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NEW WINE IN OLD WINESKINS: ADAPTING THE LAW FOR THE NEW DIGITAL ECONOMY

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Introduction

1 I am honoured and delighted to have this opportunity to address such a distinguished gathering. I am only sorry that I cannot be there in person. Some of you are doers – in the business of developing utility tokens or other applications of blockchain technology or involved in platforms for the exchange of cryptocurrencies. Others among you are thinkers – academics reflecting on how the law will interface with this emerging technology. As a judge, I am somewhere in the middle, an intermediary in a metaphorical sense. When something goes wrong, aggrieved parties seek redress in court. Whenever this happens, innovators fear that our traditional, "old-fashioned", legal institutions may not understand this new and rapidly developing technology, let alone find the right answers to resolve disputes arising from it. It is, however, my argument that the common law's pragmatic incremental approach, one which is based on principles, together with an added dose of creativity, such as how the law has made use of legal fictions, is well-suited to facilitating the growth of this new technology. In my view, blockchain technology is here to stay and may have a significant impact on business and the economy: here I am particularly thinking of smart contracts. I will divide my speech into three parts:

(a) a description of the technology and how it has promised an alternative to law and legal systems;

(b) a sketch of how, nonetheless, courts and the law become engaged with it; and

(c) a proposal for how the common law can, as it has done so many times before, adapt to the technology, facilitate its many uses and indeed foster the growth of the new digital economy.

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[1] I am grateful to my law clerk, Nikhil Coomaraswamy, for his assistance in the preparation of this address.

2 We shall see that the old wineskins of the common law have not necessarily become brittle with old age and overuse, but can still be flexible enough for the new wine of blockchain technology.

The promise of blockchain

The technology

3 One of the important aspects of blockchain technology that lawyers need to grasp is the combination of public and private key. In order to quickly establish common ground, let me quote from a 2019 paper in the Journal of Cybersecurity Law where this concept is explained in relation to Bitcoin:[2]

> … in the Bitcoin system, volunteers (i.e. users who run a full client) contribute processing power to a peer-to-peer network that runs a program (the Bitcoin protocol) to keep track of the account balances of all users. A bitcoin is basically a track of transactions between several public keys in the blockchain. Hence, 'holding' bitcoins means controlling the public key (Bitcoin address) which has received the last recorded transaction. A Bitcoin user exercises power over a public key by possessing the corresponding private key. Every transaction is stored in a public distributed ledger, called the 'blockchain'.

4 I would like to emphasise two points from this description. First, the keys are information that in combination encode or decode messages that effect transactions. While the public key can be shared freely, the private key is intended to be secret and known only to the holder. Secondly, it is the public and distributed nature of the ledger that ensures accuracy and transparency in the recording of transactions.

A "trustless" framework

5 The legal philosopher H.L.A Hart pointed out that it is because we are not all angels that we need law, and it is because we are not all devils that law is possible.[3] While law is commonly thought to depend upon the potential for sanction wielded by a person or body with

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2 Christian Rueckert, 'Cryptocurrency and fundamental rights' (2019) 5 *Journal of Cybersecurity* 1–12.

3 H.L.A. Hart, 'The Concept of Law', Clarendon Press 1961, 191-2.

the requisite power, its origins predate states – in those halcyon days the law was only as effective as the social ties and bonds of trust that glued early societies together.

6 Blockchain technology has promised something altogether different: a "trustless" framework for transacting with each other.

7 With cryptocurrencies, for example, there is no need to trust anyone because transactions in any crypto-coin or token are recorded on multiple distributed ledgers. The original cryptocurrency, Bitcoin, sprang from a search for "an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party".[4] Blockchain technology has enabled the creation of other virtual coins and digital tokens, the most significant of which currently is Ethereum. Ethereum's difference is that by being programmable it has found uses other than simply being a store of value. This includes non-fungible tokens, or "NFTs", that are a way to represent unique items that can either be traded as assets themselves, or used as proof of ownership of other assets.

