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Settlement Finality and Associated Risks In Funds Transfers—When Does Interbank Payment Occur?*

Benjamin Geva**

I. Settlement Finality in Funds Transfers

"Settlement finality" has two distinct though related aspects. First, it signifies the discharge of the interbank obligation to be settled in the interbank settlement process. In this sense, "finality" identifies the point in the settlement process, as well as its time, of achieving the discharge. The second aspect is the non-reversibility of finality in the previous sense, particularly, so as to withstand insolvency laws; the latter ought not to be allowed to repudiate or re-open settlement and resurrect original interbank obligations. Both aspects of "finality" happen simultaneously. As will be further explained below, their occurrence usually coincides with the conclusion of the settlement, denoted here as the "completion of settlement," but may also precede it.

Both aspects are addressed by BIS Core Principles for Systematically Important Payment Systems,1 in Core Principle I, underlying, in Section 7,2 the need for a well-founded legal basis. While reference is made to general law,3 particularly as it relates to contracts and banking, and even as it addresses payments, securities, debtor/creditor relations and insolvency, the emphasis of the substantive discussion is on settle-

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**Professor of Law, Osgoode Hall Law School of York University, Toronto. I acknowledge with gratitude fruitful discussions with Stephanie Heller of the Federal Reserve Bank of New York. Research assistance provided by Jules Grunwald of the Osgoode Hall Law class of 2003 is acknowledged with gratitude. Any remaining mistakes or misunderstandings are mine.
2. Core Principles, supra note 1, at § 7.
3. See also id. §3, ¶3.1.2.
ment finality.

Per ¶ 3.0.2 of the Core Principles, the “systemic importance” of a payment system is stated to be “determined mainly by the size or nature of the individual payments or their aggregate value.” Consequently, large-value transfer systems are specifically identified as “normally . . . systematically important”; it is acknowledged however that a “systematically important system does not necessarily handle only high-value payments” so that “the term can include a system which handles payments of various values, but which has the capacity to trigger or transmit systemic disruption by virtue of certain segments of its traffic.” To that end, a payment system is to be considered “systematically important” where “if the system were insufficiently protected against risk, disruption within it could trigger or transmit further disruptions amongst participants or systemic disruptions in the financial area more widely.” A participant’s insolvency is cited as a possible example for the initial disruption. Either way, whether a “systemic importance” is defined positively in terms of payment size, value, or nature, or negatively, in terms of insufficient protection against risk, it is recognized that “[i]n practice, the boundary between payment systems which are systematically important and those which are not is not always clear cut” so that “the central bank needs to consider carefully where that boundary should be drawn.” Yet, in practice, in each country, it is the large-value transfer system which is to be identified as “systematically important.”

Payment system risks addressed by the Core Principles are stated in ¶ 3.0.1 to fall into five categories. These are credit risk, liquidity risk, legal risk, operational risk and systemic risk. In fact, they all manifest themselves in the risk of default in settlement obligations by one or more participants. It is to this end that “settlement finality” becomes crucial for payment system risk control.

This paper addresses the first meaning of settlement finality, that is, the discharge of the interbank obligation. The discussion focuses on large-value transfer systems, namely, “systematically important” payment systems, and examines settlement finality therein under the provisions of Article 4A of the Uniform Commercial Code—Funds Transfers. Primary attention is given to the various implications of settlement finality under Article 4A, as well as to compliance with the statutory scheme with BIS Core Principles, in conjunction with system rules.

Following the present discussion on the meaning of settlement final-

4. Id. ¶ 3, ¶ 3.0.2.
5. Id.
6. Id.
7. Id. ¶ 3, ¶ 3.0.1.
8. Core Principles, supra note 1, at ¶ 3 ¶ 3.0.1.
Part 2 of the paper sets out settlement mechanisms in large-value transfer systems. Part 3 discusses quality of settlement assets in large-value transfer systems. Particularly, it emphasizes the security accorded by the use of central bank money; however, it also takes into account less than perfect substitutes in connection with correspondent banking. Part 4 is a detailed analysis, under the provisions of U.C.C. Article 4A of interbank settlement, in connection with both central bank money and correspondent banking. Certainty of settlement as bridging the possible gap between finality and completion of settlement is discussed in Part 5 in connection with rules governing the operation of selected large-value transfer systems. The conclusion in Part 6 is that so far as settlement finality in the sense of discharge of the interbank obligation is concerned, Article 4A of the Uniform Commercial Code is capable of providing a required framework satisfying settlement risk controls in connection with diversified system designs. This does not mean that all its provisions are necessarily beyond any criticism; there is room for specific clarifications and improvements. Particularly troublesome is the lack of precision in various systems rules in the use of "finality" and "completion" in relation to settlement.

II. Settlement in Large-Value Transfer Systems Mechanisms

Automated large-value transfer systems (LVTSs) are generally regarded as a key component of the infrastructure in modern financial markets. A major function of these systems is to dramatically speed up the communication, processing, and settlement of large-value payments. Accordingly, from a macroeconomic perspective, an automated large-value interbank system may greatly facilitate the establishment of short-term money markets. At a microeconomic level, the installation of automated large-value transfer systems can enhance the liquidity of both interbank money markets and individual banking organizations. In an international financial transaction, other than between two correspondent banks, the domestic LVTS of the currency of the transaction typically provides the link between the local correspondent of the cross-border sending bank and the destination bank in the country of the currency of the transfer.

Today, all major currency countries have computerized (or automated) facilities for the exchange of messages. As well, they all have adopted special settlement arrangements for large value transfers.

A technologically advanced LVTS (or "wire transfer system") is

characterized by a communication system linking participating banks by means of dedicated lines capable of providing on-line communication in real-time. According to Bernell Stone, "[t]he virtually instantaneous transfer of payment data by a two-way telephone-line communication network shapes the prominent economic operations characteristics" of an LVTS. These characteristics, "speed, single transaction focus and... security," facilitate a relatively expensive individualized handling, confirmation and notification for each payment.\footnote{B.K. Stone, \textit{Electronic Payment Basics}, 71 \textit{ECON. REV.: FED. RES. BANK OF ATLANTA} 3:9-10 (1986). The wire transfer is relatively expensive compared to other payment mechanisms but not necessarily in relation to the size of the payment.}

Typically, large-value transfer systems accommodate only credit transfers, namely payment transfers initiated by the payor, and are carried out by "pushing" funds from the payor's account to that of the payee. Small-value transfer systems also accommodate debit transfers, initiated by the payee (under the payor's authority), carried out by "pulling" funds into the payee's account from that of the payor. Generally, the operation of a credit transfer commences with a debit to the payor's account and is completed by means of a credit to the payee's account. In contrast, the operation of a debit transfer commences with a credit to the payee's account and completed by means of a debit to the payor's account.

