 25.5 (1965) (discussing quasi-negotiable collateral, non-negotiable instruments, non-negotiable documents, chattel paper); Kripke, *supra* note 4.

15. Kripke, *supra* note 4, at 1211.

16. 1 GILMORE, *supra* note 14, § 12.5, at 378 ("The reason why the draftsmen felt it necessary to invent, or at least to christen, this new species of intangible relates to the provisions on perfection and priority.").

17. See, e.g., MCDONNELL, *supra* note 13, § 7B.14(6).

18. *Id.*

19. Under the 1957 version of UCC Article 3, a negotiable instrument had to be in writing, signed by maker or drawer, contain an unconditional promise or order to pay a sum certain on demand or at a definite time, use the language of negotiability (pay to order or bearer).

20. MCDONNELL, *supra* note 13, § 28.02.

21. *Id.*

piece of paper. However, it differs from the rules governing negotiability by setting a lower threshold for chattel paper financiers to meet.

Negotiability provides an example of an “embodied” rights system.²² In such a system, a piece of paper that contains written description of abstract rights is deemed to embody the rights described, and someone in possession of that piece of paper is deemed to be the owner of those rights.²³ Although embodied, or reified, rights systems may seem clumsy and anachronistic today, when they were originally developed centuries ago, they were much more efficient than the even more primitive systems they replaced.²⁴ If the right to repayment of a loan depended on the memory of both parties to be enforceable, a lender was obviously vulnerable to fraudulent challenges to its right to repayment from a borrower, while a borrower who relied on the accuracy of the lender’s accounting records was similarly vulnerable to fraudulent claims from a lender.²⁵ With advances in accounting and computerized business information systems, it may be more reliable and more efficient to use a central record keeping system that both lenders and borrowers trust, but no such systems existed when principles of negotiability were developed. Modern financial markets generally rely on computerized central registry systems, or computerized accounting systems to track the rights and obligations of parties to financial transactions: UCC filing offices are an example of such a computerized central registry system, and bank and brokerage records of customer holdings are an example of such computerized accounting systems.

The original Article 9 authorized the creation of centralized registries to track security interests, but it did not authorize the use of either central registries or accounting systems as a substitute for possession of chattel paper.²⁶ The first time that “control” over assets recorded in computer systems was recognized as equivalent to being in possession of pieces of paper that described those assets came in the 1994 revision of UCC Article 8 governing investment securities.²⁷ Revised Article 9 recognized that secured party taking “control” over securities held in an account maintained by a securities intermediary could be the equivalent of the secured party taking possession of a paper stock certificate.²⁸ This model was adopted during the revisions to UCC

22. Robert Charles Clark, *Abstract Rights Versus Paper Rights Under Article 9 of the Uniform Commercial Code*, 84 *YALE L.J.* 445, 476-77 (1975); see Winn, *supra* note 3, at 1072-73.

23. Clark, *supra* note 22.

24. *Id.*

25. *Id.*

26. See U.C.C. art. 9 (1952).

27. James Steven Rogers, *Policy Perspectives on Revised U.C.C. Article 8*, 43 *UCLA L. REV.* 1431, 1474 (1996).

28. *Id.*

Article 9 by permitting secured lenders to take “control” over bank accounts or letters of credit held at banks.²⁹ Under Revised Article 9, perfection by control over investment securities, bank deposits or letter of credit rights required that the secured lender secure a commitment from the financial intermediary in whose computerized accounting system records of the asset were maintained.³⁰ A secured lender’s level of confidence that it had “control” over such financial assets would depend on its level of confidence that the financial intermediary had reliable computerized accounting systems and effective management systems in place. Because investment securities, deposit accounts and letters of credit are normally only held in regulated banks and brokerage firms, the reliability of those firms accounting and management systems is subject to audit by regulators. In other words, the revised Article 8 notion of “control” depends both on lenders’ confidence in the effectiveness of the regulation of individual financial institutions as well as lenders’ confidence of the quality of a specific institution’s computer system.

The first securitization of auto financing contracts took place in 1985.³¹ Before securitization, manufacturers’ captive finance companies had issued commercial paper or used bank credit lines to finance their dealers’ sales.³² The practice of securitizing residential home mortgages had been pioneered in the 1970s by government-sponsored enterprises (Government National Mortgage Association (known as “Ginnie Mae”), Federal National Mortgage Association (known as “Fannie Mae”) and Federal Home Loan Mortgage Corporation (known as “Freddie Mac”)), and in the 1980s, some observers were skeptical that securitization of auto financing contracts could take off without some form of government intervention in the market.³³ This skepticism proved to be misplaced, however, because auto finance securitization markets grew rapidly in the absence of government oversight.³⁴ As U.S. auto companies struggled through tough times in the early 1990s, commercial paper sales and bank borrowing became more difficult for their captive finance companies, and the appeal of securitization increased greatly.³⁵ When the Article 9 Drafting Committee was established in 1992, securitization

29. U.C.C. §§ 9-104, 9-106, 9-107 (2008).

30. Sandra M. Rocks & Robert A. Wittie, *Getting Control of Control Agreements*, 31 UCC L.J. 318, 318-19 (1999).

31. Leonard Sloane, *Your Money: New Securities Tied to Assets*, N.Y. TIMES, July 18, 1985, § 1, at 32.

32. *Id.*

33. *Securitized and Whole-Loan Sales Provide Wheel-and-Deal Room*, A.B.A. BANKING J., Oct. 1, 1997, at 88.

34. *Id.*

35. Jacqueline S. Gold, *The Parent Comes Begging*, FIN. WORLD, Jan. 19, 1993, at 20.

of auto financing contracts was rapidly gaining momentum, creating interest among secured lenders interested in securitizing their assets in the idea of “end-to-end” electronic transaction processing.

During the process of revising Article 9 in the 1990s, financiers expressed an interest in developing a “perfection by control” rule for chattel paper in electronic form. While it had been common for lenders to claim security interests in investment securities, deposit accounts and letter of credit rights before they were recognized in Article 8 or Article 9, electronic chattel paper did not yet exist, so there were no industry practices to guide the drafters. In 1997, the drafters took the first tentative steps toward recognizing ECP by inserting the following comment to what was then section 9-327 governing the purchase of chattel paper or instruments:

“**Electronic Chattel Paper.**” The Drafting Committee (with the assistance of the Working Group on Secured Transactions, Committee on the law of Commerce in Cyberspace, ABA Section of Business Law) is pursuing the possibility of extending subsections (a) and (b) to cover obligations that otherwise would meet the definition of “chattel paper” but are not evidenced by a writing. If this proves feasible (e.g., if a suitable analogue for “possession” can be developed) and desirable, the subsections might be expanded even further to cover accounts.³⁶

The Working Group on Secured Transactions referred to in the comment later published a revised version of the memo they had provided to the drafters, and that inspired this comment.³⁷ The draft comment illustrates the uncertainty the reporters felt about whether a legal equivalent of possession of ECP was even feasible.

