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Abstract

Most legal analysis of Bitcoin has addressed public-law and regulatory matters, such as taxation, securities regulation, and money laundering. This essay considers some questions that Bitcoin raises from a private-law perspective, and it aims to show that technological innovation may highlight problems with conceptualistic, classical rules of private law.

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I. Introduction

It is tempting, in considering how the law should regulate Bitcoin, to start by trying to categorize it: Is it a commodity? A collectible? A currency? A security?[1] While categorization of a new technology can be useful in fashioning responses to it, the enterprise is at heart conceptualistic rather than functional: the question invites scrutiny of definitions rather than policies and of the relationship between legal rules rather than the results of applying them. Interestingly, too, most of the existing attempts to categorize Bitcoin implicate its regulatory treatment; they are essentially public-law proposals. So, for example, there has been a lot of attention—for good reason—on questions of how to tax Bitcoins, of how they interact with payment-processing regulations, and so forth.[2] There has been relatively little attention on the core private-law questions that Bitcoin raises.

This essay begins to address some private-law questions concerning Bitcoin. For example, what rights does holding a Bitcoin confer, and against whom? Are the rights contractual, and to what extent is a bitcoin a *chose* in action?[3] What is the best way to enforce the rights associated with Bitcoin? In starting to address these questions, I suggest a broader, more theoretical thesis, which is that existing, historical private-law categories need not be functionally useful. Positive law is just positive law,

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1. For the first thorough attempts to classify Bitcoin under existing United States regulations, see Reuben Grinberg, *Bitcoin: An Innovative Alternative Digital Currency*, 4 HASTINGS SCI. & TECH. L.J. 159, 181–206 (2012).

2. *See* Omri Marian, *Are Cryptocurrencies Super Tax Havens?*, 112 MICH. L. REV. FIRST IMPRESSIONS 38, 41–48 (2013) (discussing Bitcoin's potential effects on the enforcement of tax regulations); Grinberg, *supra* note 1, at 181–206 (providing an overview of the financial regulations that may govern Bitcoin); *see generally* Rhys Bollen, *The Legal Status of Online Currencies: Are Bitcoins the Future?*, 24 J. BANKING & FIN. L. & PRAC. 272 (2013) (providing general regulatory discussions).

3. *See infra* note 7 and accompanying text (explaining that a "*chose* in action" is a right to sue for possession or recovery of personal property, damages, or a debt).

and one nice thing about new technologies like Bitcoin is that they can help us see limitations in our classical categories.

II. Holding Bitcoins: An Ambiguous Concept

To begin with, it is important to disaggregate the concept of "holding bitcoins" in the first place. To do this, it will be necessary to review briefly how Bitcoin works technologically.[4]

Bitcoin is simply software that is run on a decentralized collection of computer systems. Anyone can download and run it. This software, in coordination with other copies of itself running around the world, generates and records units of account known as "bitcoins," much in the way that a distributed computer game might record points for its players.[5] Bitcoins, however, have come to have financial value; people buy and sell them on financial exchanges scattered throughout the world, making and losing significant amounts of money. Bitcoins have value at least in part because the software (if it works properly, as it has for the most part done so far) ensures (1) their scarcity (people cannot arbitrarily create Bitcoins; they arise only through the expenditure of real computing power, as judged reliably by the Bitcoin software); (2) their security (transmitting bitcoins requires knowledge of their "secret key," a number that it is statistically impossible to guess); and (3) the ability to transmit them with relative ease.[6]

This brief description is technologically accurate and matches the ways that people commonly discuss Bitcoin; that is, it is common to speak of "buying a bitcoin" or "holding a bitcoin" (as an investment). But the description is legally imprecise in an

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4. I have provided a slightly more technical overview for legal audiences in Shawn Bayern, *Of Bitcoins, Independently Wealthy Software, and the Zero-Member LLC*, 108 NW. U. L. REV. ONLINE 257 (2014), http://www.law.northwestern.edu/lawreview/online/2014/6/Bayern.pdf. For the initial technological overview of Bitcoin written by its creator, see SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM (2008), http://bitcoin.org/bitcoin.pdf.