As a rule, settlement over an interbank payment system is conducted either on a net net (multilateral net) or gross basis. In the former, settlement occurs only periodically, usually daily, at the end of each clearing cycle, for payment orders exchanged during the clearing period. In the latter, settlement for each payment occurs on a real-time basis, as each individual order is communicated and processed. In principle, gross settlement may occur either instantaneously, in "real-time," or on a deferred basis. In practice, particularly in connection with large-value transfer systems, it occurs instantaneously, in "real-time," as the individual payment is processed. Multilateral settlement, occurring for batches of payment orders, takes place on a deferred basis. Accordingly, a distinction is typically made between Real-time Gross Settlement ("RTGS") Systems and Deferred Net Settlement ("DNS") Systems. To meet liquidity shortfalls in RTGS systems or to control risks in both RTGS and DNS for large-value transfer systems, various enhancements to both basic designs have been made in the diverse national systems. At times, distinctions are blurred and hybrid systems emerge. An example of this is where small batches of payment orders are cleared and multilaterally settled continuously throughout the day in short intervals.\footnote{See e.g. James McAndrews & John Trundle, \textit{New Payment System Designs: Causes and Consequences}, 11 \textit{BANK OF ENGLAND FIN. STABILITY REV.} 127 (2001). But}
No uniformity exists as to LVTS method of settlement. Some, such as LVTS in Canada, are same-day multilateral settlement systems. Others, such as Fedwire in the US or CHAPS in the UK, are RTGS systems. CHIPS in the US had been operated as a same-day multilateral settlement system but recently transformed and operates now as a hybrid system. At present, the overwhelming trend for LVTS is towards RTGS. At the same time, a typical DNS system is expected to incorporate effective risk controls.\(^{12}\)

Gross settlement requires individual payment for each obligation. Netting reduces the number of actual payments; payment is made solely for netted amounts of obligations rather than for each one individually. In bilateral netting, one payment is made between each pair of counterparties for a series of bilateral obligations. At the same time, in multilateral netting ("net nettings"), one payment is made by or to each of the counterparties, to or from a central counterparty, for a series of multilateral obligations.\(^{13}\)

III. Quality of Assets Received in Settlement over LVTS Systems

Central Bank Money and Correspondent Banking

Settlement on the books of the central bank of the currency of payment is by means of a central bank’s obligation and is thus as good as settlement in central bank’s banknotes, that is, in actual cash.\(^{14}\) To that end, in the context of the banking system, central bank’s obligation on a bank reserve’s account is the best settlement asset. This is recognized by
Dealing with the adequacy or quality of settlement assets, it states that assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk. Stated otherwise, settlement on the books of the central bank, that is, in central bank money, is mostly recommended, as it does not raise any liquidity or credit risk.

At the same time, BIS Core Principle VI recognizes the existence of tiered settlement arrangements in various systematically important systems. In such arrangements, "indirect participants" settle through bilateral correspondent accounts with "direct participants"; only the latter settle on the books of the central bank, both for themselves and the indirect participants for whom they act. Such systems involve, as a settlement asset, also a claim on a commercial rather than the central bank. That is, typically, settlement for the "indirect participant" is on the books of the "direct participant" acting for the "indirect participant" so that the settlement asset for the "indirect participant" is an obligation of, or claim on, the "direct participant." It is recognized that such systems can be more efficient, allowing greater competition in the provisions of payment services to third parties, as in such environment, some banks may prefer to use settlement facilities provided by others, rather than directly investing in hardware, software and procedures necessary for direct participation. Other banks may prefer to take advantage of the revenue-earning opportunities of providing these settlement services. Tiering may also enhance liquidity management and broaden access to institutions that do not qualify as "direct participants."

Yet, in terms of BIS Core Principle VI, those systems without tiering, in which all participants settle directly across the books of the central bank, provide a greater degree of safety to participants. This is because the settlement asset they hold at the conclusion of settlement is a risk-free claim on the central bank rather than a claim on a commercial bank. In addition, tiered settlement arrangements can unduly concentrate risks with the direct participants so as to increase the possibility of widespread disruptions if liquidity or solvency problems occur at one such

15. Core Principles, supra note 1.
16. For the view that final interbank settlement is best accomplished by the transfer of balances held in accounts with the central bank, see also The Payment System in a Market Economy, in THE PAYMENT SYSTEM: DESIGN, MANAGEMENT, AND SUPERVISION, supra note 9, at 1, 5.
17. See Core Principles, supra note 1, ¶7.6.7, box 11 (tiered settlement arrangements).
18. Canada is one such an example. But "tiered clearing" need not lead to "tiered settlement," for example, in Australia, all banks, including "indirect clearers" using "direct clearers" for clearing, have settlement accounts with the central bank.
bank. These risks increase if individual direct participants provide settlement services to a large number of other banks. Accordingly, a careful balancing act is required in deciding when and how tiering is to be allowed.

In the final analysis, the most satisfactory settlement asset for systematically important payment systems is a claim on the central bank issuing the relevant currency. Where other assets are to be used, the purpose of the arrangement, the creditworthiness of the issuer of the settlement asset, the convertibility of the settlement asset to other types of assets, the size and duration of involuntary exposures to the issuer, and any risk controls, must be considered. Regardless, the law governing interbank settlement ought to take into account both settlement in central bank money under diverse system designs as well as settlement over the books of a correspondent bank, namely, in the obligation of that bank. The ensuing discussion in Part 4 will analyze the treatment of applicable methods of settlement under U.C.C. Article 4A.

IV. Completion of Settlement in Discharge of Interbank Obligation

A. The Occurrence of an Interbank Payment ("Completion of Settlement") Under Article 4A

In the US, with respect to the payment obligation on an interbank payment order, U.C.C. § 4A-403 determines when a payment by a sending bank to a receiving bank is deemed to have occurred. For convenience, the occurrence of such payment will be denoted here as "completion," or "completion of settlement," which is a terminology that does not appear in Article 4A. In any event, the obligation of a sending bank to pay for a payment order issued by the sender and acted on by the receiving bank is provided by Section 4A-402. Effectively, three methods of payments are specified, to which a residual fourth and subsidiary fifth are added. They are as follows:

- Paragraph (a)(1), covers a payment made by means of "final
settlement . . . through a Federal Reserve Bank or through a funds-transfer system."\(^{23}\)

- Paragraph (a)(2) provides for payment by means of credit posted to the receiving bank’s account either with sending or any other bank.
- Paragraph (a)(3) governs payment by means of a debit to an account of the sending bank maintained at the receiving bank.
- Subsection (d) deals with "a case not covered by subsection (a)." As such this is a residual provision, covering the less common interbank payments carried out other than by means of posting a debit or credit into a bank account, such as by means of issuing a bank draft, paying cash or, in theory, any other method of discharging debts under general law.\(^{24}\)

- Subsection (c) deals with bilateral netting. It covers the case of two banks exchanging payment orders "under an agreement that settlement of the obligations of each bank to the other . . . will be made at the end of a [cycle]," usually daily. In such a case, "the total amount owed with respect to all orders transmitted by one bank shall be set off against the total amount owed with respect to all orders transmitted by the other bank," so that "[t]o the extent of the setoff, each bank has made payment to the other." This is, however, a subsidiary mode of making an interbank payment; the final balance is to be settled between the bank under one of the methods specified in paragraph (a), or at least in theory, under subsection (d).

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23. Notwithstanding a possible implication to the contrary, the provision ought to mean as it is read, namely so as not to require "final settlement" to be made on the books of a Federal Reserve Bank. See BENJAMIN GEVA, THE LAW OF ELECTRONIC FUNDS TRANSFERS § 2.02[4] (1992-2002). A "funds transfer system" is defined in Section 4A-105(a)(5) of the U.C.C. to mean "a wire transfer network, automated clearing house or other communication system of a clearing bank or other association of banks through which a payment order by a bank may be transmitted to the bank to which the order is addressed."

