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The Digital Tokenisation of Non-Financial Assets: Challenges to English Private Law*

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SUMMARY

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1. Introduction: the dog-eat-dog world of digital assets[1]

The year 2010 gave us much to remember: air travellers in Europe might recall being stranded due to the cloud of smoke from the eruptions beneath Icelandic volcano Eyjafjallajökull,[2] and United Kingdom voters are likely to remember the election of a Conservative government that would come to be led by David Cameron.[3] Somewhere in the deepest corners of the Internet, history was also being made: on 13 February 2010, kindergarten teacher Atsuko Sato used his personal blog to post several photos of Kabosu, the Shiba Inu dog that would later come to be known by Internet users around the world as "Doge".[4]

Doge is one of the Internet's most popular memes – humorous pieces of media that are passed quickly among Internet users,[5] and which, in Doge's case, consist of a specific photo of Kabosu accompanied by varying bits of Comic Sans text conveying an internal monologue written in broken English.[6] And so popular has the Doge meme become that it has since been featured in advertising campaigns,[7] and inspired its very own cryptocurrency – the "Dogecoin".[8]

In June 2021, the Doge meme's popularity was taken to unprecedented levels, as a digital non-fungible token ("NFT") representing the original Doge photo was created ("minted") and bought for a record 1,696 Ether ("ETH") – roughly the equivalent of US $4,000,000 at the time – by decentralised autonomous organisation PleasrDAO.[9] PleasrDAO then used platform Fractional.art to divide the Doge NFT into 17 billion "DOG" tokens, and platform Miso to auction 20% of

1 List of abbreviations: CRA (credit rating agency); CRA 2015 (UK Consumer Rights Act 2015); DLT (distributed-ledger technology); EC (European Commission); ETH (Ethereum); EU (European Union); FCA (UK Financial Conduct Authority); HM (His Majesty's); IAS (International Accounting Standard); MiCA (Regulation of the European Parliament and of the Council on Markets in Crypto-Assets); NFT (non-fungible token); SPV (special purpose vehicle); US (United States); UK (United Kingdom); UKJT (United Kingdom Jurisdiction Taskforce).

2 Apps (2010).

3 Desai and Castle (2010).

4 Know your Meme (2023).

5 According to the Oxford Advanced Learner's Dictionary, an Internet meme is "an image, a video, a piece of text, etc. that is passed very quickly from one internet user to another, often with slight changes that make it humorous".

6 *See* Know your Meme (2023). Common broken English phrases that accompany Doge's photo may include "much wow" or "such scare".

7 Photos of the campaign can still be found at *https://nordddb.com/case/doge/* (31.01.2023).

8 More information about Dogecoin can be found at *https://dogecoin.com* (31.01.2023). At its height (7 May 2021), one unit of Dogecoin was valued at around US $0.64; in early 2023, its value had fallen below US $0.01.

9 Kalhan (2021).

those tokens for around US $45,000,000 – putting the original NFT at a valuation of around US $225,000,000.[10]

Doge's story illustrates the absurdities of the digital tokenisation of non-financial assets, begging for further explanation. NFTs are a type of digital "tokens",[11] which are a sub-set of digital assets that constitute electronic representations of value or contractual rights that can be stored and transferred electronically, and which typically rely on some form of Distributed Ledger Technology ("DLT").[12] These digital tokens – such as the original Doge NFT – are typically minted by being published on a DLT network (like a blockchain),[13] where they can be bought, sold and traded. The process by which certain (digital or physical) assets are represented by tokens issued on DLT networks is then called "tokenisation".[14]

The digital tokenisation of assets in general – and the minting of NFTs in particular – have originated markets that have since experienced both dramatic growths and spectacular collapses.[15] Digital tokens have become an inescapable part of modern discourse, and the conversations surrounding these tokens inevitably lead to the same questions: why would anyone buy a tokenised representation of a picture of a dog – or, indeed, a fraction of a tokenised representation of a picture of a dog – and what would they actually own? What rights do the holders of the Doge NFT (or the holders of the fractionalised DOG tokens) have over the original Doge photo? In the dog-eat-dog world of crypto, who owns the dog?

Indeed, there is much legal uncertainty surrounding the universe of digital assets, crypto, and NFTs – and it is of little wonder that policymakers and legislators around the globe are already taking the first steps to regulate or clarify the legal status of digital assets in general, and digital tokens like the Doge NFTs in particular.[16] The UK is no exception, and the UK government has recently been developing significant work to ensure that the country can position itself

10 Levine (2021).

11 Law Commission (2022b).

12 HM Revenue & Customs (2021).

13 For a discussion of DLTs and blockchains, *see*, i.a., Tapscott and Tapscott (2018), and Kakavand, Kost De Sevres and Chilton (2017).

14 For a discussion of this fairly recent development, *see* Fox (2021b), who defines "tokenisation" as a recent development whereby "assets that exist off the ledger system…are represented as tokens issued on DLT systems".