5. I follow here the increasingly popular convention of referring to the technology as *Bitcoin* and to the assets the technology creates as *bitcoins*.

6. *See* Bayern, *supra* note 4, at 259–64 (providing a more extensive introduction to several technical features of Bitcoin that may be relevant to lawyers).

important way that has received little academic attention. In particular, what does it mean to "hold a bitcoin"?

The answer depends on precisely how the bitcoin is held. Hard statistics are likely unavailable, but many and perhaps most people who "hold" (or "own" or "buy") bitcoins have done so without running a copy of Bitcoin software that directly participates in the Bitcoin network and without setting up the cryptographic framework that would be necessary to safeguard the private numbers—"keys"—that confer the ability to transfer bitcoins on the Bitcoin network. Instead, many people who have purchased bitcoins simply keep an account on a website that operates as a kind of informal bank or broker. The website reports a financial balance to the investor, and the investor at that point may think "I own 100 bitcoins." In thinking that, the investor presumably means that he or she has taken a financial position corresponding to the ownership of bitcoins—that is, that he or she is making a particular (short-term or long-term) bet.

III. Bitcoins as a Contract Right

As far as the Bitcoin software is concerned, however, the investor does not have control over any bitcoins. For example, there is nothing the investor can do, technologically, to compel the website to return the bitcoins. Similarly, as a matter of law, the investor probably does not "own" any bitcoins, at least not in the sense of having title to personal property corresponding directly to bitcoins. What the investor has is simply a contract right against the operator of the website—what was classically, at common law, called a *chose* (i.e., thing) *in action*.[7] This sort of right is meaningfully different from having possession of personal property. For one thing, it is subject to a risk of default—if, for example, the website becomes insolvent, as has happened many times in Bitcoin's short history. For another, a contract right is not identical, economically or legally, to possession; a claim must

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7. *See* W. S. Holdsworth, *The History of the Treatment of* Choses *in Action by the Common Law*, 33 HARV. L. REV. 997, 997 (1920) ("In its primary sense the term '*chose* in action' includes all rights which are enforceable by action—rights to debts of all kinds, and rights of action on a contract or a right to damages for its breach . . . .").

be fought, won, and enforced—and legal rules concerning enforcement may well limit the economic value of the right if, for example, they restrict the award of specific performance in favor of an objective measurement of expectation damages.

In this sense, keeping a bitcoin on deposit with a Bitcoin exchange or other online service is somewhat similar to keeping dollars on deposit at a bank.[8] But there are several important differences. One, of course, is simply regulatory: banks are highly regulated and are insured; Bitcoin exchanges are neither. Another difference is technical and theoretical: perhaps "deposit" is a notion that is or ought to be restricted to regulated banks.[9] But the most important difference between holding dollars at a bank and holding bitcoins at a Bitcoin exchange is that the contract right at issue in both cases need not be enforced in the same way. A deposit of dollars at a bank does not raise, in most cases, significant questions concerning the appropriate contract remedy.[10] This is mainly because expectation damages are denominated in dollars and are, as a result, a convenient remedy for breach of an agreement to keep dollars on deposit; a bank's failure to pay back a $200 deposit easily leads to a judgment of $200. Specific performance is typically unavailable to support recovery of a bank deposit because it is generally unavailable when the breached duty was simply to pay a fixed sum of money.[11]

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8. *See* Rhys Bollen, *What is a Deposit (and Why Does It Matter)?*, 13 MURDOCH U. ELECTRONIC J. L. 202, 206 (2006) ("The right to repayment the customer holds in relation to money deposited is a chose in action.").

9. *See id.* at 207 ("Some writers have questioned whether non-traditional banking products and other payment facilities are deposits. For example, do stored value cards and stores of digital cash, particularly if held by an ADI [Authorised Deposit-taking Institution] on behalf of a customer, constitute a deposit?").

10. Generally, a depositor's claim against a bank is simply a contractual right. *See, e.g.*, Dektor v. Overbrook Nat'l Bank, 10 F. Supp. 894, 896 (E.D. Pa. 1934) ("The money deposited becomes the property of the bank, and the plaintiff acquires a contract right. The relation created is that of debtor and creditor. There is no express contract, but the terms are all implied. They arise from and are defined by the established usages of banking practice."); 10 AM. JUR. 2D *Banks and Financial Institutions* § 640 (1963) ("The term 'deposit,' when used in connection with a banking transaction, denotes a contractual relationship . . . .").

11. *See* ARTHUR L. CORBIN, CORBIN ON CONTRACTS § 63.7 (Joseph M. Perillo ed.) (1979)

It would be a mistake to generalize from bank deposits to bitcoin deposits, however, and to assume that expectation damages are sufficient in the case of a failure to repay a debt of bitcoins. Indeed, specific performance would probably be a more appropriate default remedy for contracts to pay bitcoins.

For one thing, doctrinally speaking, the unavailability of specific performance in cases where the breached duty was simply to transfer a fixed sum of dollars probably tells us little about the appropriateness of specific performance in general. In such cases, the difference between specific performance and damages is exceedingly minimal, at least if the enforcement mechanism for damages is sufficiently effective against a judgment debtor who has the capacity to satisfy the judgment.

There has been some recent discussion emphasizing the theoretical differences between expectation damages and specific performance in cases like these, but I believe these differences amount to very little in practice. For example, Nathan Oman has recently advanced the counterintuitive thesis that defendants have no legal duty to pay judgments, a proposition he supports by observing that a judgment for damages "does not give rise to any additional liability or other sanction."[12] I believe this claim is untrue, however. Professor Oman discusses a Vermont statute that contradicts this position, but he argues that "no other state seems to have followed Vermont in making an injunctive remedy available to collect ordinary debts."[13] This, however, is incorrect; Vermont's statute is not in fact atypical.[14] The better view is

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> At one extreme, is the case of money debts or other unilateral contracts for the mere payment of money, [where] there is generally no difficulty in determining the amount of damages. The action of debt at common law in these cases was as truly an action for specific performance as is a decree in equity, even though the mode of enforcing the judgment was different from the mode of enforcing the decree. The judgment is regarded as an adequate remedy. A suit for specific performance, in so far as that involves any difference from the money judgment, is not maintainable.

See also id. § 63.15 ("It is seldom that money damages would not be an adequate remedy for breach of a contract to lend money. Specific performance has therefore been refused in most cases of this sort.").

12. Nathan B. Oman, *Why There Is No Duty To Pay Damages: Powers, Duties, and Private Law*, 39 FLA. ST. U. L. REV. 137, 152 (2011).

13. *Id.* at 154–55.

14. *Compare* VT. STAT. ANN. tit. 12, § 5537 (2012) ("Failure to make such

simply that when a judgment for damages is insufficient to enforce a duty to pay money, courts relatively easily grant specific performance—either instead of such a judgment (if its inadequacy is apparent beforehand) or afterwards (via a mechanism commonly known as a "turnover order").[15] There is not a rigid conceptual line between the two remedies; the difference in their availability is largely the result of practical considerations.[16]

Normatively speaking, specific performance is an excellent mechanism to enforce a legal duty to transfer bitcoins. Consider the factors in favor of modern decrees of specific performance that Corbin's treatise lists:

> Among the factors to be considered in granting a decree for specific performance, the most important seem to be the following: difficulty and uncertainty in determining the amount of damages to be awarded for the defendant's breach, difficulty and uncertainty in the collection of damages after

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payments [as the court deems appropriate] may be considered civil contempt of court."), *with* CAL. CIV. PROC. CODE § 699.040 (West 2012) (allowing a judgment creditor to apply to the court, upon a "showing of need," for a court order directing that the judgment debtor transfer property to the judgment creditor to satisfy a claim). New York and California have comparable statutes:

> Upon motion of the judgment creditor, upon notice to the judgment debtor, where it is shown that the judgment debtor is in possession or custody of money or other personal property in which he has an interest, the court shall order that the judgment debtor pay the money, or so much of it as is sufficient to satisfy the judgment, to the judgment creditor and, if the amount to be so paid is insufficient to satisfy the judgment, to deliver any other personal property, or so much of it as is of sufficient value to satisfy the judgment, to a designated sheriff.