24. In this context, it ought to be particularly recalled that Section 4A-403 is not limited to payment by a sending bank, but rather, applies also to payment by a non-bank customer acting as the originator of the funds transfer that could be made by means of payment in cash over the counter. As well, U.C.C. Article 4A is drafted so as not to be limited to existing and known banking practices, and thus uses in Section 4A-403(d) a very broad language, that will cover also unrealistic scenarios in the interbank payment context, of payment by renunciation or even specie.
B. Time and Meaning of Settlement Under Article 4A

Both paragraphs (b) and (c) of Section 4A-403 cover netting. Paragraph (b) deals with multilateral netting and paragraph (c) deals with bilateral netting. Between the two, only paragraph (c), the one governing bilateral netting, provides for the occurrence of payment as discussed above. At the same time, paragraph (b), governing multilateral netting, does not cover the occurrence of payment. Rather, it provides for settlement finality for a DNS system in which settlement occurs under paragraph (a)(1). Thus, under paragraph (a)(1), payment is stated to coincide with the receipt by the receiving bank of “final settlement of the obligation through a Federal Reserve Bank or through a funds-transfer system.” For sending and receiving banks that are “members of a funds-transfer system that nets obligations multilaterally among participants,” “final settlement” is stated in the first sentence of subsection (b) to be received by the receiving bank “when settlement is complete in accordance with the rules of the system.”

Presumably, in connection with paragraph (a)(1), “settlement finality” ought to be understood as the replacement of the sender’s obligation by the obligation of the settlement bank, namely, the bank on whose books settlement figures are recorded. To that end, completion according to the rules governing the operation of the funds-transfer system will determine “settlement finality” also in situations other than the one set out in subsection (b). Stated otherwise, paragraph (a)(1) also governs “settlement finality” in gross settlement or any other design of a settlement system. In fact, Official Comment 1 to Section 4A-403 recognizes that settlement over Fedwire, the RTGS of the Federal Reserve System in the US, is governed by paragraph (a)(1); the point will be further explored at the end of Part 4(iii) below. More in general, in the context of paragraph (a)(1), in a gross settlement system, “settlement finality” is to coincide with the debit to the sending bank’s account. Otherwise, in a gross settlement system with liquidity saving features, finality may also be achieved by offsetting an outgoing payment against an incoming one.

25. U.C.C., supra note 20, § 4A-403.

26. For the meaning of a “funds-transfer system rule,” and its effectiveness even where it “conflicts with ... Article [4A] and indirectly affects another party to the funds transfer who does not consent to the rule,” see U.C.C., supra note 20, § 4A-501(b).

27. Typically, the debit will be for a single transaction. This is, however, not universally so. For example, in the UK, NewCHAPS has a gridlock-resolving mechanism called “circles,” which operates very much like a multilateral offset algorithm. This optimization facility allows the simultaneous settlement of payments queued on behalf of different banks, that if they are all made, they will largely set off each other. This facility has been used only rarely, in exceptional circumstances. See GEVA, supra note 23, § 4.04(3).
of the same counterparty that is outstanding in its queue.\(^{28}\)

However, rules governing a DNS system, of the type described in subsection (b), may provide for "settlement finality," in the sense of the discharge of the sending bank's obligation, by means of a central bank guarantee prior to the actual completion of the settlement procedures, namely prior to the posting of settlement results in settlement accounts of participating banks.\(^{29}\) As well, intra-cycle finality may be introduced by means of bilateral and multilateral netting that occur continuously throughout the day, against a pre-funded balance kept by participants at the central bank.\(^{30}\) Such intra-cycle finality may be seen to take place even in the absence of such a pre-funded balance, by means of continuous novation and substitution,\(^{31}\) as long as it is not subject to repudiation upon a participant's settlement failure, namely, as long as risk failure is eliminated.

Yet, under Section 4A-403, both paragraph (b) for multilateral netting and paragraph (c) for bilateral netting refer only to intra-cycle position netting, in which case the discharge of all netted obligations, and hence their settlement, is marked by actual payment or the completion of settlement.\(^{32}\) Nevertheless, both paragraphs (a)(1) speaking of finality by reference to funds-transfer system rules, and paragraph (d) speaking of any case not provided for by paragraph (a), are broad enough to cover netting by novation, whether multilateral or bilateral.\(^{33}\) In such a case, provided it is irrevocable and unconditional, discharge, and hence, settlement finality, may occur prior to settlement completion.\(^{34}\) Ultimately,

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28. As in RTGSplus in Germany. See id. at § 4.04[6].

29. Cf. LVTS in Canada; see also id. at § 4.04[2]; but see discussion in text & notes 82-87 infra.


31. This can be provided explicitly in the clearing rules, or else, may be inherent, that is, implicit, in the clearing house arrangement. For the latter view see the dissenting judgment of Lord Morris in British Eagle Intr'l Airlines Ltd. v. Compagnie Nationale Air France, 2 All E.R. 390, 1 W.L.R. 758, 2 Lloyd's Rep. 43 (1975), as explained by Benjamin Geva, The Clearing House Arrangement, 19 CAN. BUS. L.J. 138, 161-164 (1991). For a netting process by means of a continuous novation and substitution for the LVTS in Canada, see s. 52 of CPA By-law No. 7 Respecting Large Value Transfer System, April 2, 1998, P.C. 1998-568.

32. U.C.C., supra note 20, § 4A-403. For the fundamental distinction between "position netting" and "netting by novation" (which includes "netting by novation and substitution"), see for example, GEVA, supra note 23, at 140-148.

33. It should be added that as a matter of statutory interpretation, no good policy is served by treating paragraphs (b) and (c) as "special laws" exhausting all cases of netting arrangements and thus precluding netting by novation from being covered by either paragraph (a)(1) or (d).

34. But as indicated, neither paragraph (b) nor (c), dealing with netting, do not appear to warrant continuous netting by novation and substitution. It is thus submitted that the second sentence in Section 4A-403(b), speaking in general for setoff and substitution...
“final settlement” must occur not later than the completion of settlement, though its timing may be advanced by system rules to an earlier point in time.\textsuperscript{35}

Under paragraph (a)(2), payment by credit posted to the receiving bank’s account at the sending of another bank is deemed to have occurred “when the credit is withdrawn or, if not withdrawn, at midnight of the day on which credit is withdrawable and the receiving bank learns of that fact.” Under paragraph (a)(3), the occurrence of payment made by means of a debit to the sending bank’s account held with the receiving bank is timed to coincide with the posting of the debit, that is, with the time “the debit is made,” but only “to the extent the debit is covered by a withdrawable credit in the account.” Finally, under subsection (d), for a case not governed by subsection (a), time of payment “is governed by applicable principles of law that determine when an obligation is satisfied.”