Several months later, a different group of lawyers submitted a proposal to reporters for a new provision that provided for control over electronic chattel paper.³⁸ This group of lawyers had been advocating that an electronic equivalent to a UCC Article 3 negotiable instrument be recognized in the Uniform Electronic Transaction Act, which being drafted at the same time that Article 9 was being revised. The first complete proposal for establishing “control” over electronic chattel paper came only a few months before the Article 9 revision process was due to end. The very late submission of draft

36. U.C.C. § 9-327 cmt. 5 (Article 9 Revisions Draft 1997), available at <http://www.law.upenn.edu/bll/archives/ulc/ucc9/ucc997.htm>.

37. Candace M. Jones, Ronald S. Gross & Lee A. Schott, *Electronic "Chattel Paper" Under Revised Article 9*, 31 UCC L.J. 47 (1998).

38. The first draft of what is now Revised U.C.C. § 9-105 was developed and submitted to the reporters by a group working within the Cyberspace Committee of the Business Law Section. At various times, this group included Steve Bisbee, Amy Boss, Ron Gross, Candace Jones, Tom Smedinghoff, David Whitaker and Jane Winn.

language for “control” created a quandary for the drafters. On the one hand, they wanted to respond to the needs of chattel paper financiers with an updated rule before the drafting process came to a close. On the other hand, a rule governing control of chattel paper would have to be significantly different than the provisions for control of investment property, deposit accounts and letters of credit because chattel paper finance markets functioned differently than the banking and securities markets where investment property, deposit accounts, and letters of credit were maintained.

Chattel paper finance markets were much less centralized and less regulated than the banking and securities markets where control over investment property, deposit accounts, and letters of credit could be established. In banking and securities markets, the Article 9 control provisions could piggyback on government regulation of banking and securities intermediaries by requiring the cooperation of regulated financial intermediaries to establish control. By contrast, regulated financial intermediaries play a much smaller role in chattel paper financing, so the drafters of Revised Article 9 could not simply reuse the control provisions developed in the process of revising Article 8.³⁹ Furthermore, if a market for electronic chattel paper already emerged by 1998, then the drafters would have had the option of simply codifying industry best practices in Revised Article 9. But in 1998, there was no ECP yet in existence because chattel paper financiers were unwilling to adopt new technologies that might put their super-priority status at risk. Without either a regulatory framework or relevant industry best practices as a guide, the drafters had no frame of reference within which to determine what would give secured lenders confidence that they really had the electronic equivalent of “possession.”

The task facing the drafters of Revised section 9-105 was complicated further because there were several different models for switching from paper to electronic processes within an existing financial market, any one of which might be suitable for ECP markets. One was the central registry model. With such a system, a central computerized clearing house or registry would be established and all market participants would send and receive data about assets and transactions using that system. The system for U.S. Treasury securities such as Treasury bills and notes is an example of this model, with the centralized registry being maintained by the Federal Reserve Banks. The system for tracking rights in Treasury securities is generally known as “book entry” and adoption of such a system for chattel paper could have greatly simplified the process of securitization.⁴⁰

39. Lauryn Franzoni, *Strategy Shifts in Auto Financing: The Customer Today Is More likely to be the Dealer*, AM. BANKER, Mar. 26, 1990, at 6 (describing the decline in direct bank-consumer financing of auto purchases and the rise of indirect auto financing).

40. Securitizations of such investments are normally represented in book-entry form

Other central registry systems were created for the American securities market with the Depository Trust & Clearing Company (“DTCC”), the American real estate mortgage industry with the Mortgage Electronic Registration System (“MERS”), and for cross-border trade with the Bill of Lading Electronic Registry Organization (“BOLERO”). While such a system offers great efficiency benefits to an industry once it has been successfully launched, not all such systems actually succeed. To deal with the problems of clearing paper securities, the New York Stock Exchange established the Central Certificate Service in 1964.⁴¹ The Wall Street Paperwork Crisis of 1968 showed that more was required, which led in 1973 to the creation of the Depository Trust Company (“DTC”), the predecessor to the DTCC.⁴² DTC quickly achieved wide-spread acceptance because it had been developed to respond to a crisis in the U.S. securities industry.⁴³ By contrast, MERS was launched in 1993 but it was not until a decade later that half of all residential mortgages in the U.S. were recording in the MERS system.⁴⁴ Adoption rates for the BOLERO system remain disappointing more than a decade after it was launched.⁴⁵ Even if a central registry model might have been a good idea for chattel paper finance, the industry itself had taken no steps in that direction by 1998. In light of the lack of any evidence that chattel paper financiers as an industry were starting to collaborate on a central registry system, an initiative to create such a system could not be launched using the Article 9 revision process as a platform, which in any event was in the process of winding down.

The risks of codifying the adoption of new technology prematurely were also evident to the drafters of Revised Article 9. In the 1970s, in response to the Wall Street Paperwork Crisis and its aftermath, UCC Article 8 had been completely revised.⁴⁶ It was not until the 1980s, after the new version of Article 8 had been adopted in New York and other states, was it generally

and not in paper certificates. E-mail from Steven Schwarz, to author (Aug. 30, 2010, 05:36 PST) (on file with author).

41. Wyatt Wells, *Certificates and Computers: The Remaking of Wall Street, 1967 to 1971*, 74 BUS. HIST. REV. 193, 211 (2000).

42. *Responding to Wall Street's Paperwork Crisis*, DEPOSITORY TRUST & CLEARING CORP., <http://www.dtcc.com/about/history> (last visited Dec. 11, 2010).

43. *U.S. Post-Trade Processing: Back-Office Consolidation*, DEPOSITORY TRUST & CLEARING CORP., <http://www.dtcc.com/about/history/consolidation.php> (last visited Dec. 11, 2010).

44. Christopher L. Peterson, *Foreclosure, Subprime Mortgage Lending, and the Mortgage Electronic Registration System*, 78 U. CIN. L. REV. 1359, 1368, 1373-74 (2010).

45. See generally Miriam Goldby, *Electronic bills of lading and central registries: what is holding back progress?*, 17 INFO. & COMMS TECH. L. 125 (2008) (noting membership requirements, confidentiality concerns, and liability for system malfunction as reasons why central registry systems like BOLERO have not caught on).

46. Mooney, *supra* note 9, at 311 & n.6.

recognized that the 1977 version of Article 8 made certain assumptions about the architecture of the computer systems used to clear securities transactions that were, in fact, false.⁴⁷ The drafters of the 1977 version of Article 8 assumed that electronic securities transactions would clear through computers maintained by the stock issuers when in fact they cleared through the computers maintained by DTC. Because of the disconnect between the way the 1977 version of Article 8 was written and the way that Wall Street actually worked, lenders could not be certain their security interests in stocks and bonds were perfected.⁴⁸ That anxiety was heightened by the failure of Drexel Burnham Lambert in 1990, which in turn triggered a further round of revisions to Article 8 that was completed in 1994.⁴⁹

The drafters of Revised Article 9 had to find a way to cut through the chicken-and-egg problem that chattel paper financiers would not give up paper processes unless they were assured they would keep the super-priority they had been given under old Article 9, but there were no suitable models for crafting such a provision and adding it to Article 9. The drafters had authority to simplify, clarify, and modernize commercial law and practice, but their authority to issue new regulatory mandates was problematic at best. The failure in the 1980s of the Uniform New Payments Code in the face of extensive opposition stood as a reminder of what happens if commercial code drafters fail to distinguish between codifying existing commercial law and practice, and regulatory reform.⁵⁰ But in the absence of something rather like a new regulatory mandate, the chattel paper financiers would lack the certainty they needed to reengineer their business processes.

B. *Revised U.C.C. § 9-105*

It was not until 1998, the final year of the revision process, that a provision governing control of ECP finally appeared in the draft. The March 1998 version of section 9-105 became final later in 1998 when revised Article 9 was approved by the ALI and NCCUSL. Revised section 9-105 provides:

47. See U.C.C. art. 8 (Reporter's Prefatory Note 1994), 2C U.L.A. 431, 433 (2005) Rogers, *supra* note 27, at 1445-46.

48. Rogers, *supra* note 27, at 1445-46.

49. See Mooney, *supra* note 9, at 315; Rogers, *supra* note 27, at 1446-47.

50. See Edward L. Rubin, *Policies and Issues in the Proposed Revision of Articles 3 and 4 of the UCC*, 43 BUS. LAW. 621, 623 (1988) (noting how that Uniform Payments Code "encountered sustained opposition and was ultimately abandoned by the ALI and NCCUSL"). But see Hal S. Scott, *Corporate Wire Transfers and the Uniform New Payments Code*, 83 COLUM. L. REV. 1664, 1665-66 (1983) (noting that the Uniform Payments Code "represents the first attempt to compare, cross-justify and consolidate . . . payment system rules on a systematic basis").

A secured party has control of electronic chattel paper if the record or records comprising the chattel paper are created, stored, and assigned in such a manner that:

- (1) a single authoritative copy of the record or records exists which is unique, identifiable and, except as otherwise provided in paragraphs (4), (5), and (6), unalterable;
- (2) the authoritative copy identifies the secured party as the assignee of the record or records;
- (3) the authoritative copy is communicated to and maintained by the secured party or its designated custodian;
- (4) copies or revisions that add or change an identified assignee of the authoritative copy can be made only with the participation of the secured party;
- (5) each copy of the authoritative copy and any copy of a copy is readily identifiable as a copy that is not the authoritative copy; and
- (6) any revision of the authoritative copy is readily identifiable as an authorized or unauthorized revision.

The language of Revised section 9-105 demonstrates that the drafters decided to use the technological sophistication of business information systems as a proxy for both the security of existing chattel paper administrative processes and for the security of records maintained within regulated financial institutions. In other words, the drafters of Revised section 9-105 substituted a technological feasibility barrier for both traditional paper-based processes and prudential regulation because traditional bank or securities markets regulators were largely absent from chattel paper markets.

The draft expressed this technological sophistication requirement indirectly in terms of the result to be achieved rather than directly in terms of a description of the technology to be used.⁵¹ While it is rare for laws to mandate that computer systems achieve a specific level of security, such technological mandates do exist. For example, the Drug Enforcement Agency requires that certain parts of online prescription-issuing systems for controlled substances must conform to the Federal Information Processing Standard (“FIPS”)

51. This is similar to the distinction between “performance” standards and “design” standards in trade law. See ALAN O. SYKES, *PRODUCT STANDARDS FOR INTERNATIONALLY INTEGRATED GOODS MARKETS* 3 (1995) (performance standards explain the desired result in general terms and can be met in a variety of ways, while design standards mandate a particular solution to achieve the desired result); see also *Agreement on Technical Barriers to Trade: Annex 3: Code of Good Practice for the Preparation, Adoption and Application of Standards*, WORLD TRADE ASS’N, http://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm (last visited Dec. 13, 2010) (stating a preference for standards based on product requirements in terms of performance rather than design characteristics).

140-2.⁵² The control provisions in Revised section 9-105 especially parallel the control requirements in Section 302 of the Sarbanes-Oxley Act, which requires public companies to establish and maintain internal control systems in general terms, so that the individual public companies ultimately decide how to design their accounting systems.⁵³ The technological sophistication necessary to show that a party is in “control” of ECP consists of making a computer system reproduce all the relevant functional attributes of paper chattel paper. Although this is a very difficult task from a technological perspective, if it could be done, then it would simplify the migration to ECP for industry participants.

The official comments to Revised section 9-105 emphasize that while an unlimited number of copies of ECP may be in existence, control over ECP requires a computer system that can distinguish a “single, authoritative copy” of ECP from all other copies.⁵⁴ In the Edsel automobile financing example in the preface of this article, the dealer may only retain copies of the ECP it submitted to the finance company if the dealer’s computer, the finance company’s computer, and any other third-party computer system used as a repository for ECP can each distinguish between the single authoritative copy and the copy retained by the dealer. The official comments explain that the drafters’ intention was to allow the market to decide what business and technological systems are appropriate for establishing that they had “control” over ECP, but not to recognize a mere agreement between parties to establish that control had been achieved.⁵⁵

Although the drafters stated explicitly in the official comments to Revised section 9-105 that their goal was not to establish more stringent standards for control of ECP than existed for possession of traditional chattel paper, they certainly did create some significant challenges for the technologists developing control systems. The most obvious challenge was that it is normally impossible to identify any one electronic copy of a document as being the “original” document because computers can create an unlimited number of perfect copies of documents in electronic form almost instantly. A second related problem can occur when copies of electronic documents are transmitted across information systems by repeatedly making transient copies of them. Since transient copies may not be deleted after the transmission is complete, a trail of countless, unintended, and perfect copies could result.⁵⁶ In addition,

52. 21 C.F.R. § 1311.30 (2010).

53. Sarbanes-Oxley Act of 2002 § 302, 15 U.S.C. § 7241 (2006); Certification of Disclosure in Companies’ Quarterly and Annual Reports, 67 Fed. Reg. 57,276 (Sept. 9, 2002) (to be codified at 17 C.F.R. pts. 228, 229, 232, 240, 249, 270, 274); Securities Exchange Act Rules, 17 C.F.R. §§ 240.13a-14, 240.15d-14 (2010).

54. U.C.C. § 9-105 cmts. 3 & 4 (2008).

55. U.C.C. § 9-105 cmt. 4 (2008).

56. This is because data in transmission is stored in memory buffer caches until the

although business information systems often are designed to present users with a consistent representation of data that mirrors a paper document, the data is rarely stored inside a business information system in a way that corresponds to a paper document. Rather, what appears to be single document is actually many separate bits of data stored in many different places on a computer hard drive; the computer knows the addresses of all the data associated with a particular document when a user views it and dynamically assembles and reassembles the data in order to present a consistent image to the user. Thus, at some level, the end user's impression that a document has been stored inside the computer is a carefully nurtured illusion created by output devices such as computer screens and printers. In other words, business information systems would only be able to meet the requirement of recognizing a "single, authoritative copy" of ECP with substantial modifications.

The fact that electronic documents stored inside computers and traditional paper documents had very different characteristics is rarely relevant to most attorneys in practice. For most attorneys, that changed when the concept of "electronically stored information" ("ESI") was introduced in 2006 into the Federal Rules of Civil Procedure ("FRCP") to replace the concept of electronic document.⁵⁷ The ESI provisions in the FRCP directed the attention of parties to litigation to "native format" data on their computers and away from "images" of data processed to look like documents (such as PDF files).⁵⁸ Unlike the revised FRCP that bring the law of evidence into line with the normal operation of business information systems, Revised section 9-105 moved in completely the opposite direction by requiring business information systems to actually mimic some of the salient features of a paper document inside the computer system. Business information systems are not normally capable of recognizing a "single authoritative copy" of a document and holding it within an environment so secure that it remains unique, identifiable, and unalterable without the consent of the party in control of it. Building computer systems capable of performing those unusual functions created major design challenges for technologists; by contrast, the revised FRCP created major conceptual challenges for attorneys with limited knowledge of computer systems and accustomed to paper-based discovery processes.

Although Revised section 9-105 set a high technological threshold for "control" of ECP, the drafters gave developers the flexibility to create their

buffer space is required for other uses. *See, e.g.*, GEORGE COULOURIS ET AL., *DISTRIBUTED SYSTEMS: CONCEPTS AND DESIGNS* 329 (3d ed. 2001).

57. FED. R. CIV. P. 26(b)(2) & 2006 advisory committee's note; FED. R. CIV. P. 37(e) & 2006 advisory committee's note.

58. Kenneth J. Withers, *Electronically Stored Information: The December 2006 Amendments to the Federal Rules of Civil Procedure*, 4 *NW. J. TECH. & INTELL. PROP.* 171, 188 (2005).

own design for the control system so that the system could meet market demands. This limited flexibility stands in marked contrast to the rigidity of the Food & Drug Administration's 21 CFR Part 11 Electronic Signature Regulation and the European Union's E-Signature Directive.⁵⁹ 21 CFR Part 11 and the E-Signature Directive in effect mandate the implementation of a particular type of "public key infrastructure" based on information security design best principles from the early 1990s.⁶⁰ Although their drafters intended them to be technology neutral but strict in much the same way that the drafters of Revised section 9-105 intended, they overshot the mark.⁶¹ The final 21 CFR Part 11 regulation was issued in 1997 but more than a decade later, the U.S. pharmaceutical industry is still struggling to develop industry-wide interoperable systems to implement it. Repeated studies by the Commission reveal that e-signatures in the form provided for in the Directive are not a driver for adoption of e-commerce by European businesses, but a barrier.⁶²

C. Subsequent Developments

After the Article 9 revision process ended, the Uniform Electronic Transactions Act (UETA) used the Article 9 standard for control of ECP as a model for the electronic equivalent of a negotiable instrument with some

59. See 21 C.F.R. §§ 11.1-11.70 (2010); Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures, 2000 O.J. (L 013) 12.

60. See generally Jane K. Winn, US and EU Regulatory Competition and Authentication Standards in Electronic Commerce (May 22, 2006) (unpublished manuscript), available at <http://ssrn.com/abstract=901324>.

61. See generally Jane K. Winn, *Electronic Commerce Law: Direct Regulation, Co-Regulation and Self-Regulation*, CAHIERS DU CRID (forthcoming June 2011), available at <http://ssrn.com/abstract=1634832>.

62. In 2007, a study undertaken for Commission DG Information Society identified many problems related to the Electronic Signature Directive which were contributing to lack of adoption of the technology in Europe. See SEALED, DLA PIPER & ACROSS COMMUNICATIONS, STUDY ON THE STANDARDISATION ASPECTS OF ESIGNATURE (2007), available at http://ec.europa.eu/information_society/eeurope/i2010/docs/esignatures/e_signatures_standardisation.pdf. In 2010, the Commission DG Taxation and Customs removed electronic signature requirements from e-invoicing regulations, citing them as a major barrier to the adoption of e-invoicing by European businesses. See *Proposal for a Council Directive amending Directive 2006/112/EC on the common system of value added tax, with regard to the duration of the obligation to respect a minimum standard rate*, COM (2010) 331 final (June 24, 2010); see also Phillip Schmandt, *EU Commission Proposes New Rules Streamlining Use of Electronic Invoices in Europe*, AM. BAR ASS'N, <http://www.abanet.org/buslaw/committees/CL320000pub/newsletter/200903/schmandt.pdf> (last visited Dec. 12, 2010).

modifications.⁶³ Because the UETA applies to any transaction in electronic form, and is not limited to a specific category of commercial transaction, a new term to describe the electronic equivalent of a negotiable instrument had to be devised. The drafters of the UETA chose “transferable record.” Section 16 of the UETA reproduced the language in Revised UCC section 9-105, but transformed it into a safe harbor and inserted before it a more general description of what creates “control” of a transferable record. This general description provides that, “[a] person has control of a transferable record if a system employed for evidencing the transfer of interests in the transferable record reliably establishes that person as the person to which the transferable record was issued or transferred.”⁶⁴ Because control of transferable records in the UETA is explicitly made a function of the reliability of the system within which the record exists, it is much more flexible than the requirements of Revised section 9-105. In 2000, Section 201 of the Electronic Signatures in Global and National Commerce Act (E-SIGN Act) also recognized transferable records based on promissory notes with a general authorization and a safe harbor based on the UETA model. In 2005, revised UCC Article 7 governing documents of title adopted control provisions based on the UETA and Revised UCC section 9-105 models.⁶⁵

In 2010, Revised section 9-105 itself was amended to include a general provision based on the Revised UCC section 7-106 model.⁶⁶ Revised Article 7

63. UETA § 16 cmt. 3 (1999).

64. UETA § 16(b) (1999).

65. See U.C.C. § 7-106 cmts. 1 & 4 (2008).

66. Other minor stylistic changes were made to the text of Revised U.C.C. § 9-105 in 2010 such as replacing “revision” with “amendment” and a requirement of participation was changed to a requirement of consent. U.C.C. § 9-105 (as amended 2010) now provides:

(a) [General rule: control of electronic chattel paper.] A secured party has control of electronic chattel paper if a system employed for evidencing the transfer of interests in the chattel paper reliably establishes the secured party as the person to which the chattel paper was assigned.

(b) [Specific facts giving control.] A system satisfies subsection (a), and a secured party has control of electronic chattel paper, if the record or records comprising the chattel paper are created, stored, and assigned in such a manner that:

(1) a single authoritative copy of the record or records exists which is unique, identifiable, and, except as otherwise provided in paragraphs (4), (5), and (6), unalterable;

(2) the authoritative copy identifies the secured party as the assignee of the record or records;

(3) the authoritative copy is communicated to and maintained by the secured party or its designated custodian;

(4) copies or amendments that add or change an identified assignee of the authoritative copy can be made only with the consent of the secured party;

(5) each copy of the authoritative copy and any copy of a copy is readily

also included a provision governing reissuance of documents of title in an alternative medium, e.g., from paper to electronic or vice versa.⁶⁷ The comments to Revised section 9-105 note the possibility of converting paper chattel paper into electronic form, but overlooked the possibility that someone in control of ECP might prefer to be in possession of traditional chattel paper instead. The 2010 amendments to Article 9 do not include a section equivalent to Revised section 7-105 on converting between different media, but revised comments to Amended section 9-105 are intended to make it clear that conversions in either direction are permitted. When chattel paper exists in both paper and electronic form, it may be referred to as “hybrid” chattel paper.⁶⁸ Hybrid chattel paper may be created when finance companies agree with customers to modifications that are recorded and stored in a different form from the core electronic document. Whether this practice of storing the record of the modification apart from the single authoritative copy held within a highly secure system affects the perfection by control was discussed by the Article 9 Review committee, but is unlikely to be addressed in the 2010 amendments.

With the addition of the general provision to Revised section 9-105, secured lenders may feel more comfortable that the new systems meet the original “single authoritative copy” and control requirements. If they do not, they can still develop new systems based on different designs, such as a central registry, as UETA § 16 notes:

The [general] control requirements may be satisfied through the use of a trusted third party registry system. Such systems are currently in place with regard to the transfer of securities entitlements under Article 8 of the Uniform Commercial Code, and in the transfer of cotton warehouse receipts under the program sponsored by the United States Department of Agriculture. This Act would recognize the use of such a system so long as the standards of subsection (c) were satisfied. In addition, a technological system which met such exacting standards would also be permitted under Section 16.⁶⁹

identifiable as a copy that is not the authoritative copy; and

(6) any amendment of the authoritative copy is readily identifiable as an authorized or unauthorized revision.

67. U.C.C. § 7-105 (2003).

68. Memorandum from Thomas J. Buiteweg to the Article 9 Joint Review Committee (Dec. 23, 2008), *available at* <http://www.law.upenn.edu/bll/archives/ulc/ucc9/buitewegmemo.pdf>.

69. UETA § 16 cmt. 1 (1999).

An ECP system modeled after the USDA's electronic warehouse receipts system would require further modification because it does not meet the requirements of Revised section 9-105 in the absence of a general provision.⁷⁰

In some segments of American financial markets, commercial statutes are supplemented with a wide range of industry codes and technical standards, and ECP may develop similar forms of self-regulation in the future. The UCC accommodates merchant self-regulation through the development of industry rules and practices in a variety of ways. For example, UCC Article 4 is based on the American Bankers' Association Bank Collection Code of 1929, which in turn was the culmination of decades of work by different bankers' trade associations to rationalize the organization of the process of collecting checks.⁷¹ The role of industry self-regulation through codified rules and practices was given special recognition with UCC section 4-103(b), which provides that "Federal Reserve regulations and operating circulars, clearing-house rules, and the like have the effect of agreements under subsection (a), whether or not specifically assented to by all parties interested in items handled."⁷² Section 4-103(b) comments explain that this broad recognition of self-regulation applies to check collection under Article 4, but not to the rest of the UCC because of the technical complexity and continuous innovation characteristic of the check collection system.⁷³

IV. NEW INDUSTRY PRACTICES EMERGE

Gall's Law predicts that any attempt to build a national ECP market from scratch and launch it soon after the enactment of Revised section 9-105 would likely fail.⁷⁴ According to Gall's Law, development of complex systems through slow, iterative processes have a better chance of success if the goal is to create a large, complex system, such as a new market for financial services.⁷⁵ Over the past decade, the ECP industry has undergone slow growth in the form of the development of new companies by entrepreneurs, usage of trade and technical standards. In 2005, Nissan Motor Acceptance Corporation was the first captive auto finance company to securitize ECP created with DealerTrack e-contracting systems and stored in an electronic vault maintained by eOriginal.⁷⁶ Since then it has securitized ECP dozens of times. By 2010, ECP

70. See McDonnell, *supra* note 13, § 29A.02.

71. Hal S. Scott, *The Risk Fixers*, 91 HARV. L. REV. 737, 740-62 (1978).

72. U.C.C. § 4-103(b) (2008).

73. U.C.C. § 4-103(b) cmts. 1 & 3 (2008).

74. GALL, *supra* note 1, at 52.

75. See *id.*

76. Press Release, DealerTrack, Nissan Motor Acceptance Corporation and Infiniti Financial Services Implement DealerTrack's eContracting Product (July 7, 2004), *available*

accounted for more than half of all auto financing by Nissan dealers.⁷⁷ Adoption rates for ECP among other auto manufacturers and in other industries that depend heavily on secured financing such as equipment leasing also grew, but at a slower pace.⁷⁸ Although student loans are not covered by Article 9 because they do not involve personal property security, intermediaries in student loan markets have voluntarily adopted the Revised section 9-105 standard for “control” of electronic student loan notes in their securitization transactions.

Although section 9-105 provides industries with the legal scaffolding to use ECP, additional industry practices must also develop to build a market for ECP. Because transactions in ECP, unlike transactions in traditional chattel paper, cannot take place without computer mediation, markets for ECP will exist within networked computer systems. To build markets based on networked computer systems, business processes that are closely tied to computer system functions must be harmonized and the computers themselves must be interoperable. Harmonization of business practices requires the development of standard industry practices and technical interoperability requires technical standards. In the U.S., the conventional way that businesses operating in developing markets resolve these challenges is with collaboration within industry associations and through standard setting processes, which may evolve into self-regulatory systems. This is particularly true of financial services industries, which have produced self-regulatory organizations such as exchanges, clearinghouses and funds transfer networks. The role of codified trade practices and technical standards within the Article 9 framework has grown in recent decades, as evidenced by the migration to computerized systems for recording financing statements.⁷⁹

Technical standard-setting activities often play an essential role in building new markets mediated by information technology.⁸⁰ American businesses have a strong tradition initiating and supporting private, voluntary standard-setting activities to support the growth of new markets.⁸¹ An economic historian described industrial standard setting processes as: “[c]onsensus standardization

at <http://ir.dealertrack.com/releasedetail.cfm?ReleaseID=176711>.

77. *Nissan Motor Acceptance Corp.*, EORIGINAL, <http://www.eoriginal.com/customers/nissan-motor-acceptance-corporation> (last visited Dec. 12, 2010).

78. Also based upon author’s discussions with people in the industry.

79. Revised Article 9 Filing Project also promulgated the Model Administrative Rules for the International Association of Commercial Administrators. Lynn M. LoPucki, *The Spearing Tool Filing System Disaster*, 68 OHIO ST. L.J. 281 (2007).

80. CARL SHAPIRO & HAL R. VARIAN, *INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY* 16-17 (1999).

81. OFF. OF TECH. ASSESSMENT, U.S. CONGRESS *GLOBAL STANDARDS: BUILDING BLOCKS FOR THE FUTURE* 14-15 (1992), available at <http://www.strategicstandards.com/files/GlobalStandards.pdf>.

is a social process in which technical experts from public, private, and non-profit sectors negotiate the direction and shape of technological change.”⁸² The term “standard” means different things in different contexts, including legal contexts.⁸³ In order to distinguish industrial or engineering standards from legal standards or norms, the former are referred to in this paper as “technical standards.” The International Organization for Standards (ISO) has defined technical standards in this sense as:

[A] document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context [and] . . . be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits.⁸⁴

This same ISO document contrasts standards with “regulations,” which are documents that provide binding legislative rules, i.e., adopted by an authority.⁸⁵ “Technical regulations” are regulations that provide technical requirements, either directly or in reference to or incorporation of the content of a standard, technical specification or code of practice.⁸⁶ Applying these definitions to commercial law, UCC Article 4 governing check collections is an example of a “regulation,” while the National Automated Clearing House Association (“NACHA”) Rules include “standards” for electronic funds transfers. The Federal Reserve Bank Operating Circular No. 4, effective April 27, 2009 governing the handling of automated clearing house items that makes compliance with the NACHA Rules mandatory is a “technical regulation.”⁸⁷

Most technical standards fall into three general categories: performance, measurement, and compatibility.⁸⁸ Performance standards specify ways to perform certain tasks; they specify either a process or a result.⁸⁹ For example,

82. Andrew L. Russell, *“Industrial Legislatures”: Consensus Standardization in the Second and Third Industrial Revolutions*, at ii (Aug. 2007) (unpublished Ph.D. dissertation, John Hopkins University) (on file with author).

83. For example, THE OXFORD ENGLISH DICTIONARY 506 (2d ed. 1989) recognizes more than thirty different meanings of the noun “standard.”

84. *Standards and Regulations*, ISO/IEC INFO. CENTRE, http://www.standardsinfo.net/info/livelink/fetch/2000/148478/6301438/standards_regulations.html (last modified Mar. 25, 2008).

85. *Id.*

86. *Id.*

87. Federal Reserve Banks, Operating Circular No. 4 ¶ 1.4, at 1 (July 1, 2010), available at http://www.frb services.org/files/regulations/pdf/operating_circular_4_070110.pdf.

88. See Russell, *supra* note 82, at 3.

89. *Id.* at 4.

credit and debit card processing network standards specify time intervals within which responses for standard messages must be received or the transaction must fail. Measurement standards specify an objective quantifiable unit of measurement, such as an inch, a centimeter or a watt.⁹⁰ Compatibility standards define interfaces between discrete objects.⁹¹ Compatibility standards create efficiencies and economies of scale in the production process, and promote interoperability between complementary products.⁹²

Financial services industries in the U.S. and in global markets are often very adept at promoting mutually beneficial technical standard setting activities.⁹³ One of the earliest examples of a successful, large-scale electronic commerce system is the U.S. national check collection system based on the standard for "Magnetic Ink Character Recognition" ("MICR") encoding of checks. This technology was developed by the American Bankers Association, a trade association founded in 1875.⁹⁴ The rationalization of the check collection process itself began even earlier, in 1853 with the founding of the New York Clearinghouse Association for exchanging check, bonds, coupons, and securities.⁹⁵ In 1911, the ABA created the "routing number" system to identify unambiguously all the different banks participating in check collection systems around the country.⁹⁶ In 1956, the ABA Bank Management Commission approved guidelines for the use of MICR technology to sort checks based on their routing numbers.⁹⁷ The use of scanners to read and record MICR numbers with automated systems was first demonstrated in 1956, and by 1963, use of the technology for using computers to read information on checks was nearly universal in the U.S.⁹⁸ Standards for MICR technology were first developed by the American Bankers Association as the E-13B standard, and transferred first to the American National Standards Institute ("ANSI") in 1963, and then to the International Organization for Standardization ("ISO") where it was recognized as the ISO 1004 standard in 1965.⁹⁹ While

90. *Id.*

91. *Id.*

92. *Id.* at 3-4.

93. Winn, *supra* note 61, at 5.

94. Freedman, *supra* note 2, at 153.

95. *Id.* at 152.

96. *Id.* at 145.

97. *Id.* at 147.

98. Lewis Mandell, Note, *Diffusion of EFTS Among National Banks*, 9 J. MONEY, CREDIT & BANKING 341, 341-48 (1977).

99. Thomas D. Hayosh, *The History of the Check and Standardization Efforts*, HAYOSH CONSULTING ENGINEERS (Sept. 26, 1995), <http://home.comcast.net/~hayosh/HISTMICR.pdf>. ANSI MICR standards are currently maintained in the U.S. by the X9 Accredited Standards Committee on Banking, available at

development of standards for MICR technology clearly helped make it easier for banks to adopt it, probably the key factor driving its rapid adoption was the announcement by the Federal Reserve System that it would cease handling checks that were not MICR-encoded.¹⁰⁰

Technical standards and voluntary, consensus standard-setting processes have begun to emerge for ECP finance markets. In 2003, secured lenders interested in working with ECP convened a standard setting process under the auspices of the ANSI Accredited Standards Committee X9 for Financial Industry Standards.¹⁰¹ This effort led to the formation of the Credit Subcommittee X9C, which undertook standard setting activities related to electronic credit contracting.¹⁰² In 2004, the Credit Subcommittee X9C published the X9.103 Motor Vehicle Retail Sale and Lease Electronic Contracting Standard, and “SPeRS – Standards and Procedures for Electronic Records and Signatures.” SPeRS was developed by the Electronic Financial Services Council (“EFSC”), a trade group formed in 1999 to develop standards to help financial services firms comply with the requirements of UETA and E-SIGN. The Electronic Signatures and Records Association (“ESRA”) later took over the work of the EFSC, and supported the preparation of the X9.110 Transfer of Location of Electronic Contracts (“TOLEC”) standard, completed in 2008. In 2006, the representatives of the Open Group, a standard setting organization, worked with representatives of the American Bar Association Business Law Section’s Cyberspace Committee to produce the “Framework for Control over Electronic Chattel Paper—Compliance with U.C.C. § 9-105.”¹⁰³

At one level, standard setting activity of this type suggests that the market for ECP is maturing. For computer-mediated markets such as financial services markets to continue to grow and evolve, their activities must be supported by organic standard setting activities that develop standards in response to the requirements of market participants, and then monitor the impact of those standards, updating or replacing them as needed. In 2010, the ANSI Board of Standards review published a notice of its intention to reaffirm X9.103.¹⁰⁴ In

www.x9.org. For international markets the standards are maintained by the ISO Technical Committee 68, available at www.iso.org/iso/iso_technical_committee.html?commid=49650.

100. Hayosh, *supra* note 99, at 2.

101. A standard setting organization may become “ANSI accredited” if it observes minimum due process standards known as “ANSI Essential Requirements.” *Introduction to ANSI*, AM. NAT’L STANDARDS INST., http://www.ansi.org/about_ansi/introduction/introduction.aspx (last visited Sept. 10, 2010).

102. *Committees*, ACCREDITED STANDARDS COMMITTEE X9 INCORPORATED FOR FIN. INDUS. STANDARDS, <http://www.x9.org/committees> (last visited Nov. 26, 2010).

103. Mattias Hallendorff & Mike Jerbic, Working Group on Transferability of Elec. Fin. Assets, *Framework for Control over Electronic Chattel Paper—Compliance with U.C.C. § 9-105*, 61 BUS. LAW. 721 (2006).

104. Am. Nat’l Standards Inst., *American National Standards—Call for Comment on*

2010, the X9C Subcommittee began work on a new standard for Standard Terms and Definitions of Automotive Loan-level Data Elements for use in securitization, which would simplify the analysis of the current and future performance of securities backed by pools of auto loans.¹⁰⁵ At the same time, ESRA canvassed its members with regard to the need to review SPeRS and issue a version 2.0 of that standard.

At another level, however, the X9.103 and SPeRS standards clearly are not technical standards at all. The SPeRS standard may be described as a “behavioral” standard because its content relates to business processes, not information technology per se. In this sense, SPeRS may resemble ISO 9000, a quality management standard that focuses on improving the performance of an organization’s overall management system, not a specific engineering process or product.¹⁰⁶ X9.103 is even less like a performance, measurement or interoperability standard because it focuses on what constitutes compliance with Revised section 9-105. The Open Group’s website, describes Open Group/ABA Framework for Control as a “guide” rather than a standard, suggesting it is a soft or behavioral equivalent to a hard technology standard.¹⁰⁷ When technical standards are incorporated into national laws in the form of technical regulations, such as with the DEA requirement that online systems for issuing prescriptions for controlled substances comply with the FIPS 140-2 standard for secure information processing, it is normally because legal authorities rely on the exercise of professional engineers to determine what constitutes an appropriate solution to a factual problem.¹⁰⁸ By contrast, X9.103 appears to be a legal opinion issued as a technical standard. Since X9.103 has not been used yet in litigation, it is unclear what deference a court would pay to its interpretation of “control” over ECP. The later X9.110 TOLEC standard and the new project to standardize terms and definitions in securitized auto loans are much closer to the conventional understanding of technical standards developed to support the growth of a financial services market.

The credit rating agency Standard and Poor’s has published numerous guides to its credit rating policies for the use of issuers, including issuers of

Standards Proposals, STANDARDS ACTION, June 25, 2010, at 1, 2, available at <http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Action/2010%20PDFs/SAV4126.pdf>.

105. Press Release, Accredited Standards Committee X9, X9 to Define the Standard for Auto Loan Securitization (Feb. 2010), available at www.x9.org/home/X9_to_Define_the_Standard_for_Auto_Loan_Securitization.pdf.

106. See generally CRAIG N. MURPHY & JOANNE YATES, THE INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO): GLOBAL GOVERNANCE THROUGH VOLUNTARY CONSENSUS ch. 4 (2009).

107. *Framework for Control over Electronic Chattel Paper*, OPENGROUP (Feb. 2006), <http://www.opengroup.org/bookstore/catalog/g061.htm>.

108. 21 C.F.R. § 1311.30 (2010).

securitizations or “structured finance transactions.”¹⁰⁹ The guidelines on the legal structure of securitizations include guidance on various UCC Article 9 issues, including model representations and warranties.¹¹⁰ The publication by a rating agency of standard contract terms contributes to the growth of the ECP market in the same manner that the promulgation of a standard “master agreement” by the International Swap and Derivative Association contributed to the growth of the global market for derivatives.¹¹¹

Over the last decade, a competitive market for ECP services has emerged. Founded in 1996, eOriginal was one of the earliest companies to develop information technologies capable of mimicking many of the salient features of negotiable instruments. In 2001, J.P. Morgan Chase, Wells Fargo and AmeriCredit founded DealerTrack to provide an Internet-based automobile financing service,¹¹² and in 2005, it became a publicly-listed company.¹¹³ The “vault” system developed by eOriginal and the online auto finance system developed by DealerTrack provided the back office support for the 2005 Nissan securitization of ECP.¹¹⁴ In 2002, the captive finance companies of the Big Three U.S. automakers announced the launch of RouteOne to compete with DealerTrack, and chose eOriginal to provide its ECP “vault” service.¹¹⁵ In 2009, two leading vendors of “dealer management system” software used by dealers announced the formation of another auto finance platform, Open Dealer Exchange, and chose Silanis to provide its ECP “vault” service.¹¹⁶ Competition

109. STANDARD & POOR’S STRUCTURED FINANCE: LEGAL CRITERIA FOR U.S. STRUCTURED FINANCE TRANSACTIONS 7 (4th ed. 2004), available at http://www2.standardandpoors.com/spf/pdf/fixedincome/SF_legal_criteria_FINAL.pdf.

110. The Revised UCC Article 9 Criteria were last updated on October 1, 2006, as Appendix III to the Legal Criteria for U.S. Structured Finance Transactions, available at <http://www.standardandpoors.com>.

111. Tamar Frankel, *Cross-Border Securitization: Without Law, But Not Lawless*, 8 DUKE J. COMP. & INT’L L. 255, 275 & n.56 (1998).

112. *Company News; Three Financial Institutions Form Auto Finance Company*, N.Y. TIMES, Jan. 30, 2001, <http://www.nytimes.com/2001/01/30/business/company-news-3-financial-institutions-form-auto-finance-company.html>.

113. Press Release, DealerTrack, *DealerTrack Sets Price For Initial Public Offering* (Dec. 12, 2005), available at <http://ir.dealertrack.com/releasedetail.cfm?ReleaseID=181767>.

114. Press Release, DealerTrack, *DealerTrack Announces Securitization Of Electronic Contracts Stored In Its Vault* (Nov. 2, 2005), available at http://files.shareholder.com/downloads/TRAK/485702682x0x25591/21d60eb6-d08c-414f-89ae-8bb9a6d9c3a2/TRAK_News_2005_11_2_General.pdf.

115. Press Release, RouteOne, *Big Three Joint Venture Named RouteOne* (June 13, 2002), available at http://www.routeone.com/RouteOne_Press_Release.php?ID=9&language=english.

116. Press Release, *Open Dealer Exchange, Open Dealer Exchange selects Silanis as its e-contracting solutions partner* (June 10, 2009), available at http://www.opendealerechange.com/press_2010-06-10.html.

among different technology vendors to provide ECP services should increase adoption rates for ECP among automobile dealers and other equipment financiers.

Standard setting processes to support interoperability and innovation, and to harmonize business practices, can support the growth of competitive markets. Standard setting activities such as those undertaken within the ANSI X9C Committee and the Open Group-ABA collaboration play an essential role in the dissemination of innovative technologies and the harmonization of business practices. Standard setting activities can create a framework for shared understanding among borrowers, lenders, regulators and technology vendors in financial markets. The UCC recognizes that usage of trade may be a source of commercial law and defines it as “any practice or method of dealing having such regularity of observance in a place, vocation, or trade as to justify an expectation that it will be observed with respect to the transaction in question.”¹¹⁷ As with any customary practice, the UCC provides that usage of trade must be proved as a question of fact; however if a “usage is embodied in a trade code or similar record, the interpretation of the record is a question of law.”¹¹⁸ In recent decades, however, there has been considerable controversy surrounding UCC provisions regarding the use of usage of trade in contract disputes among merchants.¹¹⁹ When customary practices become formalized as industry codes and technical standards, they may be less controversial, or at least controversial for different reasons.¹²⁰

V. CONCLUSION

Revised UCC Article 9’s provisions governing control of ECP represented a major innovation in commercial law at the time of enactment. Section 9-105 offered the automobile and equipment financing industries an opportunity to update and streamline their lending systems. In order to accept that invitation, these industries had to undergo significant technological innovation and business process reengineering. Ten years after Revised Article 9 became effective, it is clear that the drafters’ invitation to American lenders to innovate has been accepted. Although adoption rates for ECP may lag behind what its early promoters might have hoped for, they are nevertheless significant and growing. The global financial crisis in 2008-2009 stalled adoption of ECP, especially in the U.S. automobile industry which was hit particularly hard in resulting recession. With economic recovery, the market for ECP shows signs

117. U.C.C. § 1-303(c) (2008).

118. U.C.C. § 1-303(c) (2008).

119. Lisa Bernstein, *Merchant Law in a Merchant Court: Rethinking the Code’s Search for Immanent Business Norms*, 144 U. PA. L. REV. 1765, 1769-70 (1996).

120. See Winn, *supra* note 61.

of regaining lost momentum. In 2010, ALI and NCCUSL amended section 9-105 to make it easier for lenders to demonstrate that they had control of ECP. After this amendment is enacted into state law, it should also contribute to the continued growth of markets for ECP.