N.Y. C.P.L.R. § 5225 (MCKINNEY 2012).

15. *See* BLACK'S LAW DICTIONARY 1207 (9th ed. 2009) (defining "turnover order" as "[a]n order by which the court commands a judgment debtor to surrender certain property to a judgment creditor"). Such an order is usually "directed to property that is difficult to acquire by the ordinary judgment-collection process, such as share certificates and accounts receivable." *Id.*

16. *Cf.* CORBIN, *supra* note 11, § 63.7

> Even the fact that the defendant's assets will not be subject to execution because of statutory exemption or because of location in another state may prevent damages from being an adequate remedy and, therefore, make it desirable to prevent the injury rather than to leave the injured party to an uncollectible judgment for compensation after the injury occurs.

> they are awarded, the insufficiency of money damages to obtain the duplicate or the substantial equivalent of the promised performance, either because the subject matter of the contract is unique or rare and cannot easily be duplicated or because the obtaining of a substantial equivalent involves difficulty, delay, and inconvenience.[17]

A debt denominated in bitcoins satisfies nearly all of these criteria. Because of the rapidly changing market value of bitcoins (denominated in dollars and other traditional currencies),[18] calculating damages risks significant error. Because purchasing bitcoins with dollars may involve significant transfer costs, risks of theft, and so on, an award of dollars is insufficient to address the expectations of a plaintiff, who may have intended to hold bitcoins rather than dollars.[19]

In short, emphasizing the similarity between bitcoins and dollars—or generalizing from a definition of bitcoin as "money" where the definition suits an unrelated context—would be the wrong way to determine a functional remedy in the case of contracts to transfer bitcoins, including contracts involving the deposit of bitcoins. A functional analysis based on the interests and expectations of the parties leads fairly easily to an award of specific performance in such cases.

IV. Direct Ownership of Bitcoins: A New Class of Private Property

The upshot of Part III is that holding a bitcoin using a financial intermediary is conceptually similar to owning traditional currency using a financial intermediary, except that the conceptual similarity should not cloud important distinctions

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17. *Id.*

18. *See, e.g.*, Nathaniel Popper, *In the Murky World of Bitcoin, Fraud Is Quicker Than the Law*, N.Y. TIMES (Dec. 5, 2013, 6:58 PM), http://dealbook.nytimes.com/2013/12/05/in-the-murky-world-of-bitcoin-fraud-is-quicker-than-the-law/?_php=true&_type=blogs&_r=0 (last visited Aug. 28, 2014) (noting tremendous fluctuations in the price of bitcoins) (on file with the Washington and Lee Law Review).

19. For a broader discussion of the purposes of remedies in contract law, see Shawn J. Bayern & Melvin A. Eisenberg, *The Expectation Measure and Its Discontents*, 2013 MICH. ST. L. REV. 1 (arguing in favor of a subjective "indifference principle" under which remedies are judged by their ability to make the promisee indifferent between performance and breach).

that should drive normative differences in enforcement—namely, the availability of specific performance in claims for breach of contract involving bitcoins.

Direct ownership of bitcoins raises different legal problems. A central technological innovation of the Bitcoin software is that owning a bitcoin directly—and I will discuss in a moment precisely what such ownership entails—amounts itself to possessing something of value, rather than merely having a claim against someone else for a preexisting, underlying asset.[20] That is, as investors over the past several years have recognized, cryptocurrencies are a new class of asset; they are not simply proxies for or claims upon existing assets. Consequently, while deposits over the years have been either bailments or contractual debts,[21] in a meaningful sense the ownership of a bitcoin is neither.

Of course, there are many familiar types of intangible personal property that cannot easily be reduced to debts or bailments, such as a share of stock[22] or a partnership interest.[23] In a sense, owning a bitcoin resembles such ownership interests, except that the distributed network of computer systems running Bitcoin is not a legal entity or even a legal aggregation of any kind; a bitcoin is, in at least a poetic sense, a share in an informally organized social process.

This Part considers more precisely the legal nature of bitcoin ownership, but it does so only to make a larger jurisprudential point, which is that considering the legal "nature" of ownership is only a very preliminary first step in using the private law to regulate a new technology. Categorizing Bitcoin is little more

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20. For a pre-Bitcoin analysis of electronic payment systems, analogizing them to 19th-century banknotes and suggesting that a classical legal regime should govern them, see James Steven Rogers, *The New Old Law of Electronic Money*, 58 SMU L. REV. 1253 (2005).

21. *See, e.g.*, Bollen, *supra* note 8, at 203 ("The goldsmith had evolved to a banker of sorts—the receipt evolved from a record of bailment to record of debt.").

22. *See, e.g.*, DEL. CODE ANN. tit. 8, § 159 (2014) ("The shares of stock in every corporation shall be deemed personal property . . . .").

23. *See* UNIF. P'SHIP ACT § 502 (1997) ("The only transferable interest of a partner in the partnership is the partner's share of the profits and losses of the partnership and the partner's right to receive distributions. The interest is personal property.").

than a pedagogical methodology to aid in its understanding; it cannot determine sound legal policy.[24]

This Part considers these matters in turn; Part IV.A sheds more light on bitcoin ownership, and Part IV.B argues that the "legal nature" of bitcoin ownership is probably not very important in developing common-law rules that address Bitcoin.

A. Bitcoins and Private-Law Rights

As noted earlier, owning a bitcoin has something in common with owning a stock or a partnership interest; both are intangible personal property that can be valuable on their own without direct implication of further legal relationships. So, for example, shares in corporate stock may have value even though there is no present claim to dividends or even an immediately recognizable prospect of a dividend payment. But stock in a company and other similar forms of intangible personal property are different from bitcoin in an important way, which is that ownership of corporate stock confers transactional rights (such as, for example, a right to vote for corporate directors or to receive a declared dividend), whereas on closer inspection ownership of a bitcoin does not itself confer a legal right against participants in the Bitcoin system. Note that owning a bitcoin does confer rights generally—for example, as with most property, the right against interference with "possession" from the world at large.[25] But a bitcoin does not represent a transactional or organizational right in the way that shares of stock or a partnership interest do.

To understand why this is so, it may be helpful to elaborate what a bitcoin is in the first place. As discussed previously, a bitcoin corresponds to no external asset, and it is not in fact something that physically exists. A bitcoin is nothing more than a convention established by a distributed algorithm, coordinated

24. *Cf.* Joseph William Singer, *The Legal Rights Debate in Analytical Jurisprudence from Bentham to Hohfeld*, 1982 WIS. L. REV. 975, 1059 ("The *logic of rights* is a human invention whose purpose is to preserve us from the notion that we must make political and moral choices. To make conscious choices, it is necessary to realize that we are making a choice.").

25. *See, e.g.*, MODEL PENAL CODE § 223.0(6) (2014) (including "intangible personal property" in the definition of property protected by the laws concerning theft and related offenses).

securely and reliably by many copies of the same software running throughout the world. There is an important sense in which individual bitcoins do not even exist at all; if I own, for example, 2.55 bitcoins, I do not have 2.55 times more of something physical than if I owned a single bitcoin. What I have specifically is knowledge of a long secret number that confers the ability to transfer a logical amount of value (2.55 bitcoins) to any arbitrary Bitcoin address of my choosing. On technical and physical grounds, I have exactly the same thing if I own any number of other bitcoins; the economic difference is simply that the distributed system running the Bitcoin software acknowledges my ability to send one amount rather than another. These amounts have come to have financial value outside the Bitcoin system itself, but that value is not something the Bitcoin software particularly cares about; the Bitcoin software does not know the exchange rate between a bitcoin and a dollar. It simply processes transfers of arbitrary amounts.[26]

In Hohfeldian terms,[27] given merely my knowledge of a secret key for a certain amount of bitcoins, there is nobody associated with Bitcoin against whom I have a claim-right, and conversely nobody has a duty to me—apart from the general duty to refrain from interfering with intangible personal property. Those running the Bitcoin software are free to ignore my attempts to transfer bitcoins to a new bitcoin address. They have no contract with me, implied or otherwise. They are free to ignore me, to dispute my ownership of bitcoins on technological grounds, and so on. The Bitcoin system works only because there are mathematically verifiable ways to convince other honest users of the software that my own bitcoins represent a legitimate stake (and because there is a social trust that enough honest people will continue to run the Bitcoin software). But, for example, if all the current participants in Bitcoin chose not to run the Bitcoin

26. One minor qualification to the notion that Bitcoin processes all amounts identically is that the leading modern Bitcoin client has introduced rules that prevent the sending of very small amounts under certain conditions without the payment, in bitcoins, of a transaction fee. *See Bitcoin Transaction Fees Explained*, BITCOIN FEES, http://bitcoinfees.com (last updated Feb. 12, 2014) (last visited Aug. 12, 2014) (on file with the Washington and Lee Law Review).

27. *See* Wesley N. Hohfeld, *Some Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 23 YALE L.J. 16, 28–37 (1913).

software, or if individual participants ran modifications of the software that operated on rules different from those that I initially understood, it is unlikely I have any recourse. In this sense, a bitcoin is not a right against the other users (*qua* users) of the Bitcoin network.[28]

What is bitcoin ownership, then? It is not a contract or a bailment. Indeed, it is probably not a *chose* in action of any kind because it represents no claim against others. (It perhaps resembles a Hohfeldian power—that is, an ability to change others' legally protected rights.)[29] In a meaningful sense, it is something new.

B. Theory and Function in Common Law Responses to Technological Change

Because Bitcoin is something new, it does not fit neatly into classical categories. It is striking to observe, even within the last hundred years, how several fundamental rules of private property, and the common law more generally, have moved away from their older conceptualism. For example, even the 1900s saw significant change with regard to the legal treatment of the conversion[30] and assignability[31] of choses in action.

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28. It is interesting to consider under what circumstances group participation in modification to the Bitcoin software to violate the expectations of Bitcoin users would amount to conversion, fraud, or any other actionable harm. That discussion is outside the scope of this essay, but I am skeptical that any such behavior is in fact wrongful—any more than setting up copies of the Bitcoin software that behave differently (a practice on which other cryptocurrencies like Litecoin depend)—is wrongful. While interference with individually owned bitcoins via a technological vulnerability on the owner's computer system probably amounts to conversion, influencing the evolution of the Bitcoin software is likely a risk that bitcoin owners reasonably intend to take. In some sense, owning a bitcoin is a tradeoff compared to owning other assets: in owning a dollar, an individual takes some risk that the dollar will be devalued by virtue of the central-banking functions of the Federal Reserve; in owning a bitcoin, he or she takes some risk that the bitcoin will be devalued by operation of the decentralized "banking" functions associated with the Bitcoin software itself.

29. Hohfeld, *supra* note 27, at 44–48.

30. *See, e.g.*, Lester Rubin, Comment, *Conversion of Choses in Action*, 10 FORDHAM L. REV. 415, 415–19 (1941) (documenting changes in the law governing the conversion of choses in action).

31. *See generally* LON L. FULLER & MELVIN ARON EISENBERG, BASIC

The trend toward functional rather than formal analysis in the common law demonstrates the importance of not relying excessively on categorization when determining legal rules that will govern bitcoin ownership, bitcoin transactions, and so on. In functional terms, a bitcoin is an important economic right to many who participate in the network. It is clearly proper to criminalize its theft. It matches parties' expectations if bitcoin is treated as intangible, moveable personal property. Contracts involving bitcoins should be enforced.

In modern private law, the remaining difficulties arise largely because of conceptualism and categorization that statutes create or preserve. So, for example, is a bitcoin a "good" under Article 2 of the Uniform Commercial Code? Article 2 defines goods as "all things (including specially manufactured goods) which are movable at the time of identification to the contract for sale other than the money in which the price is to be paid, investment securities (Article 8) and things in action."[32] Under this definition, much will depend on non-functional decisions about whether bitcoins are "moveable," whether I am correct that a bitcoin is not a thing (i.e., chose) in action, whether it is "money," and so on. This is unfortunate because little should turn on such arbitrary matters, and clearly the UCC did not contemplate them. In common law alone, there would be little reason to ask these questions.

CONTRACT LAW 1087–91 (8th ed. 2006).

32. U.C.C. § 2-105 (2013).