15 For the latest data on the NFT markets (including quarterly and yearly NFT market reports), *see* Market Tracker (2023).

16 Law reform initiatives pertaining to digital assets include the work developed by the UNIDROIT Digital Assets and Private Law Working Group (*see* UNIDROIT – International Institute for the Unification of Private Law (2021)), and the work developed in the United States by the American Law Institute and the Uniform Law Commission's Uniform Commercial Code and Emerging Technologies Committee (*see* The American Law Institute (2022)), among others.

to offer legal and regulatory frameworks capable of attracting and retaining the flourishing industries that rely on smart contracts, DLT and other technological developments that facilitate the creation, deployment, use and transfer of different types[17] of digital assets.[18]

Much of the work ahead will undoubtedly engage UK supervisory bodies and the regulation of dealings in (particular) types of digital assets – like stablecoins – as well as the regulation of other uses of DLT in the context of financial markets. For example, the UK's Financial and Services Markets Act 2000 is already set to be amended by a Financial Services and Markets Bill that brings stablecoins and digital assets into the scope of financial services regulation – in particular by extending the restrictions applicable to financial promotion to investment activity in cryptoassets.[19] Early in 2023, the UK Government also launched a public consultation and call for evidence that set out proposals for a financial services regulatory regime for cryptoassets that is hoped to help foster confidence in the sector.[20]

However, assessing the extent to which English private law is currently able to accommodate this new crypto/digital world is a logically prior enquiry to determining how digital assets in general (and digital tokens like the Doge NFT in particular) should be regulated[21] – and one that is also set to impact both the safety of any financial market applications and the success of any regulatory initiatives pertaining to the creation, trading and transfer of digital assets, as well as to the broader use of DLT applications in finance.

Efforts to evaluate the suitability of English private law for dealing with digital assets thus begun in 2020, with the LawtechUK Panel – an advisory board

17 Notably, the work developed by the UK Government covers all digital assets, and not just the tokenised digital assets linked to non-financial assets that constitute the focus of this article.

18 *See*, in particular, Law Commission (2023b). The focus of this paper is placed on digital assets that result from the 'tokenisation' of non-financial digital assets, regardless of the type of specific technology used to facilitate their creation, distribution and disposal; in that sense, the paper is 'technology-neutral' and its conclusions should hold even if the technology supporting these assets evolves beyond DLT.

19 The Financial Services and Markets Bill has recently passed Second Reading and is currently at Committee Stage [available for consultation at *https://bills.parliament.uk/bills/3326/stages/17273* (31.12.2023)]. Earlier, in January 2021, the UK Government had opened a Consultation on the regulation of digital assets and stablecoins, as well as a Call for Evidence on investment and wholesale uses of digital assets and the broader use of DLT applications across the financial markets (*see* HM Treasury (2021) and HM Treasury (2022)).

20 *See* HM Treasury (2021). Other initiatives include the HM Revenue and Customs Cryptoasset Manual and the HM Revenue and Customs Call for evidence on the taxation of decentralised finance involving the lending and staking of cryptoassets (*see* HM Revenue & Customs (2021) and HM Revenue & Customs (2022)), the guidance recently produced by the UK Financial Conduct Authority on cryptoassets (*see* Financial Conduct Authority (2019)), and the recent analysis by the Bank of England on the impact of cryptoassets on financial stability (*see* Bank of England (2022)).

21 UK Jurisdiction Taskforce (2019).

to government-backed initiative LawtechUK – establishing the UK Jurisdiction Taskforce ("UKJT") and entrusting it with the task of clarifying "the legal status of, and basic legal principles applicable to cryptoassets, distributed ledger technology, smart contracts, and associated technologies under English law".[22] The endeavour ultimately resulted in the publication of a legal statement on digital assets and smart contracts by the UKJT (the "UKJT Legal Statement"),[23] which, however, fell notably short of suggesting "how the law should develop in future".

That task would eventually be picked up by the UK Law Commission.[24] Following a mandate from the UK Government to build on the conclusions of the UKJT Legal Statement and make proposals for reforming how English private law deals with digital assets, the Commission has since published a call for evidence,[25] an interim update paper,[26] and a consultation paper on digital assets[27] – with a final report containing its definitive reform recommendations expected to follow in 2023.[28]

Earlier the same Law Commission had concluded that existing English (private) law could easily accommodate the developments brought by "smart contracts",[29] but the case of digital assets appears to be less clear-cut. While the Commission has also acknowledged that "the law of England and Wales has to some extent proven itself sufficiently resilient, flexible and iterative to accommodate digital assets", it has simultaneously noted the importance of law reform for recognising "the nuanced features of those digital assets".[30] Such conclusions followed from the UKJT Legal Statement, which had also been less optimistic about the ability of current English law to answer the difficult questions posed by the nature of digital assets when compared to its ability to handle smart contracts.