8 Blockchain technology has also brought to the fore the use of 'smart contracts'. Put simply, 'smart contracts' are a recording of a legal agreement between parties that is readable by a machine, such that the machine can, using an algorithm, automatically execute some or all of the performance of the agreement.[5] Smart contracts, at least in theory, remove the need for trust – not just between parties but even with any institution to interpret and enforce the contract.

Blockchain disputes and the courts

9 Blockchain technology enables users to deal with each other, whether by way of exchange or cooperation, without trusting each other, because of the transparency of the record

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4 Satoshi Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System' (White Paper, 31 October 2008).

5 J.G. Allen, 'Wrapped And Stacked: 'Smart Contracts' And The Interaction Of Natural And Formal Languages' (2018) *European Review of Contract Law*, 14(4), 307–343.

that is maintained. The distributed ledger replaces the centralised ledger, such as a state mandated register of titles or charges, or a bank's balance sheet. However, despite its apparent promise of eliminating the need for intermediaries and trusted third parties to resolve disputes, in practice there remain both roles for intermediaries and situations where users need to seek recourse from the courts and systems of law.

10 If we start with the interposition of intermediaries, the first point is that most users rely on an exchange to carry out transactions involving cryptocurrencies. Intermediaries may not be needed, but they do make it much more convenient to carry out transactions and to store cryptocurrencies.[6] For this reason, many people use exchanges in order to purchase crypto-coins or to convert them back into fiat currency. Traditional banks, like DBS in Singapore, also have started their own exchanges for cryptocurrencies and digital tokens. Some exchanges are linked to issuers of crypto coins. One such is Bitfinex, which is affiliated with the stablecoin "Tether" which is traded on its platform. I don't have to remind this audience of the recent travails of Tether. Intermediaries charge fees, and when the exchange is affiliated with the coin trading on it the fact that it benefits from processing fees means the potential for conflict of interest is built into the system.

11 Stablecoin bear the adjective "stable" because they are represented to be designed to correspond in value to a specified unit of a stipulated fiat currency. In the case of Tether, it was designed to always be worth US$1.00. It was said to be backed by US$1.00 in reserves for each Tether issued. However, an investigation by the New York Attorney General's office concluded in February 2021 (in the words of AG Letitia James) that "Tether's claims that its virtual currency was fully backed by US dollars at all times was a lie. [Bitfinex and Tether] obscured the true risk investors faced and were operated by unlicensed and unregulated individuals and entities dealing in the darkest corners of the financial system".[7]

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6 Matteo Solinas, 'Bitcoiners in Wonderland: lessons from the Cheshire Cat', (2019) *Lloyd's Maritime and Commercial Law Quarterly*, 433–456 ("Solinas").

7 New York Attorney General's press release, 23 February 2021.

12 The moment intermediaries are involved the simple model of an investor directly controlling his cryptocurrency using the private key no longer applies. The exchange will be the one in control of the cryptocurrency, and the investor will simply have a right to it.[8] There would therefore need to be a legal relationship between the intermediary and the user, usually a contractual one. There is even quite possibly a legal relationship between the intermediary and the issuer of the coin.

13 In Singapore, the most significant litigation to date concerning crypto-coins is *Quoine Pte Ltd v B2C2 Ltd* [2020] 2 SLR 20 ("*Quoine*"), which involved an intermediary, namely a cryptocurrency virtual exchange platform operated by a company called Quoine. Importantly, Quoine also functioned as a market-maker by used an algorithmic computer program to automatically place buy and sell orders on its platform. This was done with the aim that its market-making trades maintained liquidity on the platform.

14 B2C2 was a trader on the Quoine platform. It also used proprietary algorithmic trading software to place buy and sell orders on the platform. The inputs to the trading software used to generate quotes for those buy and sell orders were the best 20 orders from the platform. B2C2's algorithm had built into it a fixed fail-safe 'deep price' of 10 Bitcoin to 1 Ethereum, which the trading software would use as input if input data from the platform were unavailable.

