

COMMENTARY: WHERE IS THE ECONOMIC ANALYSIS OF PAYMENT
LAW?

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INTRODUCTION

I have been asked to comment on one or more of the papers of this Symposium. This is a roving commission; I am free to choose my target. I choose . . . nothing.

Maybe not quite nothing, but close enough. I will comment on a near-absence. Where is the economic analysis in this Symposium—or indeed, in this field of law? Payment law is a species of the family “business law” and genus “commercial law”: traditional grist for the law-and-economics mill. But you would not know it from this Symposium. The Alces-Hopkins paper¹ is good and economically astute. It applies when contract terms are a material part of a consumer product: insurance, credit, or licenses, as well as payments. It is far more than a payment paper, and thus not a payment paper.² The Gillette-Walt paper is closer to the mark. It is overtly familiar with the economic literature, and pertinent to payments.³ But this good paper shares some curious limitations of scope with the rest of the literature, discussed below. And these two papers are the only ones that cite economic literature.

* Counsel and Assistant Vice President, Federal Reserve Bank of New York. The author may be contacted at joseph.sommer@ny.frb.org. Nothing in this paper is necessarily the opinion of the Federal Reserve Bank of New York or any other component of the Federal Reserve System. This paper arose out of a sidebar with Avery Katz at the Symposium. It has benefited from the comments of Rich Field, David Gross, Stephanie Heller, Ken Kettering, and Dov Weinstein. None of these people are responsible for the errors of this paper, although Stephanie always feels responsible for everything.

This paper is dedicated to the memory of my mother, Esther Sommer, who always told me that scholarship is foolishness. You should always listen to your mother.

1. Peter A. Alces & Jason M. Hopkins, *Carrying a Good Joke Too Far*, 83 CHI.-KENT L. REV. 879 (2008).

2. See also Norman I. Silber, *Late Charges, Regular Billing, and Reasonable Consumers: A Rationale for a Late Payment Act*, 83 CHI.-KENT L. REV. 855 (2008) (consumer billing).

3. Clayton P. Gillette & Steven D. Walt, *Uniformity and Diversity in Payment Systems*, 83 CHI.-KENT L. REV. 499 (2008).

This general lack of economic analysis is striking—one of Sherlock Holmes' dogs that did not bark in the night. This Symposium is not exceptional. Posner's great economic adventure story never traveled to the land of payments, although it dallied with eronomics.⁴ Is the law of money, then, less economic than the law of love?

I am overstating for effect. There is some economic analysis of payment law. Economists—who for our purpose include lawyers playing economists—often study the network economics of payment systems.⁵ Their work has legal implications, sounding in antitrust. But these implications do not extend to the legal doctrine that supports these systems: the core topic of old-fashioned law and economics. There is one traditional exception to this void. There is a strong literature—either explicitly economic or economically-informed—on the allocation of payment loss from mistake or fraud.⁶ (This is the topic of one of the panels of this Symposium.⁷) There is also a smattering of literature on the measure of damages for bank misfeasance.⁸ But that is it.⁹

As far as I know, there is no economic analysis of the legal plumbing of payments: the clearing and settlement rules contained in the

4. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* (6th ed. 2003). Cf. Arthur Allen Leff, Commentary, *Economic Analysis of Law: Some Realism About Nominalism*, 60 VA. L. REV. 451 (1974) (Posner as picaresque).

5. E.g., DAVID S. EVANS & RICHARD SCHMALENSEE, *PAYING WITH PLASTIC* (2d ed. 2005); *THE FUTURE OF PAYMENT SYSTEMS* (Andrew G. Haldane, Stephen Millard & Victoria Saporta eds. 2008).

6. See Robert D. Cooter & Edward L. Rubin, *A Theory of Loss Allocation for Consumer Payments*, 66 TEX. L. REV. 63, 71 n.42 (1987) (collecting pre-1970 law review articles). More explicitly economic work includes: *id.*; Clayton P. Gillette, *Rules, Standards, and Precautions in Payment Systems*, 82 VA. L. REV. 181 (1996); Gillette & Walt, *supra* note 3; Ronald J. Mann, *Making Sense of Payments Policy in the Information Age*, 93 GEO. L.J. 633 (2005); James Steven Rogers, *The Basic Principle of Loss Allocation for Unauthorized Checks*, 39 WAKE FOREST L. REV. 453 (2004).

7. See Francis J. Facciolo, *Unauthorized Payment Transactions and Who Should Bear the Losses*, 83 CHI.-KENT L. REV. 605 (2008); Linda J. Rusch, *Reimagining Payment Systems: Allocation of Risk for Unauthorized Payment Inception*, 83 CHI.-KENT L. REV. 561 (2008). Other papers, outside the panel, also dealt with this subject. See Mark E. Budnitz, Commentary, *Technology as the Driver of Payment System Rules: Will Consumers Be Provided Seatbelts and Air Bags?*, 83 CHI.-KENT L. REV. 909 (2008); Gillette & Walt, *supra* note 3; Gail Hillebrand, *Before the Grand Rethinking: Five Things To Do Today with Payments Law and Ten Principles to Guide New Payments Products and New Payments Law*, 83 CHI.-KENT L. REV. 769 (2008); Sarah Jane Hughes, *Duty Issues in the Ever-Changing World of Payments Processing: Is It Time for New Rules?*, 83 CHI.-KENT L. REV. 721 (2008).