As with regard to “final settlement” under paragraphs (a)(1) and (b), the rest of Section 4A-403 focuses on the replacement of the sender’s obligation on the payment order by an agreed upon substitute. For checks and other debit paper items not governed by Article 4A, U.C.C. Article 4 broadly defines “settle” in Section 4-104(a)(11) to refer to payment “in cash, by clearing-house settlement, in a charge or credit or by remittance, or otherwise as agreed.” Such settlement under that provision “may be either provisional or final.” However, this provision does not apply to credit transfers, and Article 4A does not define “settlement.” Moreover, Section 4A-403(a)(1) covers only “final settlement . . . through a Federal Reserve Bank or a funds-transfer system” while Section 4A-403(b) covers only “final settlement” completed according to the rules of “a funds transfer system that nets obligations multilaterally among participants,” and there is no other explicit reference to “settlement” in the language of Section 4A-403.\textsuperscript{36}

Yet, as under Article 4, “settlement” can be taken to cover all forms of payment in discharge of an interbank obligation, that is, including under the rest of Section 4A-403; this is, however, so under Article 4A only as long as settlement is “final,” namely, of permanent rather than tenta-

\textsuperscript{35} To that end, the attribution of “settlement finality” in an LVTS to the posting of credit to the receiving bank’s account is not universal, notwithstanding Core Principles, supra note 1, §7, ¶7.4.5, box 9.

\textsuperscript{36} U.C.C., supra note 20, § 4A-403.
tive nature, that is, as long as it is unconditional and irrevocable.37

In turn, “settlement finality” in the sense used here ought to be distinguished from “payment finality.” The latter is used interchangeably with “receiver finality”; it denotes the irrevocability of payment to the beneficiary under Section 4A-405(c), even when such payment was made by the beneficiary’s bank in the absence of “settlement completion” or even “settlement finality” accorded to the beneficiary’s bank by its sender.38

Thus, in connection with paragraphs (a)(2), final settlement is in the form of the obligation of the sending bank under the account agreement with the receiving bank which serves as the agreed upon substitute replacing the sending bank’s obligation on the payment order. In connection with paragraph (a)(3), the substitute providing final settlement is the cover39 provided by the sender for its payment order.

Throughout Section 4A-403, it is only under paragraph (a)(1), governing payment over a funds-transfer system, that the occurrence of payment, that is, completeness of settlement under the terminology proposed here, is explicitly stated to coincide with settlement finality, namely with the discharge of the sending bank’s obligation on the payment order. In effect, this coincidence exists also under paragraph (a)(3), governing payment by debit posted by the receiving bank to the sending bank’s account. Similarly, both settlement finality and settlement completion appear to coincide where payment is made by bilateral netting under subsection (c).

Conversely, under paragraph (a)(2), governing payment by credit posted to the receiving bank’s account, finality effectively precedes completion. Thus, under paragraph (a)(2), the discharge of the original sending bank’s obligation, namely finality, occurs when credit is posted to its account. This precedes the occurrence of payment, or in the terminology proposed here, the completion of settlement, which is delayed the earlier between the withdrawal of the funds or midnight of availability for withdrawal to the knowledge of the receiving bank. At the same time, the relationship between finality and completion is not addressed at all under the residuary provision of subsection (d).

In the final analysis, under all forms of settlement, neither completion of settlement, nor “settlement finality,” are ends by themselves; they

37. For the distinction between provisional and final settlement (though in the context of checks and other debit paper items) see Comment 10 to U.C.C., supra note 20, § 4-104. See also id. at §§ 4-213, -214, 215 and 301.
38. “For “payment finality” or “receiver finality” under U.C.C. Article 4A, see Section 4A-405(c).
39. Or indeed, as explained further below, it could be the sender’s undertaking to provide cover.
are rather convenient points of reference to denote the discharge of the
sender's obligation under Section 4A-402 to pay the receiving bank for
the payment order. Usually, discharge is marked by "completion"; nev-
ertheless, to accommodate exceptions, where discharge precedes "com-
pletion," "finality" is introduced as a broader concept, denoting the dis-
charge, not later than, but usually upon, "completion." Yet, when
"finality" precedes "completion," the security and comfort provided by it
in the interim, that is prior to "completion," depend on the quality of the
settlement assets. Briefly stated, different levels of comfort and security
are accorded to a receiving bank when the discharge of sender's obliga-
tion is by means of another obligation of that same sender, the joint obli-
gation of participating banks in a funds-transfer system, or the obligation
of a central bank. Other than in the latter case, different levels of com-
fort and security are accorded to the receiving bank whether the replac-
ing obligation, under which "finality" is provided to the discharged
original interbank obligation, is secured or not, and where it is secured,
what kind of collateral secures or backs it.

C. Time of Settlement Under Article 4A—Critical Analysis

The treatment of the time of payment, and hence of when "final set-
tlement" occurs, under any of the events that constitutes "payment" un-
der U.C.C. § 4A-403, is not uniform. A noteworthy distinction appears
to exist between the time of payment under the situation governed by
paragraph (a)(2) and all other situations governed by Section 4A-403. It
is only under paragraph (a)(2), dealing with a credit posted to the receiv-
ing bank's account held at the sending or any other bank, that payment is
stated to be delayed beyond the banking operation (in this case the post-
ing of credit), to the earlier between the withdrawal of such credit, or to
midnight on the day in which it is withdrawable to the knowledge of the
receiving bank. Official Comment 2 explains that the delay stated in
paragraph (a)(2) is designed to allow the receiving bank whose account
was credited "an opportunity to reject the order if it does not have time to
withdraw the credit to its account and it is not willing to incur the liabil-
ity to Beneficiary before it has use of the funds represented by the
credit." This rationale is stated to apply only to a receiving bank that is
the beneficiary's bank, which incurs liability to the beneficiary upon re-
ceiving payment. Yet, the language of paragraph (a)(2) is also broad
enough to cover payment to a receiving bank acting in the funds transfer
as an intermediary bank.

40. For the liability of the beneficiary's bank to the beneficiary, upon receiving
payment, see U.C.C., supra note 20, § 4A-209(b)(2) and (3).
41. Nevertheless, the rationale stated in Official Comment 1 appears to have per-
Conversely, under paragraph (a)(1), payment is timed to coincide with the receipt of final settlement through a funds-transfer system. However, under paragraph (a)(3), appearance and substance may diverge; depending on the circumstances, finality may be either achieved with or delayed after the banking operation. Thus, payment made by means of a debit to the account of the sending bank, held with the receiving bank, is made under paragraph (a)(3) at the time "the debit is made," only to the extent of the existence of a positive balance to cover it. Effectively, if an available credit balance exists at the time the account is debited, settlement finality occurs at the time the debit is posted. Where, however, no cover is available at the time the sender’s account has been debited, settlement finality is delayed to the time adequate cover becomes available. In effect, this allows a receiving bank to post a temporary or provisional debit, thereby either creating or increasing an overdraft in the sender’s account. This temporary debit is pending, and conditional on, the arrival of cover, though is not of indefinite duration. It will become final, so as to be “payment” under paragraph (a)(3), where the receiving bank accepts the payment order by acting on it.\(^4\) Alternatively, this temporary debit will extinguish upon the automatic cancellation of the payment order by the operation of law, if no such action has been taken.\(^3\)

Logically, however, such a ‘temporary debit’ ought not to be permitted. In the absence of cover, a receiving bank need not to be under any obligation to debit the sender’s account for an incoming payment order, and if it nevertheless elects to post the debit, it effectively extends thereby credit to the sender for the payment that was made by means of the debit.\(^4\) A debit made by the receiving bank to the sender’s account...
ought to have been treated as payment,\textsuperscript{45} regardless of the availability of cover, except that the sender ought to have been under an obligation to cover the debit as repayment of an overdraft or credit extension rather than in discharge of the payment obligation under Section 4A-402. Indeed, a debit by a Federal Reserve Bank to an account held by it could be "final settlement" under paragraph (a)(1) irrespective of the lack of cover, and it is hard to see why this is otherwise in connection with a debit posted by a commercial bank under paragraph (a)(3).

It is, however, noteworthy that Regulation J, Subpart B,\textsuperscript{46} which governs funds transfer under Fedwire, the RTGS operated by the Federal Reserve System in the US, bypasses altogether the term "final settlement" or any similar terminology.\textsuperscript{47} Moreover, under its Section 210.30, "[p]ayment of a Federal Reserve Bank's obligation to pay a receiving bank (other than a Federal Reserve Bank) occurs at the earlier of the time when the amount is credited to the receiving bank's account or when the payment order is sent to the receiving bank." That is, emphasis is on the credit to the account of the receiving bank rather than on the debit to the account of the sending bank. I submit, however, that this is a reflection of the structure of the Federal Reserve System, in which the sending and receiving banks may maintain their accounts with different Federal Reserve Banks. In theory, the receiving bank may not rely on actions performed in a Federal Reserve Bank other than its own. Yet, in the terminology proposed in this paper, Section 210.30 of Regulation J, Subpart B deals with the completion of settlement, not with its finality; the latter is to be taken as occurring earlier, when a Federal reserve Bank assumes the responsibility of payment, typically as it posts the debit to the sending bank's account.\textsuperscript{48}

\textit{D. Settlement Finality and Acceptance by Beneficiary's Bank}

Where settlement finality is in favour of the beneficiary's bank, not all methods for achieving it have the same impact on the time of acceptance by that bank. Under U.C.C. Article 4A, "acceptance" by the bene-

\textsuperscript{45} Which indeed, is the position under Article 6(a) of the UNCITRAL Model Law on International Credit Transfers, above note 30.


\textsuperscript{47} For funds transfers over the Fedwire system, see GEVA, supra note 23, § 3.04 (by S. Heller). For payment by Federal Reserve Bank, see 12 C.F.R. § 3.04[4][g].

\textsuperscript{48} In effect, the Fedwire system operates on three centralized computer systems geographically dispersed throughout the United States under which accounts of banks with the various Federal Reserve Banks are operated in a centralized manner. For Fedwire settlement mechanism, see GEVA, supra note 23, § 3.04[1] (by S. Heller).
ficiary’s bank marks the completion of the funds transfer, the discharge of the originator’s debt to the beneficiary, and the point in time in which the beneficiary’s bank becomes indebted to the beneficiary. Acceptance by the beneficiary’s bank is either by payment or advice to the beneficiary, or by receipt of payment from its sender. In this latter sense, settlement finality received by the beneficiary’s bank is an event marking “acceptance” that both completes the funds transfer and gives rise to the indebtedness of the beneficiary’s bank to the beneficiary, even before funds are actually credited to the beneficiary’s account. Yet, as will be explained immediately below, when settlement finality is either under a funds-transfer rule or by means of a credit posted to the account of the beneficiary’s bank, acceptance by the beneficiary’s bank is timed to coincide with settlement finality. Otherwise, when settlement finality is, by means of a debit, posted by the beneficiary’s bank to the sender’s account, acceptance is delayed to the opening of the next funds-transfer business day, even where the debit to the sender’s account is covered by a withdrawable credit balance in the sender’s account.

Thus, Section 4A-209(b)(3) deals with the acceptance by the beneficiary’s bank in any case other than under a funds-transfer rule or by receiving credit in an account held with the sender’s. Effectively, in such a case, acceptance is by the combined effect of holding funds for the sender and the failure to timely reject the payment order. The provision thus primarily applies to the acceptance of the beneficiary’s bank by debiting the sender’s account. It also applies, however, to the acceptance by the beneficiary’s bank even by inaction. Provided the beneficiary’s bank has not timely rejected the payment order, acceptance under Section 4A-209(b)(3) is at “the opening of the next funds-transfer business day . . . if, at that time, the amount of the sender’s order is fully covered by a withdraw-

49. See U.C.C., supra note 20, § 4A-104(a).
50. Id. at § 4A-406.
51. Id. at § 4A-404.
52. Id. at § 4A-209(b)(1). The advice is “of receipt of the order or that the account of the beneficiary has been credited with respect to the order unless the notice indicates that the bank is rejecting the order or that funds with respect to the order may not be withdrawn or used until receipt of payment from the sender of the order.”
53. Id. at § 4A-209(b)(2) and (3).
54. This rule is rationalized on the view that the beneficiary’s bank is indebted to the beneficiary as soon as it receives payment, even before crediting the beneficiary’s account. Otherwise, while Article 4A does not regard the beneficiary’s bank as an agent for the beneficiary, it still views the beneficiary, compared to the originator, as the more appropriate party to bear losses occurring within the sphere and control of the beneficiary’s bank. After all, it is the beneficiary who designated the beneficiary’s bank, with which it has a direct relationship.
55. Both are dealt with in Section 4A-209(b)(2), under which acceptance of the beneficiary’s bank by receiving payment pursuant to Section 4A-403(a)(1) and (2) occurs at the time such payment is made under these provisions. See text immediately below.
drawable credit balance in an authorized account of the sender or the bank has otherwise received full payment from the sender." That is, cover at the time debit is posted is irrelevant; what counts is the state of the account at the opening of the next funds-transfer business day. According to Official Comment 7, the provision is designed to accommodate a bank that "may not be willing to give credit to the sender" and for whom "it may not be possible . . . to determine until the end of the day on the payment date whether there are sufficient good funds in the sender's account." Section 4A-209(b)(3) is consistent with both the cover condition and delay in the completion of payment by debiting the sender's account under Section 4A-403(a)(3); both the delay and the cover condition are premised on the possibility of posting a provisional or temporary debit to the account and is thus subject to the same criticism as Section 4A-403(a)(3).

At the same time, Section 4A-209(b)(2) provides for the acceptance by the beneficiary's bank by means of receiving payment "pursuant to Section 4A-403(a)(1) or 4A-403(a)(2)," that is, either under a funds-transfer rule or credit to the account of the beneficiary's bank. In both cases, acceptance is stated by Section 4A-209(b)(3) to take place when the beneficiary's bank receives such payment.

As indicated above in (ii), with regard to settlement, both paragraphs (a)(1) and (2) of Section 4A-403 contemplate "finality" to coincide with "completeness." To that end, the operation of Section 4A-209(b)(2) is free from ambiguity. Unfortunately, this is not so, for example, where under a funds-transfer system rule, "finality" precedes "completion." Similarly, no time for acceptance by the beneficiary's bank is provided for in the case of payment to it by means of bilateral set off under Section 4A-403(c). In fact, no time for acceptance is provided for the case of payment to the beneficiary's bank "[i]n a case not covered by subsection (a)" per Section 4A-403(d). For all such cases, Section 4A-209(2) is poorly tailored. As for the desired rule, under a funds-transfer rule providing that "finality" precedes "completion," whether acceptance by the beneficiary's bank is to coincide with the former or the latter ought to be left to the funds-transfer rule itself. This is because participants will select pre-completion finality only where it affords a high degree of security and comfort.

56. U.C.C., supra note 20, § 4A-209 (Official Comment).
57. See text around notes 44-45, above. Under Article 9(1)(c) of the UNCITRAL Model Law, above note 41, which is the parallel provision to U.C.C. § 4A-209(b)(3), a contrary position is adopted, consistent with that of Article 6(a) of the Model Law (referred to in note 45 above, and which corresponds to U.C.C. § 4A- 403(a)(3)). Under Model Law Article 9(1)(c), the time of acceptance by the beneficiary's bank by debiting the sender's account coincides with the time debit is made.
58. See discussion at the concluding paragraph of (ii), id.
where pre-completion finality is backed by central bank money.\textsuperscript{59}

\textbf{E. Concluding Observations}

In the final analysis, Article 4A provisions dealing with the completeness of settlement reflect a needed reform and are an improvement. Unfortunately they are not free of imperfection or even ambiguity. With regard to Section 4A-403(a)(2), there is no obvious explanation for the delay in finality when the receiving bank is an intermediary and not the beneficiary's bank. In connection with Section 4A-403(a)(3), there are the issues of the provisional debit as well as the interaction with U.C.C. 4A-209(b)(3); while the latter does not defer settlement finality, it delays its effect. So far as Section 4A-209(b)(2) is concerned, it does not address the case of "finality" preceding "completion." Among the three paragraphs of Section 4A-403(a), it is only the first paragraph, (a)(1), which seems to avoid any criticism.

\textbf{V. Settlement Certainty—Bridging Gaps Between Acceptance, Finality and Completion}

As indicated, settlement finality indicates the discharge of the interbank settlement obligation, that is, by its replacement with whatever is the agreed exchange. Usually it coincides with the completion of settlement, in which case the interbank obligation is replaced by the obligation of the settlement bank. However, settlement finality may precede the completion of settlement, as in the case of a central bank guarantee. Where the latter is available so as to supersede the sending bank's obligation, it may be triggered and bring finality prior to completion.\textsuperscript{60} Regardless, between the time payments are accepted by the system and settlement completion, participants face payment system risks centered around liquidity and credit. Even in an RTGS system, where each payment is settled as it is processed, there may be a time lag between the submission of a payment into the system and its processing, including settlement. At the same time, a temporal element is inherent in a DNS system, premised on a settlement at the end of a processing cycle. Credit and liquidity risks are exacerbated if they extend overnight, in part because a likely time for the authorities to close an insolvent bank is between business days.\textsuperscript{61}

In response to this exacerbation, BIS Core Principle IV requires a systematically important system to provide prompt final settlement on

\textsuperscript{59} See below discussion in text around footnotes 70-79.

\textsuperscript{60} The view that this is the case in Canada may emerge from Core Principles, \textit{supra} note 1, § 7, ¶ 7.4.5, box 10. \textit{But see infra} discussion in text & notes 82-87.

\textsuperscript{61} Core Principles, \textit{supra} note 1, §3, ¶ 3.4.1.
the day of value, preferably during the day or, at a minimum, at the end of the day. Particularly for countries with large volumes of high-value payments and sophisticated financial markets, "it should be the goal for at least one payment system to exceed this minimum standard by providing real-time final settlement during the day."62 Yet, the BIS Report recognizes that "[a]n effective intraday liquidity mechanism is necessary for this development in order to ensure that prompt final settlement is not only available, but is achieved in practice."63 Accordingly, the availability of an RTGS system in each country, while recommended,64 is not elevated to a required Core Principle.65

More specifically, the BIS Report differentiates among the submission of a payment to the system, its validation, acceptance and settlement. Depending on particular system rules, submission may even be in advance of the value day. Validation, which intermediates between submission and acceptance, involves the placement of a payment in a pending queue and the application of risk management tests. Promptness is defined in terms of the interval between acceptance and settlement. In an RTGS system, no such interval ought to exist. In a DNS system, acceptance is marked by incorporating the payment into the netting calculation.66

The implementation summary of BIS Core Principle IV addresses promptness of final settlement on the day of value in terms of several elements. Accordingly, such promptness is stated to entail:

1. Clarity in the system rules and procedures to the effect that a payment accepted by the system for settlement cannot be removed in the settlement process;67
2. A clearly defined and legally effective moment of final settlement;
3. Ensuring that the interval between the system's acceptance of a payment and the payment's final settlement never lasts overnight and preferably is much shorter; and
4. Ensuring that operating hours and the settlement processes are strictly enforced.68

62. Id. at ¶ 3.4.2.
63. Id. at ¶ 3.4.2.
64. Indeed, "the real-time gross settlement approach is increasingly viewed as the most effective design for achieving final interbank settlement in central bank money." See THE PAYMENT SYSTEM: DESIGN, MANAGEMENT, AND SUPERVISION, supra note 9, at 5.
65. This is unlike a similar requirement in the European Monetary Union. See supra note 12.
66. Core Principles, supra note 1, § 7, ¶ 7.4.5, box 9
67. Yet, nothing precludes the revocation or removal of a payment order until acceptance by the system.
68. Core Principles, supra note 1, § 7, ¶ 7.4.11.
In effect, Core Principle IV is closely related not only to Core Principle I, addressing settlement finality as a matter requiring a well-founded legal basis, but also to Core Principles II and III, requiring transparency and clarity of system rules as to risk management and allocation.

Unfortunately, however, with regard to settlement, Core Principle IV, as well as the measures set out for its implementation, do not maintain a clear distinction between “finality” and “completion.” That is, to counter settlement risks and minimize their duration, it is prompt completeness in central bank money, not merely finality, which ought to be the objective.

Where temporal gaps nevertheless exist, it may be convenient to think of thriving at “certainty of settlement” as an objective broader than, and not limited to, achieving prompt finality and completion. Rather, “certainty of settlement” also aims at bridging temporal gaps by shortening or eliminating them, by reducing risks associated with them, or by providing security for their duration. To such ends, the quest for settlement promptness, discussed immediately above, is one aspect of “certainty of settlement.” In fact, risk control measures constitute a second path for enhancing “certainty of settlement.” Finally, a higher degree of “certainty of settlement” may be facilitated by means of security provided by the central bank either in the form of central bank money or guarantee. This method for achieving “certainty of settlement” will now be discussed in conjunction with a few concrete examples.

The first settlement mechanism to be discussed in this context is that of the American CHIPS. As indicated, intraday finality is introduced in CHIPS by means of bilateral and multilateral netting that occur continuously throughout the day, against participants’ balances, in effect sub-accounts, kept in a CHIPS pre-funded balance account held at the Federal Reserve Bank of New York (“FRBNY”). In fact, this is a joint account of all CHIPS participants controlled and operated by the New York Clearing House. All payments to which intraday finality is accorded are recorded throughout the day in the Clearing House System as adjustments to participants’ balances or positions in the CHIPS pre-funded balance account; “FRBNY will not take any action during the day

69. For this term see, for example, § 5(c) of the Canadian Payment Clearing and Settlement Act, S.C. 1996, cl. 6, § 162, enumerating “certainty of settlement and finality of payment” as subjects with respect to which the central bank is authorized to enter into an agreement with a clearing house or a bank in order to control systemic risk. “Finality of payment” refers to the irreversibility of credit posted to the beneficiary’s account.

70. See text at note 30, supra. See in general CHIPS Rules (January 2001) 12-16. The full text can be found in www.chips.org. For a discussion by S. Heller, see GEVA, supra note 23, § 3.03.
to adjust its records to reflect the changes to the System's records."\textsuperscript{71} Outstanding unsettled payments are processed and settled during end-of-day procedure, in connection with which a single entry, either debit or credit, reflecting the outcome of the entire daily activity, is posted to each participant's account with FRBNY.

Regarding intraday finality for a payment message, CHIPS Rules state that "[c]ompletion of settlement constitutes final settlement of that payment message and final discharge and payment of the Sending Participant's obligation to pay the amount of the payment message to the Receiving Participant."\textsuperscript{72} However, while "finality" and "discharge" are simultaneous, the use of "completion" is unfortunate, as payment has not yet been recorded in the reserve accounts with FRBNY. Granted, there is "completion" for each adjustment in participants' balances or positions in the CHIPS pre-funded balance account as run by the Clearing House System, but this does not "complete" the banking exercise aimed at carrying out payment in central bank money. CHIPS does not manage individual participants' reserve accounts on the books of FRBNY,\textsuperscript{73} but rather adjusts participants' positions in the joint pre-funded account held at FRBNY. Nor is CHIPS a bank holding participants' balances in the total amount of the balance in the pre-funded account on its own books.\textsuperscript{74} It is only when the balance with FRBNY comes to take into account each payment, that settlement through CHIPS can be said to have been completed. In the terminology of this paper,\textsuperscript{75} while intraday finality, and hence discharge, is provided by the adjustment of positions in CHIPS, "completion of settlement" is deferred to the end-of-day procedure.\textsuperscript{76}

The above-quoted language of CHIPS Rules, under which "[c]ompletion of settlement constitutes final settlement of that payment message and final discharge and payment of the Sending Participant's obligation to pay the amount of the payment message to the Receiving Participant," so as to identify between "completion" and "finality," may however be justified if the above-described operation is differently explained. Thus, one could argue that CHIPS settlement is actually completed for each payment order as it is finally settled, in which case com-

\textsuperscript{71} CHIPS Rule 12(c).
\textsuperscript{72} Id. Rule 13(b)(1); see also Rules 13(b)(2) and (3).
\textsuperscript{73} This is unlike the situation in Switzerland, where the central bank, SNB, is responsible for the management of reserve accounts on a host computer owned and operated on behalf of SNB by Telekurs SIC AG, a private company jointly established by Swiss banks. See GEVA, supra note 23, § 4.04[4].
\textsuperscript{74} As in CLS system, discussed immediately below.
\textsuperscript{75} See text, part IV(4), above.
\textsuperscript{76} Where a beneficiary's bank receives payment through CHIPS, the operation of Section 4A-209(b)(2) to link acceptance to "finality" rather than completion is quite reasonable due to the solid nature of central bank money as collateral. See discussion in text, part IV(D) above.
pletion is to be attributed to an obligation other than that of FRNBY, but rather to the joint obligations of the other participants as set out immediately below. According to this explanation, the subsequent end-of-day settlement at FRBNY is a separate and legally distinct operation, discharging interbank joint obligations, which has no effect whatsoever on any individual interbank payment processed earlier on over CHIPS and whose settlement has been completed as it became final as it was processed.

This alternative explanation is superficially attractive as it makes CHIPS settlement fit into paragraph (a)(1) of Section 4A-403 of the U.C.C. which, as discussed in Part 4 above, provides that in a funds transfer system, completion of payment is to take place when final settlement occurs. Yet, in my view, the explanation is flawed in two major respects. First, it is artificial; CHIPS participants anticipate receipt of central bank money, and the entire CHIPS machinery is geared to that end. Second, this alternative explanation does not resolve the fundamental temporal risk that exists in CHIPS no matter in what language the mechanism will be analyzed.

Indeed, other than blurring the distinction between completion and finality, a more substantive deficiency is the failure of CHIPS Rules to identify anyone responsible for intraday settlement finality. The Clearing House is specifically exonerated from liability, and there is nothing even to faintly suggest the implication by FRBNY. Whatever the level of security and comfort provided by the banking arrangement is, intraday finality is not in central bank money; this true even if intraday finality is secured by central bank money, namely, by a claim on the central bank. Although this might be excellent collateral, from a strictly legal perspective, a claim secured with central bank money is not the same as a claim paid with central bank money. True, the mechanism does not give rise to a "security interest" in central bank money in the technical sense, but relies on central bank money as a reserve to back and fund participants' obligations, so as to provide for a functional equivalent of a collateral.

Yet, while according to CHIPS Rules the claim on the Sending Bank has been discharged, no claim is stated to exist between intraday finality and the ultimate entry to the reserve account at the end of the day. Arguably then, intraday finality is provided in CHIPS by means of

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77. CHIPS Rule 15. This exoneration is subject to an exception covering System-originated fraud which is irrelevant for our purposes.

78. Moreover, in connection with the CHIPS pre-funded balance account, CHIPS Rule 12(c) specifically excludes any privity between FRBNY and each participant.

79. This situation is to be distinguished from the case where a Clearing House is assigned with the responsibility of managing participants' reserve account or their balance assigned to for settlement, as is currently the case in Switzerland. See GEVA, supra note 23, § 4.04[4](b).
a non-recourse collateral consisting of central bank money. Or else, it is the joint liability of all participants backed by and limited to this collateral which provides for this finality. Either way, "certainty of settlement" is implemented in CHIPS by achieving intraday, precompletion finality, backed by central bank money. Practically speaking, "certainty of settlement" may not be impaired in CHIPS, notwithstanding a lack of intraday finality in central bank money. While there is a temporal gap between finality and completion in central bank money, the security of central bank money during the gap provides an adequate level of comfort. However, remote risks of technical malfunction or legal freeze on the CHIPS pre-funded balance account are not addressed at all by CHIPS Rules. In such cases, so far as each participant is concerned, surely FRBNY is not responsible; nor is there any loss sharing formula or other source of liability on counterparties other than that limited to amounts actually paid and kept in the pre-funded balance account.

A second example for the provision of "certainty of settlement" backed by, but not in, central bank money, is in the context of multicurrency settlement operations. Thus, the new Continuous Linked Settlement ("CLS") system is an example of final settlement backed by central bank money, though completed in funds held outside of a central bank. The CLS system is a private sector initiative designed to respond to central banks' concerns for controlling foreign currency risks. This is a variant of a DVP system, under which a debit position of a counterparty resulting from an obligation to pay one currency is secured by the counterparty's entitlement, or credit position, in another currency. More specifically, a bank's intraday short position in one currency is secured by its long position in others. Settlement members are to hold accounts with the CLS Bank, a special purpose bank to be formed under US Federal Law and to be supervised by the Federal Reserve. For each currency, the CLS Bank is to have a settlement account with the relevant central bank, and access to the pertinent LVTS. Each account with a central bank is in the amount of that currency deposited by settlement members with the CLS Bank. Stated otherwise, settlement on the books of the CLS Bank is always secured by central bank money. Each settlement member has a single account with the CLS Bank, for all currencies, valued in US Dollars, with sub-accounts for each currency. The operation of the system is premised on the requirement that for each transaction to be processed, such single account, as distinguished from any individual sub-account of which it consists, must always have a positive balance. Overdrafts in sub-accounts will be strictly controlled.