15 When Quoine changed its platform's operating systems in 2017, it inadvertently created a situation where its trading program lost access to other exchanges and failed to generate new market-making orders. This resulted in an appearance of illiquidity that triggered forced sale orders against two margin traders who had borrowed on the exchange. At the same time, the appearance of illiquidity made the deep price in B2C2's trading software become effective. B2C2's sell orders at this deep price were then matched with the buy orders of the margin traders and the trades were settled by the platform. Unfortunately, the deep price was approximately 250 times the then going rate in the market. When Quoine became aware of the trades, it unilaterally cancelled them and reversed the settlement transactions. It did so on the basis that the trades were concluded at highly abnormal rates.

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8 Solinas.

16 B2C2 commenced proceedings against Quoine, alleging that Quoine's unilateral cancellation of the trades and reversal of the settlement transactions were in breach of the contract between it and Quoine. This contract was in a standard form which all traders using Quoine's platform signed up to. B2C2 also alleged a breach of trust on the part of Quoine arising out of the same conduct. Quoine argued that the disputed trades were void by operation of the contractual doctrines of unilateral mistake or common mistake. At first instance Quoine's defences were rejected and both the breach of contract and breach of trust claims succeeded. I will return to discuss how the trust aspect was decided on appeal in my next section.

17 Other than situations where an intermediary is involved, there are several situations where the law encounters crypto-coins and digital tokens. Let me just identify three:

(a) One is where blockchain platforms are hacked and cryptocurrencies are extracted. Just last month, Ronin, an Ethereum-linked blockchain platform for NFT token-based video game Axie Infinity announced that around $615m worth of cryptocurrency was drained from its platform after an attacker used hacked private keys to forge faked withdrawals.[9]

(b) Another concerns inheritance and succession. Holders of cryptocurrencies pass away. Crypto-coins, if property, may be the subject of bequest by will or of intestate succession, but it is the possession of the private key which will determine who controls those crypto coins.

(c) A third concerns corporate holders of crypto-coins. Within the corporate entity, there would have to be an individual holding and using the private key. This creates the possibility of unauthorised use of that private key. Where a professional custodian is appointed by the company, this interposes an intermediary relationship.

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9 MacKenzie Sigalos, 'Crypto hackers steal over $615 million from network that runs popular game Axie Infinity', 29 March 2022, CNBC.

The common law's approach

18 Where the law encounters crypto-coins and digital tokens, their novel nature means that interesting legal issues arise. In particular, I highlight three such issues.

19 First, where a crypto-coin or digital token has been improperly transferred, the law's remedy is to order the transferee to transfer the coin to the prior holder. Blockchain technology establishes a transparent record via distributed ledgers. The blockchain will thus show both the improper transfer and the court-ordered re-transfer. This is unlike a centralised register where under many systems of law, improper transactions can be rectified or expunged so that it is as if no such transaction ever took place. While this does not necessarily impair tracing, which has been ordered as a remedy in the case of hacked cryptoassets, for example in *Vorotyntseva v Money-4 Limited t/a Nebeus.com* [2018] EWHC 2596, it does raise questions concerning the intervening position between the wrong and the remedying order.

20 A second issue concerns what the legal relationship of a digital token is to the thing it represents. There are broadly two types of such uses for digital tokens. One is where the thing represented is itself only virtual, as in virtual real estate or digital art works. The other is where the thing represented exists in the real world, such as physical real estate, shares in companies or physical art works. Among the questions is whether that relationship is contractually defined or an incident of property, or something else altogether.

21 I will discuss the third issue in greater depth. This is the issue of whether cryptocurrencies are property, and if so, what sort of property they are. I return to *Quoine,* where a threshold issue for the breach of trust claim was whether cryptocurrencies were property. A trust can only exist over property, whether that property is tangible or intangible. Quoine did not contest that cryptocurrencies could be treated as intangible property that could be held on trust. At first instance, and on appeal in the Court of Appeal, it was considered that Quoine was probably right to make that concession, although at the appeal stage the claim in breach of trust was rejected on other grounds.

22 At first instance, the court concluded that neither of the cryptocurrencies concerned were money, and certainly "not legal tender in the sense of being a regulated currency issued by government". But they met the 'classic definition of a property right' outlined in *National Provincial Bank v Ainsworth* [1965] AC 1175, 1247-8, namely: "[Property] must be definable, identifiable by third parties, capable in its nature of assumption by third parties, and have some degree of permanence or stability." On appeal, Chief Justice Sundaresh Menon concluded:[10]

> There may be much to commend the view that cryptocurrencies should be capable of assimilation into the general concepts of property. There are, however, difficult questions as to the type of property that is involved. It is not necessary for us to come to a final position on this question in the present case.

23 Since *Quoine*, the courts in Singapore have granted proprietary injunctions over cryptoassets, holding that it is arguable that they are intangible property. In one case, the High Court granted an interim proprietary injunction over stolen cryptoassets.[11] In another, the High Court granted an interim proprietary injunction blocking the sale of a Bored Ape NFT which had been used as collateral in relation to a loan of cryptocurrency.[12] The lender against whom the interim injunction was obtained, in aid of a claim to enforce the borrower's redemption rights, is a "metaverse" personality.

24 Thus, Singapore is aligned with other common law jurisdictions in the view that cryptocurrencies are intangible property. As for what kind of intangible property and what their nature or attributes might be, this remains to be worked out. There is however reasonable consensus that they are not money, nor choses in action but some other form of intangible property.

25 The reason why cryptocurrencies have not been assimilated as money is first of all that in none of the common law jurisdictions where the nature of cryptocurrencies has been

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10 *Quoine* at [144].

11 See eg *CLM v CLN and others* [2022] SGHC 46 at [46].

12 Dominic Low, 'Singapore High Court blocks potential sale and transfer of rare NFT', 20 May 2022, Straits Times.

considered by courts has the state adopted a cryptocurrency as legal tender. It is of course possible that this may change in future. For example, last year El Salvador adopted Bitcoin as legal tender, as has the Central African Republic this year.[13] Money is not however necessarily the preserve of governments. Historically, the use of money predates authorities that issue it. Money is thought to have originated when some specific item such as a type of shell or stone became accepted as a unit of account and so proved more efficient than barter, not to mention usable for social purposes other than trade, such as the payment of a bride price or compensation for a wrong done. Indeed, the acceptance of such a commodity as a common unit of account did not require the transfer of the thing itself but could be a reference point for the trade of other objects. At common law, recognition of a currency as money does not depend on a government having issued it. This is reflected in Lord Mansfield's famous observation in *Miller v Race* (1758) 1 Burr 452, 457, that what is treated as money 'by the general consent of mankind' is given 'the credit and currency of money to all intents and purposes'. However, as of now, that cannot be said that of any cryptocurrency.

26 Cryptocurrencies also do not fit the category of intangible property that are choses in action, because there is no counterparty, no person to sue. Choses in action were the creation of the medieval common law, and became foundational to much of modern commerce, in a multitude of forms such as negotiable instruments, shares, policies of insurance and bills of lading.

27 As I said in my introduction, my argument is that the common law has qualities that make it well-suited to find good answers to these novel questions, such that the development and use of this new technology is facilitated in a fair and just manner. The common law, infused as it is today with equity, has the twin virtues of flexibility and opportunity for trial and error, but evolves slowly, over decades. It is a slow process. One has only to recall the length of time taken for key innovations such as the separate legal personality of companies to become accepted. Yet, because it operates on principle and inductive reasoning, it accommodates change and innovation far better than codes, statutes and regulations, which freeze the law into

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13 'Bitcoin becomes official currency in Central African Republic', 27 April 2022, BBC.

precise rules that may not pass the test of time. When innovation is in the air, regulators speak of and create sandboxes within which such innovation can take shape. But the common law, together with the spirit of equity, is in some sense a large sandbox. The common law works from precedent and ancient forms to fashion substantial justice for each new age. In the words of the legal historian, Sir Frederick Pollock:[14]

> Archaic justice binds the giants of primeval chaos in the fetters of inexorable word and form; and law, when she comes into her kingdom, must wage a new war to deliver herself from those very fetters. This conflict of substantial right and formalism is never exhausted; it is a perennial adventure of the Common Law, and perhaps the most arduous of all.

28 In short, each generation must rework the law of the past to meet the needs of the present.

29 Let me suggest three strengths of the common law: its incrementalism; its reliance on principles, by which I mean both developing principles by induction and applying principles by analogy; and lastly its use of legal fictions.

30 Its incrementalism means that the law does not get ahead of business or social conditions. Judges decide only what they need to in order to resolve the dispute before them. *Quoine* is an example of this, where the Court of Appeal refrained from deciding the evidently complex issue of how crypto-coins could be assimilated into the law of property. This gives time both for full arguments to develop and for each incremental step to become a building block for a larger edifice. It is caution and circumspection which aid the common law's sure and steady development.

31 Its reliance on principles is the key to the common law's flexibility. Principles come from broad notions of justice or fairness that tend to remain unchanged in a society, even over centuries. In contrast, a society's precise rules constantly change – technology develops and the way its members live their lives changes accordingly. As Lord Reid once advised, judges

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14 Frederick Pollock, 'The Genius of the Common Law', Carpenter Lectures, Columbia University, 1911.

should have regard to common sense, legal principle and public policy in that order.[15] Lord Mansfield, Chief Justice of the Court of King's Bench for more than three decades in the eighteenth century, adapted English law to the then new and emerging commercial economy by an astute melding of legal principle, understanding of mercantile custom and a readiness to borrow from the civil law. I would suggest that today we should not be averse to considering systems of law other than those descended from Roman law, including the ways in which distributed ledgers of a sort facilitated trade and social contact across vast distances, such as the trade routes of the pre-de Gama Indian Ocean or pre-Columbian North America.

32 Turning to legal fictions, it is worth recalling Lord Nicholls' dissent in *OBG Ltd v Allen* [2008] 1 AC 1 concerning whether the tort of conversion is available in relation to misappropriated intangible property that is not embodied in paper. Notwithstanding that he was in the minority, his speech is a great example of bringing to bear common sense, legal principle and policy considerations in the pursuit of justice. In that case, receivers, acting in good faith but without any legal right to do so, took over the business and assets of OBG. They sold its land and tangible property like plant and equipment, and also wound down its contracts. They were found liable in the tort of conversion, but conversion has traditionally been limited to tangible property. One exception was where intangible property, like a negotiable instrument or a company share, was embodied in a piece of paper. In that case, a legal fiction was employed to identify the paper with the value of the intangible property. In reality, a cheque made out to cash is practically worthless as a piece of paper. The law, however, took its value to be the amount to which it was drawn and for which it could be encashed. Lord Nicholls suggested that the legal fiction having achieved its purpose it could now be dispensed with so that conversion applied directly to the intangible property and not to the piece of paper. In this way, the tort of conversion could provide a remedy where, for example, debts or contractual rights that are not embodied or recorded on paper are misappropriated. I would respectfully suggest that Lord Nicholls' reasoning was impeccable save for the obstacle of legislative reform of the tort of conversion that had in the view of the other law lords proceeded on the basis that it was

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15 Lord Reid, 'The Judge as Lawmaker', (1972) 12 JSPTL 22.

indeed limited to tangible property and only extended to intangible property via tangible property in which it was embodied. Hence, he ended up in a minority.

33 My point is that it is possible for the common law to evolve by the adoption of legal fictions and over time their discard, all in the interests of utility and coherence. Today is a moment for cautious creativity. This possibility of legal evolution makes the work that you are all doing in this field especially relevant and important.

Conclusion

34 In this short address, I have sketched some of the ways in which blockchain technology bumps up against the law and legal systems and argued that the common law has the pragmatic flexibility to adapt to and facilitate the new digital economy.

35 It has been a pleasure and an honour to address you. The programme ahead looks both stimulating and challenging. You are confronting some of the hardest legal questions of our time, and I wish you fruitful deliberations.