8. The seminal case: *Evra Corp. v. Swiss Bank Corp.*, 673 F.2d 951 (7th Cir. 1982). The literature includes: Mark Budnitz, *The Finicky Computer, The Paperless Telex and the Fallible Swiss: Bank Technology and the Law*, 25 B.C. L. REV. 259, 294 (1984); Cooter & Rubin, *supra* note 6, at 92-97; Gillette & Walt, *supra* note 3; Hal S. Scott, *Corporate Wire Transfers and the Uniform New Payments Code*, 83 COLUM. L. REV. 1664 (1983). A symposium paper on a closely-related topic: Anita Ramasastry, *Confusion and Convergence in Consumer Payments: Is Coherence in Error Resolution Appropriate?*, 83 CHI.-KENT L. REV. 813 (2008).

9. But see *infra* note 38.

common law¹⁰ and U.C.C. Articles 4 and 4A. Not little analysis—no analysis at all. This Symposium is a good case in point. One panel, on payment finality, contained three excellent papers. None of them used economic analysis; they were all doctrinal.¹¹ This is the problem I seek to explain. Why is there no economic analysis of the core payment law that governs clearing and settlement?

My approach to this problem will resemble skeet shooting. I release a few clay pigeons and fire on the wing. The word “scattershot” might come to mind, but that is a feature, not a bug. If you do not like one of my answers, you might like another. And if you dislike them all, you might come up with one of your own. (Refutation is the sincerest form of flattery.) And if you like none of them, and feel patient, you can wait for my book on the law of bank deposits, which will cover this topic (and many others) in great detail.

I will launch four pigeons into the air:

1. The chief instrumental goal of core payment law is *not* economic efficiency. Not all instrumental reasoning is economic. Instead, core payment law is a branch of . . . engineering.
2. Much of payment law is explicable in terms of sociology, not economics. Sociology and engineering are consistent.
3. Network economics has few implications for core payment law.
4. Legal scholarship is a slave to fashion, and commercial law is not fashionable.

Let's go!

I. ENGINEERING

Sometimes, the simplest answer to a question is the correct one. Maybe there is little economic analysis of core payment law because core payment law has little to do with economics. This conjecture is rank heresy. Modern economics has an imperial reach. If economists can study almost any field of law, surely core payment law should be no exception. Payments are money in motion, and economics has a little something to do with money.

10. My favorite treatise on the common law: ARTHUR LINTON CORBIN, CORBIN ON CONTRACTS ch. 67 (One Volume ed. 1952). Mileage may vary. See also James Steven Rogers, *The New Old Law of Electronic Money*, 58 SMU L. REV. 1253 (2005).

11. Benjamin Geva, *Payment Finality and Discharge in Funds Transfers*, 83 CHI.-KENT L. REV. 633 (2008); Andrew Kull, *Restitution and Final Payment*, 83 CHI.-KENT L. REV. 677 (2008); James Steven Rogers, *Unification of Payments Law and the Problem of Insolvency Risk in Payment Systems*, 83 CHI.-KENT L. REV. 689 (2008).

Like most good heresies, mine is a complex one, entailing a leap of faith. To get there, we shall take a detour away from economics. I start by imposing a structure on payment law. This structure consists of two principles, which I have called “nominalism” and “privity.”¹² I will define these principles, and then show how they pervade payment law, both as normative criteria for evaluating payment law, and as positive predictors of the content of the law. I will argue that these principles are engineering design principles. These engineering design principles have tremendous explanatory power; conventional economics has had none. Then comes the crux of the heresy: engineering is not reducible to economics. This is the leap of faith, but a small one. If you leap with me, you then conclude that core payment law is an engineering construct that has little to do with economics.

Let us start with privity. It is more familiar than nominalism, although ultimately more abstract.

I use “privity” with its normal legal meaning. Contracts bind the parties to them, but have limited third-party consequences. Privity is potent in payment law, because most payment systems are built on contract. Payment systems rely on bank money; bank money relies on bank deposits;¹³ bank deposits are debt obligations;¹⁴ debt is contract. Payment transactions are built from these contractual units. A single account-based payment involves the two end parties, their banks, maybe some intermediaries, and perhaps some communications firms. Privity orders this complexity into simple pairwise relationships:¹⁵ between account holders and their banks, between banks, or between senders and their communications providers. U.C.C. Articles 4A and 8

12. See Joseph H. Sommer, *A Law of Financial Accounts: Modern Payment and Securities Transfer Law*, 53 BUS. LAW. 1181 (1998). These design principles also apply to U.C.C. Articles 5 and 8, as well as parts of U.C.C. Article 9. *Id.* at 1199.

13. I exclude negotiable payment systems from this discussion, but lose nothing from this exclusion. Modern check law does not need negotiability, and no other payment system—except currency—even pretends to rely on it. Ronald J. Mann, *Searching for Negotiability in Payment and Credit Systems*, 44 UCLA L. REV. 951 (1997); James Steven Rogers, *The Irrelevance of Negotiable Instruments Concepts in the Law of the Check-Based Payment System*, 65 TEX. L. REV. 929 (1987); Albert J. Rosenthal, *Negotiability—Who Needs It?*, 71 COLUM. L. REV. 375 (1971). *But see infra* note 19.

14. *E.g.*, Carr v. Carr, (1811) 1 Mer. 543, 35 Eng. Rep. 799 (Ch.); Citizens Bank of Md. v. Strumpf, 516 U.S. 16, 21 (1995).