Looking ahead, three questions pertaining to digital assets (and their treatment under English private law) appear to be particularly difficult to answer, including two that can be posed in regard to all types of digital assets (even though

22 UK Jurisdiction Taskforce (2023).

23 Law Commission (2023b).

24 The Law Commission is an advisory non-departmental public body that is tasked with reviewing current UK law and recommending reform as necessary (*see* Law Commission (2023c)).

25 Law Commission (2021a).

26 Law Commission (2021c).

27 Law Commission (2022b).

28 *See* Law Commission (2023b). Future projects also include work on the various conflict of law issues arising from emerging technology (*see* Law Commission, 2023a).

29 Law Commission (2021b).

30 Law Commission (2022c).

they may elicit different answers depending on the sub-type of asset in question), and one that is relevant only in the context of tokenisations.

The two questions that are common to all digital assets are: first, can they be treated as property? And second, are they "possessable"? The answer to these two questions is then expected to shape the answers to several follow-up questions: how does the law handle the acquisition, disposition and derivative transfer of title and competing claims in relation to digital assets? How can security be taken over digital assets? How are custody relationships in regard to digital assets governed? What level of protection – what legal remedies and actions – are available to holders of digital assets?

The one key enquiry that applies only in the context of tokenisation assesses the link between the digital assets that result from tokenisation (i.e., the tokens) and the underlying (digital or physical) assets from which such tokens derive their value – with the answer to this inquiry again shaping the rights and protections available to the relevant parties, potentially depending, once more, on the exact type of tokenisation that took place and, in particular, on the characteristics of the resulting token – including whether it is a fungible token, a non-fungible token (like the Doge NFT), or some hybrid between the two (like arguably the DOG tokens resulting from the fractionalisation of the Doge NFT).

As would be expected, the two questions that are relevant for all digital assets were exhaustively pursued both in the UKJT Legal Statement and by the Law Commission itself – with both institutions coming to mostly similar conclusions. Indeed, both acknowledge that English common law is sufficiently "flexible" to accommodate treating (some) digital assets as property.[31] Additionally, both the UKJT Legal Statement and the Law Commission reject the idea that the common law concept of "possession" can apply to digital assets,[32] although the Law Commission does appear to endorse the use of an analogue concept for describing the relationship between digital assets and persons – namely, the factual concept of "control".

The third question – pertaining only to tokenisation and the nature of the link that unites the resulting digital token and the asset that underlies it – is

31 According to the UKJT, the answer to such question depends on multiple factors, including the nature of the asset, the configuration of the system that hosts the asset and the purpose behind that enquiry (*see* UK Jurisdiction Taskforce (2019)); the Law Commission, on the other hand, notes that digital assets should be considered as property when they are "composed of data represented in an electronic medium, including in the form of computer code, electronic, digital or analogue signals", "exist independently of persons and exist independently of the legal system" and are "rivalrous" (*see* Law Commission (2022c)).

32 In 2019, the UKJT Legal Statement had emphatically affirmed that digital assets were purely virtual and could not, as thus, be possessed (*see* UK Jurisdiction Taskforce (2019)). In 2022 the Law Commission similarly noted that "the concept of possession should not apply to data objects" (*see* Law Commission (2022c)).

comparatively underexplored, at least in the UKJT Legal Statement. Indeed, the work produced by the UKJT barely examines the concepts of "tokens" and "tokenisation" and merely flags up the fact that digital assets (or, in the terminology used by UKJT, "cryptoassets") can sometimes be used to represent off-chain (tethered or exogenous) assets, raising questions of what rights are conferred on the holder of the resulting tokens in such assets, as well as questions of whether those tokens should be treated as documents of title – namely to the effect that transferring them would result in transferring the corresponding off-chain assets.[33]

By contrast – and in response, perhaps, to recent developments surrounding investment in NFTs and the rise (and fall) of the NFT market[34] – the Law Commission's Call for Evidence does dedicate more attention to questions surrounding tokenisation. In particular, the Law Commission has readily acknowledged that "some" digital assets can be classified as tokens – to the extent that they represent different (digital or physical) assets – and has noted that parties transacting in this type of tokens "may expect that when the tokens transfer on the system, so does the title to the digital or physical things represented by the token or the legal rights in that thing".[35] At the same time, the Law Commission has also admitted that parties do not always actually contract for that result, leaving unanswered the question of whether such a transfer will and/or should nevertheless take place as a matter of law.[36] More recently, the Law Commission has further suggested that English private law should not be amended to strengthen the link between tokenised digital assets and the assets that underlie them.[37]

This article analyses the answers given by the UKJT and the Law Commission to the key questions of: first, whether (tokenised) digital assets can be treated as property under English private law; second, whether (tokenised) digital assets are "possessable" under English private law; and, third, what is the nature of the link between the digital assets that result from tokenisation and the assets that underlie them. Specifically, this article discusses these questions in the context of digital tokens that represent non-financial assets and examines: first, whether the holders of these tokens acquire them with the expectation of

33 UK Jurisdiction Taskforce (2019).

34 For an overview of the NFT market and its ups and downs, *see* Market Tracker (2023). