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CHANCE

THE TREATMENT OF CRYPTOTOKENS AT ENGLISH LAW

BACK TO THE FUTURE

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CONTENTS

Executive summary	3
Payment instruments and negotiability in English law	5
Currency and negotiability	8
Types of cryptotokens	8
Characterisation of cryptotokens	11
Instruments and frameworks	12
The impossibility of a “law of tokens”	12
Cryptotokens as property	14
Cryptotokens as currency	17
Possession	18
Commercial certainty versus protection of title	19
Security	20
Tokens and banking	20
Pooling of cryptotokens	21
Writing and distributed ledgers as a register	22
Conclusion	23

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Executive summary

There is not, and should not be, any such thing as a "law of cryptotokens".
A cryptotoken is simply a tool which is used to effect a transaction. The role of the law is to decide:

1. Whether or not to give effect to that transaction; and
2. Whether the transaction has been entered into in accordance with the laws which apply to a transaction of that type.

As regards the first consideration, the law should approach any issue involving tokens by asking three simple questions:

- What was the token designed to do?
- What did the participants in the transaction concerned believe that they were doing?
- Would that assessment have been shared by people generally?

If the answers to all of these questions are clear, then the law should strive to deliver the intended outcome of the transaction.

As regards the second consideration, the primary legal task is to characterise the underlying transaction. For example, if the offer of a token constitutes the offer of an investment, then the offer should be subject to the ordinary law applying to the offer of investments. What is important here is not whether the underlying transaction is effected using a token or not, but the legal nature of the underlying transaction.

As regards the English judicial tradition, there is nothing new about any of this. The development of innovative payment mechanisms and transaction types in English law, whether through the development of promissory notes, of bills of exchange or negotiable securities, all involved the recognition by the courts of instruments which were already in circulation in the markets. There is no reason why the courts of today should be less accepting of market developments than were the courts of previous centuries.[1]

In practice, cryptotokens are universally spoken of, and dealt with, as transferable property. There is no policy argument for refusing to recognise this treatment as a matter of law. Arguments about the definition of the term "chose in action" are of only antiquarian interest.

1 This legal acceptance of commercial practice extends beyond payment mechanisms. Recent examples include charges over bank accounts held at the chargee (*BCCI (No 8)* [1998] AC 214) and no oral modification clauses (*Rock Advertising* [2019] AC 119) despite conceptual objections to both.

Cryptotokens which are part of cryptocurrency schemes are created for the sole purpose of being transferred, and such transfers are effected by the adjustment of a distributed ledger. There is no policy argument for regarding this as anything other than a transfer of the relevant token. This conclusion is independent of the software mechanisms used to constitute the token.

In particular, there is no justification for the imposition of further legal formalities in respect of the transfer of such tokens over and above the adjustment of the ledger. If obsolete rules requiring “writing” for the transfer of equitable rights are applied in this regard, the adjustment of the ledger should be accepted as satisfying the requirement. Even better, such requirements should be abolished (or at least explicitly disapplied as regards financial markets, money and payment transactions).

Cryptotokens which are created for the sole purpose of being transferred should be regarded as negotiable, or as currency (the two concepts are in this regard interchangeable). The arguments against extending this treatment to cryptotokens are based on protection of title. However, protection of title is important as regards the transfer of goods, but useless and damaging as regards payment instruments. To apply such protections to payment media would negate the objective which that medium is created to perform.

Where cryptotokens relate to underlying property, that property must be held in a way which relates the property to the tokens. In such a case, issues relating to the ownership and control of the property will be governed by the law under which the arrangements in respect of the underlying property are made.

The treatment of cryptotokens created for the purpose of payment as currency has consequences for property rights in them – in particular, if they are pooled in an account they will need to be segregated or otherwise designated before they can be charged or ownership in them can be transferred.

Payment instruments and negotiability in English law

There has been much discussion around the appropriate treatment and characterisation of cryptotokens, both under English law and internationally. At the date of writing the current value of the largest virtual currency in existence, Bitcoin, is $185bn, the value of the second largest, Ethereum, is $23bn, and the value of the 100th largest – Stratis – is $55m.[2] What these numbers tell us is that in discussing the legal structure which should apply to transactions in cryptotokens we are not proposing a framework for a future product, but establishing what the law is as regards a significant commercial activity existing today. We discuss this and the relevant existing frameworks under English law in this paper.

English law has a long and honourable tradition of accommodating developing forms of payment instruments. There have always been individual lawyers and judges who object on principle to the development of new forms of mercantile practice, including Holt CJ arguing that they "amount to the setting up of a new sort of specialty, unknown to the common law, and invented in Lombard-street, which attempted in these matters of bills of exchange to give laws to Westminster Hall".[3] However, the law as a whole, and in particular the commercial courts, have always been ready to accept as law that which already existed as fact in the market. This was from time to time disguised as the acceptance of a pre-existing "law merchant", which was perceived as a separate source of law.[4] However, this fiction that the *lex mercatoria* had an independent long-standing existence, and was recognised by the English courts only when it could be proved to have existed from time immemorial, is clearly nonsense.[5]

It is also important to understand the relationship of English law with commercial practice during periods of rapid change in that practice. This is best explained in the judgment of Cockburn CJ in *Goodwin v Robarts.*[6] Commencing with the observation that "the system of banking has recently undergone an entire change", he points out that "all these instruments ... had their origin, at no very remote period, in mercantile usage, and were adopted into the law by our courts as being in conformity with the usages of trade". He went on to explain that:

"Usage, adopted by the Courts, having been thus the origin of the whole of the so-called law merchant as to negotiable securities, what is there to prevent our acting upon the principle acted upon by our predecessors, and followed in the precedents they have left to us? Why is it to be said that a new usage which has sprung up under altered circumstances, is to be less admissible than the usages of past times? Why is the door to be now shut to the admission and adoption of usage in a matter altogether of cognate character, as though the law had been finally stereotyped and settled by some primitive and peremptory enactment?"[7]

This establishes as a matter of principle that the courts should be prepared to reflect mercantile custom as regards cryptotokens in the same way that they did as regards promissory notes and cheques. However, in order to answer the question as to how

2 Source https://coinmarketcap.com as at 19 July 2019

3 *Clerke v. Martin* (1702) 2 Ld.Raym. 757, 758. For an anthology of strong attacks on this judgment (concerning promissory notes), see Holden, *History of Commercial Instruments in English Law,* London: University of London, The Athlone Press 1955, pp. 80-81.

4 Sir Edward Coke wrote that the *lex mercatoria* "is part of laws of this realm, for the advancement and continuance of commerce and trade, which is pro bono publico" (Co Litt. 182)

5 See, in particular, *The Law Merchant and the Common Law before 1700*, J.H. Baker, The Cambridge Law Journal, Vol 38, No 2 (Nov 1979) pp. 295-322

6 (1875) LR 10 Ex 337

7 *Ibid*, p.352

this is to be accomplished today, it is helpful to look back at how this was accomplished in earlier centuries. In this regard Goode identifies the following core requirements – certainty and consistency of practice, reasonableness, notoriety and conformity with mandatory law.[8] For these purposes, the establishment that there is a general practice is fundamental.

The key point here is that far from investigating the mercantile practice of remote antiquity, the courts investigated those mercantile practices that were immediately current, and did so primarily through evidence. Hale CB warned in 1668 that "although we must take notice in general of the law of merchants, yet all their customs we cannot know but by information".[9] By information, he meant either "to inquire [informally] what the course has been amongst merchants" or "to direct an issue for trial of the custom amongst merchants". As he wrote in his *Treatise on the Admiralty Jurisdiction* (1675), "either the custom or law comes in question by special pleading, and then the court use to ascertain themselves by speech with merchants ... or else it comes in question upon the general issue, and then ... merchants are usually jurors at the request of either party, and merchants are produced on either side to ascertain the court and jury touching the custom of merchants".

What we do know about this approach is that it was heavily dependent upon the question of how general the custom could be said to be. It seems that there were already by the end of the 17th century a number of mercantile customs which did not need to be proved, but of which judicial notice was taken. However, this simply reignited the debate about how many particular persons had to subscribe to a particular custom before it could be treated in this way. In 1692, Holt CJ declared "we take notice of the laws of merchants that are general, not of those that are particular usages".[10] And in 1697, the King's Bench reaffirmed the principle that while the court could take notice of the *lex mercatoria* or a general custom, a "special" custom of merchants had to be pleaded.[11]

This approach – that the custom of merchants can be pleaded in evidence and pass through to judicial notice – is the technique for which Lord Mansfield CJ is usually given the credit. In particular, Mansfield simplified the process of taking evidence on new aspects of mercantile law by empanelling juries of merchants ("Lord Mansfield's Jurymen"[12]) who could be expected to know and rely on mercantile custom without its needing to be proved to them in evidence.

One aspect of this debate which seems to have manifested itself in particular in Mansfield's court is the issue of the extent to which this idea could be applied to different types of property. It is to Mansfield himself that we can ascribe the famous characterisation of money as "currency". In *Miller v Race*[13], Mansfield, overruling Holt CJ, observed that:

"It has been quaintly said that "The reason that money cannot be followed is, because it has no ear-mark", but that is not true. The true reason is, upon the account of the currency of it: it cannot be recovered after it has passed into currency."

8 *Goode on Commercial Law,* ed. E McKendrick, LexisNexis, 5th ed. (2016), and see Goode, *Usage and its Reception in Transnational Commercial Law* (1997) 46 ICLQ 1, p.9

9 *Anonymous* (1679) Hardres 485, 486. Cf. *Peirson v. Ponuteis* (1608) 1 Brownl. 102 ("the Judges ought to take notice of those things that are used amongst merchants for the maintenance of traffick")

10 *Lethulier's Case* (1692) 2 Salk 443

11 *Bellasis v. Hester* (1697) 1 Ld.Raym. 280, 281

12 CHS Fifoot, *Lord Mansfield*, Oxford: Clarendon 1936

13 (1758) 1 Burr 452 at 457. See Rodgers *Negotiability, property and identity*, Cardozo Law Review 12 (1990) 471-475 for a discussion of "currency" in this context.

However, it is important to understand that Mansfield was not here claiming that money was a unique species of property. Mansfield would have accepted that money in the form of notes and coins was property like any other – it could be stolen, it could be converted, it could be pledged. His point was that even if specific stolen coins could be identified in the hands of another, the fact that they had passed into currency prevented them from being recovered. Thus he was not asserting a new doctrine of property law, but simply trying to reflect as accurately as possible the way in which notes and coins were actually used in everyday life. Indeed, one of the most important things about *Miller v Race* is that it is absolutely not an attempt to create a special "mercantile" law of money. It is simply an application to the world at large of the approach which he had developed in the specialised field of mercantile law – that when the world treats a thing in a particular way, the law should follow it.

The question of how the market did treat particular things was by no means straightforward. As an example, in 1770 we find the courts being asked to rule on the transferability of East India Company stock, "a new species of property, arisen within the compass of a few years".[14] Evidently, East India Company stock was at that time represented by some form of certificate, for in argument one of the lawyers had said, "This stock must be considered as money; like bank-bills, or other things which are current as money. It is, in all respects, the same as money. The mode of transferring it, is only by delivery." Mansfield, however, rejected the analogy, holding that an action for money had and received would not lie for the stock. However, here again, the issue was not as to what new law should be created, but as to how the relevant property was to be considered in law, and in particular whether and to what extent an East India Company stock certificate should be considered to be negotiable, or "money-like".

Finally, it is important to note that even in areas where mercantile custom has been placed on a firm statutory footing, it is usually the custom which precedes the statute and not vice versa. Promissory notes were treated as negotiable well before the first Promissory Notes Act was passed in 1704[15], and indeed this statute was itself passed not to introduce a novelty into the UK market, but to reverse a decision[16] which, if it had stood, would have severely damaged that market. The Bills of Exchange Act 1882 codified the laws relating to bills, but a rapid perusal of the Table of Cases in the current edition of *Chalmers & Guest on Bills of Exchange and Cheques*[17] will reveal that the majority of the cases on bills there cited predate 1882 – some by a considerable margin. The idea that the law – whether through decided cases or through legislation – creates a framework which commercial practice subsequently expands to fill must be rejected.

The period between the acceptance of evidence of a custom and recognition of the custom itself has frequently been short. As regards company bonds, the proposition which had seemed so radical in 1875, was in 1903 described as so clear that judges should be prepared to take judicial notice of the fact without having to have it proved in evidence before them.[18]

14 *Nightingale v. Devisme*, 5 Burr. 2589, 2592, 98 Eng. Rep. 361, 363 (K.B. 1770)

15 3 and 4 Anne C9

16 of Holt CJ in *Buller v Cripps* (1703) 6 Mod 29

17 8th ed., 2017, Ed. Gleeson

18 *Edelstein v Schuler & Co* [1902] 2 KB 144, 155-6 (Bigham J) ("these days usage is established much more quickly than it was in days gone by; more depends upon the number of the transactions which help to create it than on the time over which the transactions are spread; and it is probably no exaggeration to say that nowadays there are more business transactions in an hour than there were in a week a century ago").

Currency and negotiability

There are two key questions about cryptotokens. One is as to their status as property, the other as to the terms on which their transfer takes effect. In particular, we are required to consider whether they are cognate to currency. It is probably wrong to consider currency status and negotiability as alternatives in this regard. Another mistake would be to place too much importance on whether it is technically possible to track the transfer of a particular cryptotoken. In many cases, this will not be possible, at least for cryptotokens that are intended to be fungible. However, even if a particular cryptotoken were specifically identifiable, so is a banknote (each banknote having a unique identifying number). The law relating to banknotes has the effect that although they can in practice be followed through that identifying number – they do in fact have an earmark – in law they may not be. The question to be asked in respect of cryptocurrency units is as to whether the same should be true for them – that is, whether the law should positively decline to recognise continuity of ownership. This question can be reframed as a question as to whether such tokens should be treated as "negotiable", in the sense that the title to the unit of the holder in due course is unchallengeable; however, it should be clear that this is simply the same question phrased differently.