15. Conflict-of-law aficionados will respond that no legal relationship is pairwise; there is also an adjudicator to consider, and maybe a set of legal rules, as well. Perry Dane, *Vested Rights, “Vestedness,” and Choice of Law*, 96 YALE L.J. 1191, 1254 (1987). *Cf.* Goodridge v. Dep’t of Public Health, 798 N.E.2d 941, 954 (Mass. 2003) (“In a real sense, there are three partners to every civil marriage: two willing spouses and an approving State.”). This objection is worth noting, but only in a footnote.

are dominated by privity; it is very difficult to bring a claim outside the privity chain.¹⁶

Privity is structural. A network contains many possible relationships. Everything is potentially connected, and the number of potential connections is enormous. If all possible interactions are permitted, a system of n members contains $2^n - (n+1)$ possible interactions.¹⁷ But privity limits this number considerably. If the privity is pure, all interactions are dyadic. Each of the n members may interact with any of the remaining $(n-1)$ members. Multiplying the two, and dividing by 2 (these, after all, are dyads), we get $n(n-1)/2 = (n^2 - n)/2$ dyads for “ n ” actors. This is an astonishing parsimony: $2^{100} \sim 10^{30}$; $(100^2 - 100)/2 = 4950$.

But structural privity is stronger yet. It lets parties *avoid* relationships. In other words, privity lets parties simplify their system topology. There may be 4950 possible credit and informational dyads for a payment community of 100 persons. But if they all chose one bank as an intermediary, the number of credit dyads would collapse to 100 (or 99). And remember, we *all* participate in the payment system:¹⁸ “ n ” is a number in the billions. Could you imagine life with billions of people running accounts with each other, and settling these accounts only when they can set them off or enter a multilateral arrangement with third parties who also had offsetting obligations? This describes specie-starved America at the time of the Revolution. For understandable reasons, bank charters were nearly simultaneous with independence. These banks (and ours) serve to simplify credit topology, acting as common intermediaries.

Wait, there is more! Privity is causal, as well as structural. Privity does to account relationships what negotiability does to property rela-

16. In Article 4A, the informational privity is particularly apparent in the section 4A-211 rules for cancellation of a payment order. Credit privity is apparent in, say, the money-back guarantee rule. See *Grain Traders, Inc. v. Citibank, N.A.*, 160 F.3d 97, 101 (2d Cir. 1998). In Article 8, the privity is wired into the statutory text in several places; e.g., U.C.C. §§ 8-502, -503(d)-(e), -510(a) (2005).

17. The system would have one possible interaction of all n members; n possible interactions of $(n-1)$ members, and more generally, there will be:

$$\sum_{j=0}^n \frac{n!}{j!(n-j)!}$$

interactions among every possible combination of membership. This sum is, conveniently, 2^n . We must then subtract the non-interactions that this formula gives: the one possible interaction of no members, and the n possible interactions of one member. I am grateful to David Gross for introducing me to combinatorial mathematics.

18. True, many of us are unbanked, and do not participate in a privity payment system. But this is a quibble. See *infra* note 19.

tions. Privity cuts off adverse claims, and abolishes the relevant history of the account. If my bank balance is \$100, privity implies that there is nothing else to know about the balance. With privity, the original source of funding is irrelevant. Bank balances originate from incoming payments; these incoming payments involve third-party payors; third parties traduce privity. Q.E.D. Privity, then, is payment finality. There is an old quip: God created time to ensure that everything does not happen at once. Here is a new one: Mammon created privity to cleanse the payment system of Judas's thirty pieces of silver.¹⁹

Privity is never an absolute; it has exceptions. Third parties can assert rights. This complicates the system. To simplify matters, assume that third-party rights only affect the dyad and cannot interact (e.g., bank garnishments on solvent depositors). This assumption changes the total number of possible relations from $(n^2-n)/2$ to $(n^2-n)(n-2)/2=(n^3-3n^2+2n)/2$, which is generally an increase. More importantly, it denies parties the plenary power to bilaterally structure their relations. Some third-party relations (e.g., joint accounts or security interests as original collateral) are consensual. Most are not. A consensual three-party relationship is difficult enough to design;²⁰ a nonconsensual relationship is impossible.

The privity of payment law is stronger than that of general contract law.²¹ However, even payment privity has exceptions. Most of these exceptions are worth the added complexity. Discharge rules are a good example: an interbank legal relationship can determine the payor-payee relationship. Insolvency is another example, because the value of a person's claim on an insolvent depends on the value of others' claims. Creditor's rights are a third example, although some state laws take a jaundiced view of bank account garnishments. There are others. But not all exceptions to privity are useful. Joint accounts are a

19. Yeah, yeah, I know. Judas was paid in silver, not bank accounts. Commodity money is subject to the property law of negotiability, not the contract law of privity. This is a distinction without a difference. As a distinguished eighteenth-century combinatorial mathematician noted: "It has been quaintly said, 'that the reason why [commodity] money can not be followed is, because it has no ear-mark;' but this is not true. The true reason is, upon account of the currency of it: it can not be recovered after it has passed in currency." *Miller v. Race*, (1758) 1 Burr. 452, 457, 97 Eng. Rep. 398, 401 (K.B.) (Mansfield, L.J.).

20. See Joint Task Force on Deposit Account Control Agreements, ABA Section of Bus. Law, *Initial Report of the Joint Task Force on Deposit Account Control Agreements*, 61 BUS. LAW. 745, 747 (2006). The report sought to craft an industry-standard security interest in bank accounts: a tripartite agreement. It claimed to be merely "initial" despite two years in the making.