Funds in both accounts of settlement members with the CLS Bank and accounts of the CLS Bank with central banks are to be deposited each morning, and all balances are to be withdrawn at the end of the day. Settlement members are to settle for themselves as well as for their correspondents ("user members") on the single accounts each holds with the CLS Bank. The settlement process runs on the books of the CLS Bank continuously during the settlement period. Transactions input are to be queued and then settled on the books of the CLS Bank. Each transaction is settled simultaneously in both currencies. It is settled only if upon completion, each counterparty's account to be transferred from (1) meets "the net positive value test," namely, as long as it remains in an overall positive balance, measured in US Dollars, and (2) as long as the account does not fall below a "short position limit" in the particular currency, as well as an "aggregate short position limit" in all currencies in which it is in short position.

Effectively then, for each participant, an overdraft in one currency is secured by surplus in another, with each overdraft being repaid in the course of the day. This procedure eliminates the Herstaat risk and also facilitates the smooth flow of funds so as to enhance liquidity and reduce gridlocks. Where a settlement member defaults in one currency, a liquidity facility is available to cover short positions resulting from transactions that have settled on the CLS Bank’s books and which are thus fully collateralized with central bank money. Since balances in accounts with the CLS Bank are backed by balances in accounts with central banks, settlement on the CLS Bank’s books is effectively secured by central bank money. More specifically, in the course of this settlement, operations secured by central bank money, in our terminology, on the CLS Bank’s books, finality and completion do coincide; finality is achieved on the basis of the debit to a participant’s single account denominated in US dollars, while completion is attributed to the debit posted to that participant’s sub-account in the particular account of payment.

Unlike in CHIPS, the continuous CLS settlement is on books held by a bank. This is a fundamental difference that, in my view, permits one to treat the end-of-day transfer of CLS balances to respective central banks as a distinct operation unrelated to the settlement on the books of the CLS that had been completed as it became final.

A third example is that of LVTS in Canada, in which "certainty of settlement" is afforded prior to completion by means of the security of central bank’s guarantee, which is provided so as to coincide with intra-

81. The Herstaat risk, so-called after the failure of the German bank Herstaat in 1974, is the risk of counterparty’s default in a spot foreign exchange transaction. Due to such default, no consideration is received from the defaulting bank for the amount delivered to it. See Dale, supra note 80, at 331.
day finality. Intraday finality is achieved in the Canadian LVTS by means of a continuous novation and substitution of interbank settlement obligations, secured by risk control measures such as bilateral credit limits, multilateral debit caps, collateralization, and loss sharing arrangement. The central bank's guarantee subsists until completion of settlement in central bank money.

BIS Core Principles may be read to describe the Canadian position as that of finality provided by means of the guarantee of the central bank. From a strictly legal perspective, this is inaccurate. For a central bank's guarantee to provide finality, it must supersede and discharge the settling bank's obligation. In fact, LVTS in Canada operates as a DNS system, with netting by novation and substitution taking place as each message passes all risk control tests so as to be "deemed received" by the receiving bank.

It is the obligation of the sending bank to pay "all participants jointly" and "the joint obligation of all participants to the [receiving bank]" which extinguish and replace the sending bank's obligation to the receiving bank and then continuously and automatically entered into a netting process so as to produce a "final discharge and payment of the obligations of each participant to the extent that they are netted." As this netting by novation and substitution discharges the sending bank's obligation, this is effectively the point of "finality." The multilateral net position of a participating bank remains outstanding until settlement on the books of Bank of Canada is "final and irrevocable"; in effect, this is the point of completion.

Yet, on the basis of a power specifically provided by statute, the Bank of Canada guarantees the negative multilateral net position of a defaulting bank. It is in this manner that the Bank of Canada effectively provides a guarantee of settlement for each "deemed received" message that passed all risk controls. Strictly speaking, this guarantee is a liquidity facility, designed to expedite the completion of settlement upon a participant's default, without affecting subsequent recourse to collateral and additional settlement obligations of participants under a loss sharing formula. At the same time, this guarantee of settlement affords "certainty of settlement" without by itself providing "finality," "completion," or even enhancement of the settlement assets themselves.

82. See Core Principles, supra note 1, § 7, ¶ 7.4.5, box 10 (discussing the Bank of Canada's guarantee in the context of prompt finality).
83. For a message that passed all risk control tests as "deemed received," see Section 38 of LVTS By-law, supra note 31.
84. Section 52(3) of LVTS By-law, supra note 83.
85. Id. § 56. In the terminology proposed by this paper, the language of Section 56 confuses "finality" with "completion" which is unfortunate.
86. Section 7(b) of the Payment Clearing and Settlement Act, supra note 69.
87. LVTS By-law, supra note 21, § 57.
Finally, contribution to "certainty of settlement" will be examined in the context of a situation in which central bank money, including balances in settlement accounts, is backed by financial assets in another currency. Thus, to enhance the credibility of their exchange rate pegs, some countries have adopted a currency board regime, under which the domestic currency is anchored to and may be redeemed by a designated foreign "hard" currency. Unlike standard fixed exchange regimes, a central bank operating as a currency board must hold liquid reserves in the anchor foreign currency covering the value of its outstanding monetary obligations, consisting of banknotes and balances on its books. In such a case, as in the typical case of settlement on the books of any central bank, interbank settlement in the domestic currency is in central bank money of the currency board, and not in the central bank money in the anchor currency. Moreover, interbank central bank money of the currency board is typically not even backed by central bank money of the anchor currency; it is, however, backed by financial assets in the anchor foreign currency.

Indeed, while in a currency board regime, settlement assets are not the foreign currency liquid reserves held by the central bank, the settlement obligation of the central bank acting as a currency board is effectively secured by those liquid reserves in the anchor foreign currency. Yet such reserves need not necessarily be in central bank money of the anchor foreign currency. Required liquid reserves held by the currency board to back its obligations are expected to generate income to the currency board and usually need not be in the form of a claim on the monetary obligations of the foreign central bank. Liquid reserves in high quality financial assets, namely, in the form of claims on high quality commercial debtors in the anchor foreign currency, are likely to generate a better income than central bank money in that currency, and will usually satisfy the currency board requirements.

Regardless of whether liquid reserves in the anchor currency are in central bank money or not, what is backed by the anchor currency in a currency board regime is the obligation of the central bank for the balance of the settlement account. Unlike in the previous examples, it is not participants' settlement obligations that are backed in the currency board regime. For this reason, "certainty of settlement" is not enhanced by the mere existence of a currency board regime.

VI. Conclusion

A legal framework for the operation of the interbank settlement system for wire transfers ought to accommodate diverse payment system designs and interact with various risk control policies and mechanisms. It has to contribute to certainty of settlement by both clearly identifying and providing for settlement finality, as well as for the completion of settlement. In this context, settlement finality means both the discharge of interbank settlement obligations and the non-reversibility by insolvency law of the settlement, that is, of the discharge of settled interbank obligations.

The ultimate challenge of any such legal framework is not to arrest future developments. Yet, while flexibility is required, there should not be any tolerance for ambiguity or vagueness. The balancing act is to provide for a detailed scheme, which will contribute to legal certainty, while not tailoring it exclusively to existing technology.

Overall, so far as settlement finality in the sense of discharge of the interbank obligation is concerned, Article 4A of the Uniform Commercial Code is capable of providing the required framework. This does not mean that its provisions are necessarily beyond any criticism; as indicated in the course of the paper, there is room for specific clarifications and improvements. Particularly troublesome is the lack of precision in the sources and various systems rules in the use of “finality” and “completion” in relation to settlement.