In this regard, a useful consideration of the pros and cons of recognising a particular instrument as having this status is set out in *Goodwin v Robarts.*[19] Having commented on the public utility of negotiability (see above), Cockburn CJ went on:

"No doubt there is an evil arising from the facility of transfer by delivery, namely, that it occasionally gives rise to the theft or misappropriation of the security, to the loss of the true owner. But this is an evil common to the whole body of negotiable securities. It is one which may be in a great degree prevented by prudence and care. It is one which is counterbalanced by the general convenience arising from facility of transfer, or the usage would never have become general… It is obvious that no injustice is done to one who has been fraudulently dispossessed [of a negotiable security] through his own misplaced confidence, in holding that the property in it has passed to a bona fide holder for value, seeing that he himself must have known that it purported on the face of it to be available to bearer, and must be presumed to have been aware of the usage prevalent with respect to it in the market in which he purchased it."[20]

These last two sentences are critical to the issues currently before us. Does a participant in the market for cryptotokens believe that those units are sufficiently currency-like to be negotiable, or does he believe that they require some other formality in order for them to be transferred in such a way as to grant unchallengeable title to the transferee? In the 19th century cases on instruments, it is reasonably clear that this point was rarely even considered, for the good and obvious reason (alluded to by Cockburn CJ in the passage above) that the defrauded owner must have come into possession of the securities concerned by purchasing them in the market. If, as a purchaser, he relied only upon the market custom of negotiability, and took no other step, it does not lie in his mouth to deny that custom in respect of any subsequent transaction in those securities. A similar approach would undoubtedly apply to the treatment of cryptotokens.

Types of cryptotokens

In the same way that the courts of the 18th and 19th centuries were presented with a dizzying array of different types of mercantile instruments, the courts of the 21st century are likely to be presented with an equally dizzying array of products based on cryptotokens. It cannot be too strongly emphasised that a cryptotoken is a process, not a product. It is usually a mistake to talk about tokens in the abstract – what matters is the use to which that token is put. Equally, it is unlikely that consideration of the technical design of these tokens will yield anything useful by way of legal characterisation – it is the process, not the technicalities of the product, which the law is called upon to deal with.

19 (1875) LR 10 Exch 337

20 *Ibid*, p. 353

True Virtual Tokens		
1.	Currency tokens	These tokens or cryptocoins are intended to circulate as direct substitutes for money and – importantly – have no other purpose or characteristics. Such a token is constituted solely by an electronic record. An 'owner' of a cryptocoin has no claim on anything or against any person arising out of his 'ownership' of the coin – what he has is a mere right to instruct that the register be changed such that some other person's name should be entered in place of his own. Tokens of this kind may have arrangements in place to stabilise their supply (sometimes referred to as "Seignorage Supply" stablecoins) but these arrangements are extrinsic to the coin itself.
Money-backed tokens		
2a.	Bank money-backed tokens	For tokens created by individual banks, each unit is likely to be capable of being presented to the relevant bank at any time and exchanged for an account credit denominated in fiat money. Thus, bank issues bankcoin which can be exchanged for money in a current account at the rate of one bankcoin for one pound.
2b.	Non-bank money-backed tokens	These are tokens denominated in fiat currency, and convertible at par with the corresponding currency, but issued by a person other than a bank. These are possible where the issuance of such tokens does not automatically make the issuer a bank – a question of bank regulation in the territory of incorporation of the issuer.
Asset-backed Tokens		
3a.	Utility tokens	These are tokens which are intended to confer some benefit or right on the bearer other than by payment for goods or services. An example is a service like Filecoin, where investors purchase coins and then 'spend' them to acquire data storage capacity.
3b.	Asset-backed tokens	Tokens of this kind confer an investment return of some kind based on the performance of some identified asset, project, business, or other factor. With tokens of this kind the token-holder generally does not have any property or other claim to the underlying assets, but the terms on which he acquired the token will provide for some benefit to accrue to him in the event that an underlying investment made with the proceeds of the token offering is successful. Most initial coin offerings or ICOs take this form.
3c.	Warrant tokens	Tokens of this kind operate in a manner equivalent to depositary receipts or warehouse warrants. They can take two forms: those where an individual identifiable unit relates to an individual identifiable item of property (e.g. if the underlying property were individually numbered bags of coffee in a warehouse, it would be possible for each individual unit to be linked to a specific bag); and those where the underlying is an undistinguished mass (e.g. if the underlying property were a pool of shares, each individual unit would entitle the holder to a delivery of a number of shares out of that mass).

None of the uses which cryptotokens perform is entirely new to English law, and for all of these there are existing assets which are broadly cognate with these asset types. It is helpful at this stage to consider these. This gives us five very broad legal categories.

1. Instruments which are "pure" tokens, which do not convey any particular claim against any person for any thing. These may be likened to beads on an abacus – they exist for the purpose of record-keeping only. However, such tokens may very well be used within a group of people to keep track of obligations amongst them. Such tokens may be either real (for example, cigarettes in a prison camp[21]) or notional (such as Air Miles). In this context, such tokens have no more legal existence than the pounds which are recorded as existing within a person's bank account – they may be used to denominate claims which arise between these individuals, but they are not themselves legal things giving rise to any ownership claim.

2. Physical banknotes and coins. These are an anomalous form of property for a number of reasons – the have the attribute of "passing into currency" (and are therefore not subject to the ordinary rule of *nemo dat* and cannot be followed[22]), their delivery in respect of any debt gives rise to a defence of tender, and ownership is presumed from possession. It is true that technically a banknote is a claim on an issuer, but since that claim is simply a claim for another instance of the thing itself, this characteristic is irrelevant in this regard, and banknotes in practice are treated in the same way as physical coins.

3. The class of tokens whose possession is treated as giving rise to a claim for money from a particular person. The closest analogy to these in the physical world is instruments such as bills of exchange and cheques. The point of such instruments is that there is no doubt that they are themselves things, and the reason that they exist is that the transfer of the physical thing automatically transfers the obligation of the payer from one person to another. However, the law looks at a bill as a thing, and the remedies available for the misappropriation of a bill are proprietary remedies – thus, if someone steals a bill of exchange from me, my remedy against him lies in conversion. However, the benefit to me of holding such an instrument is that I can sue the acceptor of it for its value.

4. The class of tokens which are deliberately constructed to constitute a proxy for possession of property. The classical example of this is the bill of lading, but some warehouse warrants perform much the same function. In law, the analysis of these instruments is that they are proxies for possession – delivery of the document is treated as delivery of the property to which it relates. However, their possession is generally treated as equivalent to possession of goods and, importantly, a contractual obligation to deliver goods can generally be performed by the delivery of a token of this kind. This architecture is frequently used for financial assets. For Global Depository Receipts, for example, an underlying security is immobilised by a custodian, and the custodian issues certificates relating to those underlying securities. The effect of this is that the holder of the certificate is put in broadly the same position as an owner of the underlying security. The certificate can be exchanged for the underlying security at any time.

21 Radford, The Economic Organisation of a POW Camp, Economica Vol 12 No 48 (Nov 1945), pp 189-210.

22 For the difference between following and tracing, see Lionel Smith, *The Law of Tracing,* Oxford: Clarendon Press 1997

5. The class of tokens where there exists an arrangement in respect of property under which the holder of that token is entitled to the proceeds of that property. The distinguishing feature of these is that they are constructed as investment vehicles rather than mere indicia of ownership or position, and the investor hopes to receive a return on his investment. There are two broad subclasses of these tokens – ownership-based structures and arrangements.

   In an ownership-based structure, the underlying property is held on trust (or some similar arrangement) for the holder of the token from time to time. In this context the ownership rights of the token-holder derive from the trust arrangement.

   In an arrangement, there is simply an arrangement in respect of the property whose effect is that the holder of the token will receive a benefit out of it. These arrangements generally fall within the regulatory classification of collective investment scheme ("CIS") structures in the UK, and investment contracts in the US.[23]

What this means is that all of the tools required to give these structures effect already exist within English law. There is no need to invent new concepts or pass new legislation in order to facilitate the development of these products or to give them clear legal effect. All that is necessary is to apply existing concepts in slightly different ways.

Characterisation of cryptotokens

An important starting point is that in law there is no such thing as a "token" – a "token" for this purpose is simply a technique which is given a purpose. Tokens are by no means always transferable; the "cookies" used in accessing websites are tokens for this purpose, but are not in any sense transferable. However, the tokens used in the context of Bitcoin exist solely for the purpose of being transferable. Consequently, we can conclude that the two mechanisms require to be treated differently in law, *even if the software operating them is identical*. Upon examination it should be clear that this is simply another manifestation of the point that examination of the software which creates a particular effect is of little or no relevance in the legal characterisation of the effect which is created. When considering the legal nature of a token, we must look only at the function (or process) which it has, not the way in which it is constituted. In other words, we must consider not what an instrument *is*, but what it *does*.

This leads to the point that there are two ways of identifying what an instrument does. In some cases, the instrument is created as part of a scheme. In other cases, the instrument is a standalone creation, which is intended to be used for a particular purpose.

23 *Securities and Exchange Commission v. W. J. Howey Co*., 328 U.S. 293 (1946)

Instruments and frameworks

Consider, for example, a simple unit trust arrangement, whose legal form is to the effect that the trust assets were held for the benefit of the individuals who hold particular tokens. In this case, let us call the tokens the "instrument" and the trust the "framework". The net impact of the arrangement is composed of both. Thus, if, for example, the laws of the land prohibited anyone under 21 from owning a token, the practical effect of the trust arrangement would be that no one under 21 could be a beneficiary under the trust. Thus, in a compound arrangement of this kind, the law of both the instrument and the framework must be considered to establish the overall legal consequences of the arrangement.

A simple example of this division arises where a company issues bearer shares. The articles of the company are the framework which gives rise to the arrangement, the pieces of paper which constitute the bearer shares are the instruments. The key point here is that the law relating to the ownership of those pieces of paper is simply the ordinary law of property.

The impossibility of a "law of tokens"

The point about the anomalies created by postulating a law of tokens comes into sharp focus when we consider tokens which are deliberately created to facilitate transactions in securities or other underlying assets. Here again, it is helpful to begin with first principles. What investors in any investment require is for a legal mechanism to exist in respect of that investment which (1) makes its ownership easy to establish, and (2) makes its transfer reasonably easy. As to the first of these there were two traditional approaches – registration and bearer instruments. Registration is more robust in terms of establishing ownership, but is more burdensome as regards transfer. Bearer instruments only perform the first function well if they are negotiable – a characteristic which also facilitates the performance of the second function.

As a result, those instruments where the parties had some discretion as to their legal form (that is, excluding shares in companies, whose form is usually fixed by the legislation under which the company is created) tended to gravitate over time towards the form of negotiable instruments. However, negotiable instruments in any quantity pose significant practical difficulties as to their management, holding and administration. The rise of the global custody industry has largely addressed these issues for investors, but it must be emphasised that the issues themselves have not gone away – they are merely subcontracted by investors to service providers.

There are two possible ways in which tokens could be used in the context of securities administration. One is if the token itself replaces the security – thus, instead of issuing a security which is then delivered to a custodian, the issuer creates the security in the form of a token. This would be an extremely straightforward thing to do as regards debt securities – the basis of modern debt securities remains a deed poll by which the issuer promises to pay money to the holder of the bearer note, and there would be no difficulty in redrafting such a deed poll to the effect that it constituted a promise to pay money to the person entered in a distributed ledger at the relevant time as the owner of a particular token. A less ambitious approach might be to issue securities in the normal fashion, and for the custodian to operate a ledger on which tokens indicating rights to particular securities can be transferred. This latter model is of course simply a development of "note banking" as the predecessor to account banking – when the acceptor takes the thing, he issues a transferable certificate and undertakes to deliver whatever he has received to the holder of that thing.

In both of these cases, if the token is regarded simply as a token then the problems quickly become insuperable. For example, in the EU Central Securities Depositories may not provide services in respect of any instrument other than a "financial instrument" as defined by MiFID[24], and settlement finality protection under the Settlement Finality Directive is only available to systems whose primary function is the transfer of securities.[25] Since it is very hard to see any policy argument for not extending settlement finality to these instruments, and it would be positively perverse to argue that they should not be capable of being custodied, the argument for including them under the heading of financial instruments seems irresistible. Other arguments point in the same direction – for example, it would be a significant hole in the current EU investor protection regime if it were possible for intermediaries to distribute tokenised securities to investors without being subject to MiFID[26], for issuers to issue them without being subject to the Prospectus Directive[27] and the Transparency Directive[28], or for traders to trade in them without being subject to the Market Abuse Directive.[29] However, a finding that "tokens" *per se* are securities for this purpose would prohibit them from being freely circulated as payment instruments.

The only way out of this dilemma is to consider the function which the token is performing rather than the token itself. At base, as noted above, the token does two things – it constitutes evidence of the ownership of a thing, and provides a mechanism for transferring that ownership. If the underlying thing is a security, the token should be regarded as performing the function of, and therefore being subject to the rules relating to, securities; if the underlying thing is a commodity, the token should be regarded as performing the function of, and therefore being subject to the rules relating to, commodities and so on. Any other approach will collapse under the weight of the internal contradictions inherent in trying to apply the legal regimes for different products to the same underlying asset.

Another issue which arises in this regard is in respect to what are sometimes misleadingly described as "cyber-contr acts" or "smart contracts". These are arrangements which involve "big tokens" – that is, tokens which do not merely indicate ownership of an asset, but which either contain or reference the terms of the arrangement between the parties. These arrangements are cognate to negotiable securities, in that the terms and conditions of a negotiable security set out the rights and liabilities which arise between the issuer and the holder of the security. These terms are in effect fixed when the instrument is created, and thereafter cannot be varied except by the creation of a further contract. If the holder of such an instrument transfers it to a third party, the rights which the third party acquires against the issuer are no more and no less than the rights set out in the terms of the instrument. More importantly, if the terms of the security dd not correctly reflect the agreement between the issuer and the holder, then the holder may have a separate claim for damages against the issuer, but the terms of the security are not affected by that error.

The reason that it is incorrect to categorise these arrangements as contracts is that English law has (and has always had) difficulty in characterising the rights which arise under negotiable instruments. In particular, if an issuer issues an instrument to a person who transfers it as a gift to a third party, there is no doubt that the issuer is obliged under the terms of the instrument to the third party, but it cannot be argued

24 Central Securities Depositary Regulation 2014/909 Art 2(1)(8).

25 98/26 EC Art 2(a)

26 Markets in Financial Instruments Directive 2 2016/1034/EU

27 2003/71/EC

28 2004/109/EC

29 2003/6/E

that there is a contract in place between the issuer and the third party. The easiest way of dealing with this issue at law is to regard the issuer as having made an open offer to the world to perform the obligations set out in the terms of the security as issued, which offer is then accepted by any person by becoming the owner of the security. However, this analysis would require consideration to move from the promisee (in this case the holder), and although that is the normal state of things, it would be clearly wrong to argue that a transferee of a bond by way of gift would have no rights to enforce the bond. The best and most accurate analysis in this regard is that the negotiable nature of the bond has the effect that the issuer, by issuing it, undertakes a binding promise to perform under the terms of the instrument to the person who is the lawful holder. However, at English law an enforceable obligation of this kind can only be created by an instrument constituted as a deed poll under seal, and it seems reasonably clear that a smart contract would not satisfy the formal requirements to be a deed poll. Interestingly, it is this issue – the relative untransferability of rights under common law – which drove the development of mercantile law in Britain.

It is suggested that the correct solution to this issue would be to dispense with the rules of consideration in this regard. The rule on consideration, although sometimes decried as archaic, in fact performs an important function in English law, in that it is the tool which English law uses to distinguish between mere promises and enforceable obligations. However, where a person wishes (as the issuer of an instrument does) to create an obligation to whichever person may at the relevant time be the holder of that instrument, it should be acknowledged in legal theory as well as in practice that where a person undertakes a formal obligation to another for good consideration, and the obligation takes the form of a transferable instrument, the parties should between them be able to agree that that obligation so created is enforceable against the obligor by any transferee of the obligation even though the obligor and the transferee are not in any contractual relationship with each other.

Where the arrangements under the contract are bilateral – that is, both parties have obligations to the other – the position is more complex. In general the identity of a party to a contract may matter or may not, but the law tends to presume that it does. As a result, where a party owes obligations under a contract, it cannot discharge those obligations by transferring them to another person without the consent of the obligee. It is perfectly possible to circumvent this rule by drafting; loan market contracts, for example, tend to have a transfer certificate mechanism under which the borrower consents in advance to subsequent transfers by lenders of their obligations under loan agreements, thereby extinguishing the relevant lenders' liabilities. However, for obvious reasons no such facility is extended to borrowers.

The point which this illustrates is that even where a token is used to do more than simply indicate ownership, the legal consequences of its transfer must be considered in the context of its overall structure.

Cryptotokens as property

Wherever there exists a framework whose effect is to confer economic rights on a person who is deemed to be a holder of a particular instrument, the existence of that framework is sufficient to constitute that instrument as an item of property for this purpose. If there exists a framework under which a person who is denoted in a particular way has a particular claim or set of claims, and that denotation is transferable by that person to another person (by whatever method), the laws relating to that transfer should be the ordinary laws of property. The question of whether the instrument has the effect of transferring a right of action against a specific and identifiable third party (a chose in action) should be irrelevant for this purpose. The mere fact of the existence of a framework which gives a transferable thing economic value should be sufficient to demonstrate that the law to be applied to transfers of that thing should be the ordinary law of property.

This becomes more complicated where the things to be transferred have no physical existence. However, in dealing with incorporeal assets, the simple answer to questions of title can be derived by looking at the methods by which ownership of the asset is transferred – in other words, how ownership is evidenced. Ownership of physical currency is evidenced by physical possession – with money, possession generally is ownership; ownership of registered intangibles, such as shares, is evidenced by registration; ownership of unregistered rights is evidenced by proving assignment. For cryptotokens, existence is constituted by entry in an electronic register. This registered status is more or less identical to physical possession of physical tokens. In the same way that only the person who is in physical possession of a banknote can validly spend it as currency, it is only the person who is properly identified as the registered possessor of a cryptotoken who can validly transfer it. Registration is in this regard the functional equivalent of possession.

It would be tempting at this stage to conclude that the law should simply be that wherever an intangible thing exists solely by virtue of registration on a register, the law should treat that thing as owned by the person who is registered as the owner. Where (as is common in electronic currency), the register does not identify a person but simply provides that it can only be changed by the possessor of a particular electronic key, then we can presume that the person who possesses that key should be regarded as the owner.

Viewed from this perspective, it is difficult to see what positive arguments there might be for rejecting the idea that the tokens are property. A very basic starting point for most people would probably be that anything which (a) is transferable and (b) has some economic value, has already satisfied the basic requirements for being property.[30] From a common-sense point of view it is very difficult to dissent from this view. It is clear that there can be valuable economic rights which are not property – for example, a state pensioner in the UK could be said to own valuable property in the form of an annuity claim on the UK government, but this would not normally be regarded as property on the basis that it is not transferable. However, the fact remains that where something is both valuable and transferable, it will in practice be regarded as and treated as property, and there are examples of courts taking exactly this approach, such as *Goel v Pick*[31] (car registrations) and *Armstrong v Winnington Networks*[32] (emissions licences).

It can be clearly seen by looking at more or less any website, newspaper or other communication discussing Bitcoin in particular and cryptocurrency in general that

30 This is set out more precisely in *National Provincial Bank v Ainsworth* [1965] AC 1175, pp. 1247-8, where Lord Wilberforce defined a property right as one which is "definable, identifiable by third parties, capable in its nature of assumption by third parties, and have some degree of permanence and stability".

31 [2006] EWHC 833 (Ch) 2007. The valuable asset is the statutory right to display a particular mark, not the physical mark itself.

32 [2012] EWHC 10 (Ch)

cryptocoins of all forms are not only universally accepted to be valuable and transferable, but it is also notable that public discussion of them is invariably conducted using the language of ownership and transfer. Some legal notice at least should be taken of the fact that it is far too late to put this particular genie back in its lamp.

However, some English lawyers believe that there is a technical legal problem to the recognition of such tokens as property at all. This argument is based on the observation of Fry LJ in *Colonial Bank v Whinney* that "all personal things are either in possession or in action. The law knows no tertium quid between the two."[33] In order to understand this observation, it is necessary to understand what *Colonial Bank* was all about.

Prior to the 1869 Bankruptcy Act, the term "chose in action" was little used. Lawyers distinguished property into two classes; chattels real and chattels personal. The term chose in action was used to describe actions for debt, and was frequently applied to other intangibles, but had no settled meaning. However, the 1869 Act used the concept of "choses in action" in its provision that in the event of a bankruptcy, chattels personal in the possession of the bankrupt should be included in the bankrupt estate, but choses in action should not.[34] The distinction which the Act was trying to make was between goods in possession (which might give rise to false wealth) and other chattels, which it was argued would not.[35]

As might have been anticipated, this created difficulties for firms, such as stockbrokers, whose stock-in-trade were choses in action. *Colonial Bank* addressed the position of a bankrupt stockbroker, who had transferred shares to a bank as security for a loan. The issue before the court was whether the effect of the Act was to cancel the bank's security interest in the shares and bring them back into the bankrupt estate. Counsel for the trustee in bankruptcy argued that the term "chose in action" had a technical meaning limited to the right to sue for a debt or damages[36] – consequently the pledged shares were not choses in action, and the bank's security interest in them was effectively extinguished by the Act. This is the argument which succeeded both at first instance and in the Court of Appeal, and appears to have been technically correct. However, the point which Fry LJ made in his dissenting judgment in the Court of Appeal, and which succeeded in the House of Lords, was that this was absolutely not what the Bankruptcy Act was intended to effect. As Lord Blackburn said in the House of Lords:

"I think it was hardly disputed that, in modern times, lawyers have accurately or inaccurately used the phrase "choses in action" as including all personal chattels that are not in possession."[37]

33 (1885) 30 Ch D 261, 285

34 The policy rationale for this apparently odd position was the view that, in the days before easy incorporation, when a workman went bust the assets which were part of his business should be for his creditors, but the assets which constituted his savings and/or means of livelihood should be preserved for him. The class of preserved assets therefore included the "tools of his trade" and the life insurance policies which frequently constituted the only form of pension savings of tradesmen in that era. It was the latter which the exclusion of "choses in action" from the bankrupt estate sought to preserve. *Colonial Bank* itself concerned section 44(iii) of the Bankruptcy Act 1883, which was in identical terms to the Act of 1869.

35 It was not until several years after the Bankruptcy Act that Parliament first provided a statutory mechanism for assigning legal claims (s.25(6) of the Supreme Court of Judicature Act 1873). This mechanism used the term "chose in action" to describe those things which were capable of being transferred by assignment. However, there is no suggestion that this Act was intended to limit the meaning of "chose in action" only to things which are capable of being assigned.

36 The "right to a thing the enjoyment of which can only be perfected by action", p. 269

37 (1886) 11 App Cas 426, 440

Thus, the point before the court, and which the House of Lords agreed, was that the term chose in action – at least as introduced into statute by the Bankruptcy Act – was not intended to mean only instruments where there was a single identifiable right of action attached to the claim, but was intended to signify any chattel that was not in possession. This is what Fry LJ meant by there being no third class of property which was neither in possession nor in action – his view can be summarised as the term chose in action meaning any asset that was not in possession, whether or not it conferred a right to sue for debt or damages. He rejected Blackstone's narrow definition that "all property in action depends entirely upon contracts express or implied; which are the only regular means of acquiring a chose in action"[38], and suggested that pretty much any legal right could fall within the definition. Indeed, he specifically referred to the King's right to the marriage of his ward as a chose in action[39], despite the fact that a right of that kind clearly neither arose from contract nor was enforceable by any court action against any person.

It is unfortunate that Fry LJ's views have sometimes been misrepresented as a finding that a thing which cannot be enforced by a court action against a specific person is not capable of being property. This is the opposite of the proposition which he advanced, and which the House of Lords accepted. Correctly construed, the point is simply that any valuable, transferable right which is not reflected by actual possession of a thing is a "chose in action" for this purpose. It seems quite clear that Fry LJ, presented with a cryptotoken, would have had no difficulty in finding that it constituted a "chose in action" for the purposes of his construction of the legislation before him.

Cryptotokens as currency

If cryptotokens are property, this brings us to the question of what sort of property, and this in turn brings us to the subject of transfer mechanics. A chose in action in the form of a right of action is conventionally transferred by assignment, and this imposes formalities which are incompatible with the use of an intangible as an instrument of payment. Consequently, the history of the law of payment instruments is largely a history of the recognition by the courts of transfer mechanisms other than assignment.

In order for any item of property to be useful as a mechanism for commercial debt settlement (broadly, to be used as a means of payment), it must have the special property of "currency" or "negotiability". Very loosely, this means that the ordinary rules of property must be disapplied where the relevant item is used as a means of payment. Although this is generally thought of as an attribute of currency, it is by no means unique to sovereign monetary tokens – the law extends it to bills of exchange and promissory notes, and this treatment was recognised at common law well before it was memorialised in the Bills of Exchange Acts.

There is, however, an important distinction in this regard between bills of exchange and money. Bills of exchange exist by reference to a framework – there are relationships between the drawer, drawee and holder which are confirmed by legislation and which enable a bill to be recognised as such. This is not the case for currency. Money does not exist by reference to any framework. Its existence is the only characteristic which it possesses. This is necessarily true for coins. It is sometimes argued that banknotes constitute a claim on an issuer (and indeed that is their legal form), but, since the UK's

38 2 Com. 397

39 P. 286, referencing Brooke's Abridgement fol. 140

final abandonment of the gold standard 88 years ago, that form is a fiction which should be disregarded. The claim on the Bank of England which is notionally embodied in a Bank of England banknote can only be discharged by the Bank in the form of another note of the same denomination. If a £20 note is presented for payment at the Bank, and the presenter receives in exchange an identical £20 note, then we can discard the idea that this farce would have any legal significance. In practice, banknotes and coins are identical in this regard.

The thing which gives notes and coins their value is nothing more than the fact that the possessor expects them to be accepted in payment by people generally. There is a complex and redundant discussion as to how broad the group of "people generally" must be before the relevant token becomes "money" properly so-called (this arises in discussions as to whether tokens like the Bristol Pound[40] are properly described as money). However, for our purposes, the key issue is that the holder of notes and coins does not hold them pursuant to any formally existing legal framework – the expectation that they will be accepted in payment is itself sufficient reason for holding them.

It is open to the courts to treat any item as currency provided it is satisfied that it is customary to use that item in that way. The test here is a public, and not a private, test – individuals cannot confer the status of currency on an item simply by agreeing to do so. However, where a court is satisfied that the item concerned is in fact used in the same way and for the same purpose as currency, and that that practice satisfies the ordinary criteria for recognition – certainty and consistency of practice, reasonableness, notoriety and conformity with mandatory law – there is no reason why that practice should not be accepted.

Possession

There may be reasons for creating a doctrine of pseudo-possession of intangibles under English law. The useful attributes of the doctrine of possession are that it enables hierarchies of control to be recognised – consider, for example a company which buys a car and provides it to a member of staff to use, who in turn delivers it to a garage for repair. All three of these can be said to have "possession" of the car. However, the problem with possession is the way in which it interacts with ownership.

Consider, then, a locked safe deposit box kept with a bank. The bank may well provide that any person who presents themselves with the key to the safe deposit box should be entitled to do what they like with the contents of the box. However, if I steal the key to your safe deposit box and use it to remove the contents, I have acquired possession of those contents, but I will not in general obtain ownership of them. Thus, you can recover them from me, and from any person to whom I may have transferred them.

This brings us back to currency. The difference between property which has the characteristic of currency and property which does not can be illustrated by imagining that the safe deposit box contains some banknotes and some jewellery. If you track down both into the hands of the same person, you will be entitled to the jewellery back but not the specific banknotes – transfer of possession of banknotes is presumed to transfer title, transfer of possession of jewellery transfers nothing.

40 A combined digital and paper community currency launched in Bristol in September 2012, with the aim of generating growth by encouraging people to spend more money with local businesses.

Where we need to get to with money tokens is that their transfer has the effect of a transfer of possession of currency. It does not matter whether the analytical framework for getting to this conclusion is to create a doctrine of pseudo-possession, deem a registered transfer to be equivalent to a transfer of physical possession, and then recognise a transfer of title as a consequence, or whether we short-cut that process by simply deeming a transfer of control to be a transfer of title.

It should be noted that this issue only arises with pure tokens – where a token is created pursuant to an arrangement in respect of property, the question of the legal effect of a transfer of a token can be fully set out in the terms of the framework. However, where they are not so set out, it should be presumed that the intention of the parties was that the ordinary law relating to the transfer of ownership of tokens should apply.

Commercial certainty versus protection of title

The English courts have historically tended to try and confine the status of currency within narrow bounds, and the reason for this is a desire to protect good title. The threat which currency status poses is its ability to deprive a true owner of property of his ownership without his knowledge, consent or involvement, and this is a consequence which the law finds difficult to accept.

However, this principle is heavily moderated in practice. This point can be best illustrated by considering the contrasting positions as regards a dealing with a bill of exchange and a dealing with some other form of physical goods. The default position as regards physical goods is that an illegitimate transfer does not pass title. However, this is subject to the defences generally collectively referred to as the Factors Act 1889 defences, the effect of which is that if the current possessor double-deals, a purchaser who deals with him in the course of business and acts in good faith acquires good title to the goods purchased. The default position as regards a bill of exchange, by contrast, is that the holder for value has good title – in other words, that a holder who acquires a bill acquires title to it. However, this is qualified by the "in good faith" requirement of the law of bills – an innocent purchaser acquires ownership, a purchaser who knows he is buying a misappropriated bill does not. In both cases the absolute nature of the underlying rule is mitigated by the court having regard to the facts of the individual case.

An oversimplified way of putting this point is as follows – where the law imposes a strict rule of *nemo dat*, an exception is created for buyers in good faith; where the law imposes a strict rule that a transfer is unchallengeable, it creates an exception for bad faith. It is therefore wrong to suggest that the choice of a *nemo dat* or a currency basis for the property nature of a new type of instrument makes a major difference to the rights of the parties to transactions in it.

This fact alone constitutes a powerful argument for the adoption of a currency approach to the property nature of cryptocurrencies. It is in general the case that commercial law prioritises certainty of transactions over certainty of root of title – the division between real estate and commercial law found in most legal systems is based on this distinction. The slow development of the law of bills of exchange was in good part an acceptance by the courts that commercial certainty required a different approach to ownership than was the case in land transactions. It seems more or less certain that pure tokens need to be regarded as money in order to function as such, and are expected by participants in the market to function in this way. The only remaining policy question is simply one of whether this approach can safely be extended to tokens whose nature is derived from infrastructure arrangements. It is suggested that this is unproblematic. As noted above, where such infrastructure-based arrangements exist, the rights of the holder are in reality based on the terms of the infrastructure as much as on the property law aspects of the token. Consider the situation which would arise if legislation were to render cryptotokens transferable in the same way as currency or bills of exchange. It might be objected that an arrangement in respect of property where the property was held for the owners of cryptotokens would be a very different thing from an arrangement where the property was held for registered unitholders. However, this is not in itself an objection – the mere fact that similar things can be done in different legal ways with different legal consequences is not in itself a problem. If those establishing the arrangement are aware of the different legal ways in which a registered unit or a cryptotoken can be transferred, the mere fact that they have chosen one or the other form is unproblematic. As noted above, this problem only really arises where there is no infrastructure and the only thing to be characterised is the token itself. In such cases, the starting point should be that if a thing has only one incident of existence – that being the fact of transferability – the law should have no difficulty in presuming that it is intended to be transferred, that the fact of its transfer should be its defining incident, and that that transfer should be recognised unless there are good reasons (such as fraud or bad faith) to challenge it. This leads us neatly to a currency/bills of exchange analysis of the property rights which should be attributed to it.

Security

One of the problems which arises if an instrument is regarded as currency, however, is that it becomes difficult to take security over it. From the perspective of a security-taker, the easier it is for the grantor of the security to alienate it, the less useful the security is. Thus, for example, if I give you a charge over notes and coins which remain in my possession during the term of the security, your security right is so precarious as to be barely worth having. Thus, in such a case a useful security can only be created by taking physical possession of the relevant notes. However, this is not a difficult problem to overcome. If the position were to be that security over a cryptotoken could only be usefully constituted by requiring that cryptotoken to be transferred either to the security taker or to a third party (such as a custodian or security trustee) for the duration of the security, this would put the parties in no worse a position than is common today as regards the taking of security over financial collateral. Although it is true that ascribing currency-like property status to cryptotokens would render the taking of security over such instruments more difficult, that is not in itself an argument against that policy. It is likely that the position with tokens will be broadly the same as the position regarding physical money – that the only effective way of taking security over it will be either to transfer it to a third party and take a charge over the claim on that third party for its return, or to take a mortgage by having it transferred to the security-taker on terms that it will be returned when the secured exposure is discharged.

Tokens and banking

Finally, it is important to note that regardless of the property nature of a thing, that nature can be simply and easily transformed where such transformation is commercially useful. For example, consider the position as regards physical gold. An owner and possessor of physical gold has the most secure title possible to that asset. However, he also has the burden and cost of safeguarding it, transporting it and insuring it. Consequently, gold is frequently held with gold custodians, so that the owner, although no longer a possessor, is relieved of those burdens whilst preserving his ownership. Most gold custodians will also offer an unallocated gold arrangement. In an arrangement of this kind the owner transfers his gold to the custodian in exchange for a claim on the custodian for an unallocated amount of gold. Such an arrangement is structurally identical to a deposit of money with a bank – the thing deposited becomes the property of the receiver, and the depositor has nothing more than a claim on the deposit-taker. However, it also has the advantages of a money deposit with a bank; in particular, the fact that transfers can now be accomplished by simple book entry rather than by physical transfer of gold bars. It is clearly true that such arrangements could be created as regards cryptotokens, such that a user might have a choice between becoming the direct holder of the tokens on the distributed ledger, employing an agent to operate the claim on his behalf, or making an arrangement by which he had a derivative claim on some other provider. The important thing here is to ensure that all of these arrangements are possible.

Pooling of cryptotokens

The issue relating to the consequences of pooling is in many respects similar to the issue which arises as regards currency. Where distinguishable but undistinguished property is pooled, the pool constitutes a thing, and it is impossible to own part of the resulting bulk.[41] However, with financial assets such as shares, which are undistinguishable and inseparable, it is possible to own part of a balance.[42] This means that although it is not possible to sell (or charge) 50 out of a cellar of 100 bottles of wine, it is possible to sell (or charge) 50 out of a holding of 100 shares in a company. The justification for the distinction is that bottles of wine can be allocated by physical separation, whereas shares cannot.

This is a surprisingly difficult principle to apply to cryptotokens. In general, cryptotokens are distinguishable and traceable, so it would in theory be possible to argue that they are never mixed, in that each token is always and at all times traceable and therefore does not lose its legal identity into a mixture. However, this is far distant from the way in which such tokens are actually used in the real world. If we accept that at least some cryptotokens are created expressly and explicitly to perform the function of currency, and as a result are in practice treated as capable of passing into currency, then our conclusion as to traceability must be that whether or not it is possible in practice, we decline to recognise it as a matter of law. As regards tokens having that characteristic, a mixture of those tokens should have the same consequence as the mixture of banknotes in a pile, or pounds in a bank account. This would mean that the rule which would apply would be the rule for goods rather than the rule for shares – that is, if I have 200 cryptotokens and I wish to grant a person a charge over 100 of them, I must separate them or designate them in such a way that the specific cryptotokens have been in some way appropriated to the charge.

41 *Re London Wine Co (Shippers)* [1986] P.C.C.121 Ch.D, *Re Goldcorp Exchange Ltd* [1995] 1 A.C. 74

42 *Hunter v Moss* [1994] 1 WLR 452.

Writing and distributed ledgers as a register

One of the problems which has bedevilled the UK for many decades is the survival of obsolete requirements for "writing" in statute. The policy decisions which justified the imposition of these requirements many centuries ago are clear, and these requirements have over the years performed a valuable function. However, there is a continuing ambiguity as to whether electronic records satisfy these requirements. In particular, "writing" is defined in Schedule 1 to the Interpretation Act 1978 as follows; "Writing includes typing, printing, lithography, photography and other modes of representing or reproducing words in a visible form, and expressions referring to writing are construed accordingly." This provision has been authoritatively interpreted by the Law Commission[43] as being restricted to such forms of communication as are capable of being displayed in the form of writing. Thus an email is a form of writing for this purpose, because even though it exists only as electronic data, it is capable of being viewed electronically in the form of words.[44] However, a record maintained in the form of a distributed ledger is clearly not "writing" within the scope of this definition.

Writing requirements are sometimes useful. For example, the restricted definition of "writing" in the Bills of Exchange Act 1882 probably has the beneficial effect of avoiding cryptotokens being classified as bills of exchange, and thereby importing several centuries' worth of inappropriate rules about tender and protest from being applied to them.[45] However, there is one archaism in English law which provides a significant problem whenever modern payment or settlement systems are considered. This is Article 53(1)(c) of the Law of Property Act 1925, which provides that "a disposition of an equitable interest or trust subsisting at the time of the disposition, must be in writing signed by the person disposing of the same, or by his agent thereunto lawfully authorised in writing or by will."

Readers who have sometimes wondered why the major settlement institutions for the Eurobond market are located outside the UK may be interested to know that it is the ambiguity which this provision introduces into English law as regards the validity of a disposition of interests in securities held through a custodian which is primarily responsible for this location. As regards cryptotokens, where a token is "backed" by a pool of assets (as, for example, in Facebook's proposed "Libra" token and a number of other tokens aimed at both payment and securities settlement), there is at least a risk that such a token could be seen as equivalent to a unit in a unit trust, constituting an equitable interest of some form in the underlying property. If this were found to be the case, s.53(1)(c) would potentially invalidate any such disposal unless it satisfied the requirement of being in "writing".

As regards any instrument which has been created with the sole purpose of being transferred using a particular technology, and where that technology provides a permanent record of the fact of the transfer, it is very difficult to think of any reason beyond conservatism to reject the proposition that the operation of that technology should be regarded as writing. The UK is fortunate in this regard that it does not have a class of notaries whose earnings would be reduced by such a measure. It does, however, have an equivalent class of company registrars, and this takes us to the point of whether a record maintained in a distributed ledger can be regarded as a "register".

43 "Electronic commerce: formal requirements in commercial transactions – Advice from the Law Commission" (2001), https://www.lawcom.gov.uk/project/electronic-commerce-formal-requirements-in-commercialtransactions/.

44 *Golden Ocean Group v Salgaocar Mining Industries* [2012] EWCA Civ 265

45 See Chalmers & Guest on Bills of Exchange and Cheques, ed Gleeson, 18th Ed (2017) Sweet & Maxwell, p.27.

The function of a distributed ledger is, exactly as it says, to perform the function of a ledger. The basic design parameters of distributed ledgers are to prevent misappropriation and double-dealing by ensuring that at all times it is possible to know what is the net amount of tokens which a transferor may validly transfer to another participant. This is not a traditional register, in the sense that it is not a book with ruled columns. However, in that regard a modern computerised register is not a register.

There is some old authority which is problematic here. In *Agence Havas*[46], a company had not maintained a register of shareholders in the form of a list of named holders, but had simply retained the allotment sheets relating to the initial allotment of the shares concerned. It was held that this was not a register, but no more than the "materials from which a register may be prepared". Although this conclusion was understandable in the context of share registers, it is unhelpful today – on this argument no electronic register can be a register, since until the database concerned is interrogated by the relevant program the data remains simply a record of individual actions. It seems fairly clear that where it would be possible by interrogating a system to obtain a list of the owners of a particular instrument, that system constitutes a register, and the precise mechanics of the composition of the system are not relevant to this determination. It is, of course, clear that in order to be a register a system must be comprehensive.

The problems with describing a blockchain platform as a register appear to proceed from an excessive focus on the technology involved. In particular, the fact that a blockchain platform is potentially pseudonymous is sometimes raised as an issue. This is, of course, nonsense – if a person registered ownership of a share in an English company under a fictitious name, this would not invalidate the company's share register. Equally, the fact that a blockchain record can be edited by a potentially infinite number of people means that we have the unusual situation where there is a register but no identifiable registrar. However, there is no doubt that the protocols which have been developed for the variation of blockchain entries are at least as robust as those which apply to the processes which are used to amend an ordinary share register. Here again, the source of the difficulty appears to be an excessive interest in the technology by which the system is operated, whereas the true focus should be at all times on the legal outcome which the system is designed to produce. It should be a trite proposition of law that the courts should seek to produce, rather than to frustrate, that outcome.

Conclusion

Neither the legislature nor the courts will lead the development of cryptotokens – that role is reserved to the marketplace. Whether or not such tokens become a – or even the – dominant means of exchange, or perhaps simply disappear altogether, is currently unknowable. However, what does seem almost certain is that there will in the future be disputes brought to the courts about transactions involving such tokens, and about their ownership, transferability and traceability. The issues addressed in this paper will have to be addressed in litigation; possibly in the fairly near future. The more thought that can be given to them now, the more likely it is that such cases will, when they fall to be decided, provide a stable basis for commercial and business development, and vindicate the reputation of the English courts and the judiciary for protecting and promoting legitimate commerce.

46 [1894] 2 Ch 392

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