21. For examples, see *infra* text accompanying notes 32-36.

mess.²² I think that tracing is bad law—an opinion shared by many others.²³ But tracing is the law in Anglo-American jurisdictions, and is inconsistent with privity. Asset forfeiture—which relies on extreme tracing principles—is only justified by its non-commercial benefits, such as its signal success with the illicit narcotics trade.

Our other design principle may be less familiar than privity, but is simpler. We shall call it “nominalism”—a word with many meanings,²⁴ which we shall use as a term of art. Our nominalism is a kind of super-formalism. Nominalism attributes legal rights to authentic communications based *solely* on their data content and rules that operate on the data. Nominalistic rules accept authentic communications as input. The rules operate solely on the data contained in the communication (including, perhaps, time of receipt and transmission). The product is a legal right: a function solely of the data and rules. I am using computer language (for a reason), but nominalism is an old idea in the law, and as old as negotiability. “To fit [currency] for its purpose[,] the stamp denotes its value, and possession alone must decide to whom it belongs.”²⁵ For “stamp,” substitute “data content;” for “possession,” substitute “authentication.” Nominalism is the old law of negotiable instruments, abstracted to a computerized age. Or to abstract even further, consider the old nursery rhyme: “My face is my fortune.”

Let us return to the computer lingo. Nominalistic legal rules are device drivers, converting symbolic input states to legal rights as output states. This is no metaphor—I mean it literally. Modern bank operations require digital computers. Computers process symbols with rules, transforming symbolic inputs into outputs. Therefore, to the

22. Lisa R. Mahle, *A Purse of Her Own: The Case Against Joint Bank Accounts*, 16 TEX. J. WOMEN & L. 45, 47–50 (2006); Martha A. Churchill, Annotation, *Joint Bank Account as Subject to Attachment, Garnishment, or Execution by Creditor of One Joint Depositor*, 86 A.L.R.5th 527 (2001).

23. For example, see Lord Mansfield (“money cannot be followed”), in *Miller*, 97 Eng. Rep. at 401. As another example, there is Grant Gilmore, who would only trace proceeds into a segregated account. 2 GRANT GILMORE, SECURITY INTERESTS IN PERSONAL PROPERTY ¶ 27.4, at 735–36 (1965). Tracing does not exist in civil law jurisdictions, and is not popular with United States legal scholars. See, e.g., Richard L. Barnes, *Tracing Commingled Proceeds: The Metamorphosis of Equity Principles into U.C.C. Doctrine*, 51 U. PITT. L. REV. 281 (1990); Hanoch Dagan, *Restitution in Bankruptcy: Why All Involuntary Creditors Should Be Preferred*, 78 AM. BANKR. L.J. 247 (2004); Dale A. Oesterle, *Deficiencies of the Restitutionary Right to Trace Misappropriated Property in Equity and in UCC § 9-306*, 68 CORNELL L. REV. 172 (1983); James Steven Rogers, *Negotiability, Property, and Identity*, 12 CARDOZO L. REV. 471 (1990); Steven Walt & Emily L. Sherwin, *Contribution Arguments in Commercial Law*, 42 EMORY L.J. 897 (1993).

24. We can safely ignore its meaning in medieval philosophy. Far closer to home, the term is used in the law of money. See F.A. MANN, THE LEGAL ASPECT OF MONEY 90 (5th ed. 1992). We ignore this meaning here, as well.

25. *Wookey v. Pole*, (1820) 4 B. & Ald. 1, 7, 106 Eng. Rep. 839, 841 (K.B.).

extent that payment law merely gives legal effect to bank operations, *it must be nominalistic*. (Humans may conduct bank operations if they act like computers—the Turing test run backward.²⁶) Some exceptions to privity are good for payment law. But any payment rule that rejects nominalism will harm bank operations,²⁷ and bears a heavy burden of justification.

By now, I hope you understand these terms, and my *prima facie* arguments in their favor. But to see how pervasive these concepts are, there is nothing like example after example after example. I will quickly throw out about a dozen examples of nominalism or privity in payment law, and take a quick shot at each. The process is noisy, and my aim might not be true. I only hope to hit the target often enough to keep you amused:

- *Account Stated Doctrine*. The account stated doctrine is a general principle of contract law. It is an evidentiary doctrine. A statement of account is presumptively true, if rendered by one party and communicated to the other party without demur. The doctrine also exists in payment law, in supercharged version. Instead of an evidentiary presumption, it has preclusive effect.²⁸ This aids nominalism by reducing disputes over authentication.
- *Choice of Law*. Modern banking choice-of-law is intensely nominalistic. Modern statutes key off the “location” of the relevant branch, as determined essentially by agreement.²⁹ These statutes abandon the old “place of performance” test, acknowledging that tangibility is irrelevant in a computerized, symbolic world.³⁰ We have already discussed the subtle relation of choice-of-law and privity.³¹

26. Cf. Herman Melville, *Bartleby the Scrivener: A Tale of Wall Street* (pts. 1 & 2), PUTNAM'S MONTHLY, Nov. 1853, at 546, PUTNAM'S MONTHLY, Dec. 1853, at 609, available at <http://cdl.library.cornell.edu/moa/browse.journals/putn.1853.html>.

27. The classic example is the old Article 4 process of posting, rejected by *West Side Bank v. Marine National Exchange Bank*, 155 N.W.2d 587 (Wis. 1968). (Nominalism works on negotiable paper, as well as accounts. See *Wookey*, 106 Eng. Rep. at 839; cf. *supra* note 19 and accompanying text.) Posting is not nominalistic, because it does not refer to a communication, but rather to an internal bank process. The nominalistic form of the midnight deadline test refers solely to times established by communications: the time the check was received, and the time the check was returned. Amended Article 4 adopted *West Side Bank*.

28. See U.C.C. §§ 4-406, 4A-505, 8-406 (2005). U.C.C. Article 5 does not have such a preclusion rule, but it does have a short one-year limitations period. U.C.C. § 5-115.

29. U.C.C. §§ 5-116(b), 8-110(e), 9-304(b). See Joseph H. Sommer, *Where Is a Bank Account?*, 57 MD. L. REV. 1 (1998).

30. See U.C.C. § 8-110(f) (“A securities intermediary’s jurisdiction is not determined by the physical location of certificates representing financial assets, or . . . by the location of facilities for

- *Computerization.* We have already discussed how nominalism enables computer operations. Privity has a role, too. Nominalism works at the level of an individual bank's computer system; privity simplifies the network topology between systems.
- *Disputes.* Only two industries sell their liabilities as products: banking and insurance. The volume of payments is far higher than the volume of insurance claims: trillions of dollars of payments every single business day. Yet insurance policies are a magnet for litigation, and payments are not. Payments are seldom litigated, except for inauthentic messages. The difference between payments and insurance litigation? Insurance law is not nominalistic; payment law is. Nominalistic law is predictable law based on unchallengeable fact (if authentic). Predictable law is seldom litigated. Privity also shares a role, reducing the number of permissible parties to a dispute and clarifying their roles.
- *Formalism.* Payment law is very formalistic—U.C.C. Article 4A almost seems drafted in machine code. As we can see by now, this makes sense. Article 4A is *implemented* by machine code. As discussed above, formalism is implicit in nominalism.
- *Interfaces.* The checking system is too complex for most lawyers, but simple enough for most individuals. There is no paradox here: the operations are complex, but the user interface is simple. By no coincidence, this is also true for computers, i.e., extremely complex machines operable by children. How does this work? Ask our old friends: privity and nominalism. A complex system can have a simple interface if the design is sufficiently modular (see below), the responses are sufficiently predictable, and the inputs carefully controlled. Users only notice the complexities of the operating level when things go wrong.
- *Limited Third-Party Rights.* As discussed above, privity is the account analogue of negotiability. Unsurprisingly, third-party rights are rare in payment law: more so than in ordinary contract law. The ordinary creditor process is effective, but “ad-

data processing or other record keeping concerning the account.”); Hague Conference on Private International Law, Convention on the Law Applicable to Certain Rights in Respect of Securities Held with an Intermediary art. 6, July 5, 2006, 46 I.L.M. 649, 653 (2007) (similar).

31. See *supra* note 15.

verse claim” statutes preclude third-party self-help through notification. Article 4A strictly forbids creditor process that does not respect privity.³² Perfected security interests in bank deposits require the bank’s consent, at least for original collateral.³³ Some cases suggest that bank deposits are unassignable in common law.³⁴ Even insolvency is a special case in the law of bank deposits.³⁵ Finally, a bank may offset a fiduciary’s debts to the bank against a fiduciary account, if the bank is not aware of the fiduciary nature of the account.³⁶

- *Modularity.* Thanks to privity, payment systems are modular. This separates roles and simplifies the allocation of risk and responsibility. Even though the payment system is an integrated system, modularity lets parties adjust their bilateral relationships without adjusting their relationships with the rest of the system.³⁷ With a modular structure, new elements (i.e., parties) may be added at any time, in any sequence, without affecting the rest of the system. This can be quite difficult for a less modular structure. You cannot add milk to an omelet after the eggs have set. Modularity also allows for malfunction (a common theme in this Symposium). A bad module will only weakly affect other modules, limiting damage to the system.
- *Payment finality.* I have already alluded to this. Privity is a sufficient (if not necessary) condition for payment finality. A payment is final when the resulting bank balance no longer

32. U.C.C. §§ 4A-502(d), 4A-503. This result is threatened by asset forfeiture cases, such as *United States v. Daccarett*, 6 F.3d 37 (2d Cir. 1993), or cases that adopt forfeiture principles, such as *Winter Storm Shipping, Ltd. v. TPI*, 310 F.3d 263 (2d Cir. 2002).

33. U.C.C. § 9-342. Of course, a security interest in the proceeds of a bank deposit does not require a bank’s consent. But proceeds are a close cousin of tracing, and much of the anti-tracing literature was motivated by proceeds. *See supra* note 23.

34. *Deposit Protection Bd. v. Barclays Bank PLC*, [1994] 2 A.C. 367 (H.L.) (appeal taken from Ch.); *Gibraltar Realty Corp. v. Mt. Vernon Trust Co.*, 12 N.E.2d 438 (N.Y. 1938).

35. Older payment law was eager to award insolvency priority to bank deposits, insulating them from the bank’s balance sheet. This still remains in U.C.C. section 4-216 and the law of special deposits. *See Merrill Lynch Mortgage Capital, Inc. v. Fed. Deposit Ins. Corp.*, 293 F. Supp. 2d 98 (D.D.C. 2003).

36. *See* B.C. Ricketts, Annotation, *Bank’s Right to Apply Third Person’s Funds, Deposited in Debtor’s Name, on Debtor’s Obligation*, 8 A.L.R.3d 235 (1966).

37. This is the basis for Fox & Ballen’s suggestion that interbank rulesets be adjustable by pure private law, independently of (public) consumer law. Robert G. Ballen & Thomas A. Fox, *The Role of Private Sector Payment Rules and a Proposed Approach for Evaluating Future Changes to Payments Law*, 83 CHI.-KENT L. REV. 937 (2008). This suggestion is no better than the privity in payment law, and becomes questionable where privity is weak: e.g., insolvency, payment finality, creditor process.

depends on the payment's history, or the relationship between the end parties to the payment.³⁸ (This is not the only possible definition of finality.) Like negotiability, privity demolishes the history of the account, providing finality.

- *Risk*. Nominalism and privity push transaction risk outside of payment law, and often outside the banking system. (This point is explicitly made in the prefatory note to U.C.C. Article 4A.) To the extent that the law respects nominalism and privity, a bank has no payment risk if it avoids operational errors and insolvent counterparties. This may be a bug or a feature, depending on your views on loss allocation and loss spreading. (Nominalism and privity do not preclude bank liability outside of payment law, e.g., restitution.) Note that nominalism explains the meek measure of damages that typifies most of payment law. Consequential damages rely on facts outside the data content of the parties' communications, and hence are not nominalistic.
- *Risk Management*. Privity simplifies risk management, by allowing a party to select those to whom it is exposed.
- *Scope of Payment law*. Most people consider U.C.C. Article 5 to be "payment law," even though it contains no discharge rule, and its definition of "honor" adverts to means of payment defined outside of Article 5. Their instincts are correct, or at least in accord with this Commentary. Article 5 is a law of privity (the independence principle) and nominalism (documentary conditions). The same is true for U.C.C. Article 8. Similarly, parts of revised U.C.C. Article 9 that appear to be a concession to the bank lobby are consistent with these principles.³⁹

Nominalism and privity explain core payment doctrine remarkably well, at least as a first pass. My bullet points may have all the finesse of a blunderbuss. But there are so many of them! They do not all have to hit the mark. Even allowing for bad aim, they still explain more core payment law, in a unified way, than the entire economic literature. Nominalism and privity explain almost everything but inauthentic

38. This opens a fascinating conceptual question (to me, at least). Is a non-final payment really a payment at all? It depends, I suppose, on how one defines "payment." If non-final payments are indeed payments, I suppose that I should be fair, and note that there is some informal normative economic work on the reversibility of the credit card system. *E.g.*, Gillette & Walt, *supra* note 3; Mann, *supra* note 6.

39. *E.g.*, U.C.C. §§ 9-312(b)(1), 9-341 to -342. *But see* U.C.C. § 9-327(3).

messages and antitrust. (Nominalism assumes authenticity.) They are nicely complementary, then, to ordinary economic explanations.

We can now return to the topic of this Commentary. I am trying to explain why the economic analysis of payment law is so limited in scope. We see that nominalism and privity explain core payment law very well—much better than economics has done. Nominalism and privity are not economic principles, or at least are not principles of any economics I have heard of. Instead, they are principles of engineering *design*. Nominalism, once understood, is trivial. If a digital computerized system is to function, all of the inputs must be cognizable by a computer, and all the outputs must be producible by a computer. In other words, the inputs and outputs must be digital, i.e., symbolic. Between the inputs and outputs are legal rules, i.e., symbol processing. And that is legal nominalism. Privity is a bit more difficult. In design terms, privity assures modularity. This allows many (near) independent units to exist and interact in fairly simple and predictable ways. Modularity is a key criterion of networks. Modularity allows complex networked systems to be assembled from simple subsystems. Modularity permits weak coupling among modules and a hierarchical system design.⁴⁰ And we see this in the world of payments: the tree topology of the Article 8 indirect holding system, or the quasi-concentric hub-and-spoke topology of correspondent networks.

Maybe privity and nominalism are somehow reducible to economics. Isn't everything reducible to economics? Well, er, not really. The physicists would demur, and even the most imperialistic economists would meekly defer. However, I am not claiming that physics holds the key to the law of payments. Nominalism and privity are design principles: *engineering*. The question is whether engineering is reducible to economics, or at least the kind of neoclassical microeconomics that passes for "economics" in the law and economics literature.

This is a tough question. My extralegal training is in natural science—not engineering (a substantially different discipline), and not economics. But where training fails, there is always *chutzpah*. So I'll give it a whirl. Economics, I have heard, is the study of rational choice under scarcity. Economics takes scarcity and preferences as exogenous: supply and demand. Engineering has nothing to do with prefer-

40. This sentence is probably incomprehensible to anybody not acquainted with the work of Herbert Simon. See HERBERT A. SIMON, *THE SCIENCES OF THE ARTIFICIAL* (1969). I do not have the space to develop these ideas here. The "law and modularity" movement is not yet burgeoning, but may be nascent. See Henry E. Smith, *Modularity in Contracts: Boilerplate and Information Flow*, 104 MICH. L. REV. 1175 (2006); Sommer, *supra* note 12.

ences, or perhaps takes them as exogenous. In either case, it works purely on the supply side. But unlike economics, engineering does not take the supply side as exogenous. Engineering seeks to push the supply curve down: better, cheaper, faster, safer, newer. No arbitrary supply curve constrains engineering; it is constrained by only our natural world and our human ingenuity. Engineers shift supply curves; economists match them to demand.

Engineering, like economics, describes rational goal-oriented activity. But the goals are different. Engineering does not allocate scarce resources; it makes more resources. And that is the role of nominalism and privity.

I will not make a further fool of myself with this homebrew foundational argument. It is enough to repeat my empirical point. This Commentary explains far more about core payment law than the entire law and economics literature to date. This is not an argument. It is a fact.

II. SOCIOLOGY

There is another reason why payment law is not reducible to economics. Payments are social phenomena, and money has an extensive sociological literature.⁴¹ The parties can select their medium of payment (e.g., bank debt, currency, or gold), but they cannot create it. By definition, a purely bilateral “medium of payment” is mere barter. True payment media are socially accepted. People accept dollar bills in payment only because they know others will take them as payment. (The significance of legal tender law is greatly exaggerated.⁴²) The acceptability of a medium of exchange need not be universal; indeed, it is almost never universal. In this era of anti-money-laundering, nobody sells a house for currency, and nobody buys a stick of gum with a wire transfer. But currency and wire transfers both command many goods. What is true for media of payment is doubly true for units of account. Two persons may select a unit of account, but cannot create it. Most units of account are associated with sovereign states. However, a unit

41. *E.g.*, GEORG SIMMEL, *THE PHILOSOPHY OF MONEY* (David Frisby ed., Tom Bottomore & David Frisby trans., 3d enlarged ed. 2004); VIVIANA A. ZELIZER, *THE SOCIAL MEANING OF MONEY* (Princeton University Press 1997) (1994).

42. Legal tender “is neither necessary nor sufficient for the supply of monetary confidence and may not even be important.” Benjamin Klein, *The Competitive Supply of Money*, 6 J. MONEY, CREDIT & BANKING 423, 448 (1974); *see also* Rogers, *supra* note 10, at 1275. For the extremely narrow scope of legal tender law, see Herman Oliphant, *The Theory of Money in the Law of Commercial Instruments*, 29 YALE L.J. 606, 609 (1920); CORBIN, *supra* note 10, §§ 1233, 1235.

of account can be created by mere social consensus, without the state.⁴³ As with media of exchange, units of account are not universal. But conversely, they are not always limited to their state of issue. Tourist and border towns accept several units of account; the heartland usually does not.

For the sake of argument, let us assume that sociology is not economics, and that sociology has something to say about money. The question still remains: can sociology explain anything about the *law* of money that economics cannot? I think that the answer is “yes.”⁴⁴ Sociology tells us that money is a confidence game. It works best when trusted, unquestioned:

Queen Victoria is loyally obeyed—without doubt, and without reasoning—by millions of human beings. If those millions began to argue, it would not be easy to persuade them to obey Queen Victoria, or anything else. Effectual arguments to convince the people who need convincing are wanting. Just so, an immense system of credit, founded on the Bank of England as its pivot and its basis, now exists. The English people, and foreigners too, trust it implicitly. Every banker knows that if he has to *prove* that he is worthy of credit, however good may be his arguments, in fact his credit is gone: but what we have requires no proof. The whole thing rests on an instinctive confidence generated by use and years.⁴⁵

I once quipped: “Money is like the cartoon characters who run over a cliff—they never fall until they look down.”⁴⁶ To be unquestioned, a social phenomenon must be unquestionable. Nominalistic rules lead to unquestionable results—if the authentication works well. Poor authentication leads to *Bush v. Gore*,⁴⁷ (yes, election law is nominalistic) or the ravages of counterfeit money. Note that the *rule* can be questioned: why should we keep the Electoral College? But the results obtained by the rule are not questionable, if the authentication is good.

43. Hayek argued that a non-statal unit of account was possible. F.A. HAYEK, DENATIONALISATION OF MONEY—THE ARGUMENT REFINED 62–65 (2d extended ed. 1978). He was right. The Second Life virtual world uses its own unit of account, which fluctuates against the dollar. Second Life, Economy, <http://secondlife.com/whatis/economy.php> (last visited Mar. 21, 2008).

44. For a fuller explanation, see Sommer, *supra* note 29, at 19–20.

45. WALTER BAGEHOT, LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET 33 (Richard D. Irwin, Inc. 1962) (1873).

46. Sommer, *supra* note 29, at 20.

47. 531 U.S. 98 (2000). It may be worth noting that the legal rules for correcting poor electoral authentication in a presidential election are themselves nominalistic. U.S. CONST. amend. XII. This is the basis for an argument that the Supreme Court’s intervention in *Bush v. Gore* did not forestall a legitimacy crisis. The sociology of nominalism also explains the legitimacy of voting, which is otherwise a strange method of aggregating preferences, if you think about it. You are not *supposed* to think about it: the social power of nominalism.

Lincoln's electoral victory in 1860 was tremendously divisive—enough to trigger the Civil War. But nobody argued that he did not win. His victory was the strongest kind of social fact, built of (authentic) symbols alone.

Like engineering, sociology explains more core payment doctrine than economics can. It explains the precision of the rules (if not their content), and the tremendous importance of bank operational integrity. It does not explain the risk-allocation rules for inauthentic messages, although it does give some support for allocating the risk from the innocent believers to the more cynical priests of Mammon.

III. NETWORKS

Payment law, I believe, has potent implications for network economics. Privity is the legal foundation of networked contractual systems. Privity gives legal structure to the network: creating some linkages, destroying others, and limiting yet others. There may be exceptions to privity, but the structure requires privity, at least to first order. So core payment law makes contractual networks possible.

But here, we are more interested in the converse question. Does network economics have anything to say about payment law? Network economics certainly has legal implications, usually in antitrust. It may also have implications for bank regulatory law.⁴⁸ But does network economics have any implications for *payment* law? The answer to this question depends on the meaning of “payment law.”

Payment law—as we have discussed it—works at the level of an individual payment. It is not cognizant of payment *system*, as such, but is limited to payment *transactions*. Look at the U.C.C., drafted at the level of an individual transaction: the collection of a check, the creation or pledge of a security entitlement, and the progress of a wire transfer. There is a rich network in which this transaction is embedded, but the transaction does not know of the network.

However, this is true only to first order. Payment law—even defined narrowly—does not completely exclude networks. The concept of “bank” is a network concept,⁴⁹ and payment law treats banks specially.⁵⁰ The U.C.C. also recognizes system rules, and some payment

48. Ronald J. Mann, *A Requiem for Sam's Bank*, 83 CHI.-KENT L. REV. 953 (2008).

49. See *supra* text accompanying notes 16–19 (combinatorial discussion).

50. For similar reasons, payment law also treats hub intermediaries specially. See U.C.C. §§ 4-103 (clearing house rules), 4A-403, 4A-501 (funds-transfer system rules), 8-111 (clearing corporation rules), 511(c) (remedies) (2005).

law is constructed almost completely out of system rules. Many of the system rules do not affect individual payment transactions, but some do. Network imperatives will dictate system rules, and some of these rules govern individual payment transactions. However, it may be worth noting that U.C.C. Article 4A, apart from legitimating banks and system rules, barely notices the existence of payment systems.⁵¹

So I cannot conclude that network economics has no effect on core payment law. But I doubt that the effect is material, for three reasons. First, as stated above, payment rules focus on transactions, not systems. Second, network economics is usually applied to the payment *business*, a portmanteau of business model, governance, competitors, pricing, user traits, system architecture, and who knows what else. Most of these have nothing to do with payment law. Finally, clearing and settlement rules—no matter who designs them with whatever motives—will be engineered by our old friends privity and nominalism. Most of these core rules will be dominated by these design principles, not by the business model. A suspension bridge is a suspension bridge, whether built by greedy monopolists or selfless philanthropists. They may design the tollgate very differently, depending on the business model. But the engineering criterion of a good bridge does not depend on the underlying business model.

IV. FASHION

I have argued that core payment law is beyond the reach of economics. Could I be wrong? Maybe economic analysis can be done—somehow—but nobody has bothered to do it. Given the state of legal scholarship, this is not a wildly implausible statement. Scholars may dress in drab attire, but they are dandified creatures of intellectual fashion. They rush to trendy fields, often relabelling dowdy old research with stylish new names. (Colloid chemistry, for example, has become “nanotechnology.” Way cool.) And more to the point, they sometimes avoid fields of study, simply because their colleagues are doing the same. Then the fashion changes, and a formerly frumpy research program suddenly loosens its hair, drops its glasses, and becomes popular. For an example, look at the economic analysis of

51. U.C.C. §§ 4A-206 (recognizing funds-transfer system as informational agent of sender), 4A-403 (payment through funds-transfer system).

conflict-of-laws. There was almost nothing until recently, then a sudden efflorescence of scholarship.⁵²

Payment law is unfashionable, even when tarted up as “cyberlaw” or the like. Posner, after all, did not even mention it. Public law is the darling of today’s law reviews. Even in private law, commercial law ranks well behind corporate and bankruptcy law in the pecking order.⁵³ And payment law is the geek in the commercial law family,⁵⁴ only befriended by in-house bank practitioners, a few consumer advocates, and the kind of academic who would associate with such riffraff. Why would any scholar study it? Or so the story goes.

I think that the story is true, to an extent. Nobody goes to law school to become a payment lawyer. (And few payment lawyers learn their trade in law school.) But true as this story may be, I do not think that it explains much. Commercial law scholarship may be unpopular, but commercial law scholars still toil away in the academy. People write articles, many of which are good. Many payment lawyers can perform economic analysis of payment law, at least at an informal level, and maybe even a formal level. Leading commercial lawyers—both academic and practicing—often have strong mathematical, scientific, or engineering backgrounds,⁵⁵ and a few are even Ph.D. economists. Unsurprisingly, their scholarship is often economic in nature—inauthentic communications and consumer issues. Would they analyze the economics of inauthentic communications, yet stop short at the economics of clearing and settlement? I doubt it.

The social status of payment law may be low, but this does not explain the economic analysis of core payment law. Economic analysis simply does not work on the clearing and settlement rules of the payment system.

52. See Giesela Rühl, *Methods and Approaches in Choice of Law: An Economic Perspective*, 24 BERKELEY J. INT’L L. 801, 802 n.6 (2006).

53. See Larry T. Garvin, *The Strange Death of Academic Commercial Law*, 68 OHIO ST. L.J. 403, 420 (2007).

54. By 1979, the law of negotiable instruments had “disappeared from the curricula of most forward-looking law schools.” Grant Gilmore, *Formalism and the Law of Negotiable Instruments*, 13 CREIGHTON L. REV. 441, 446 (1979).

55. A short list off the top of my head (with an assist from Stephanie Heller): Neil Cohen (operations research), E. Allan Farnsworth (mathematics), Richard Field (engineering), Larry Garvin (neurobiology), Stephanie Heller (mathematics), George Hisert (mathematics), Kenneth Kettering (mathematics), Charles McCallum (mathematics), Steven Schwarcz (engineering), Alan Schwartz (physics), Jeff Turner (mathematics). Commercial law is very attractive to the nerdy mind. It offers clean problems, with the promise of definite (but difficult) answers.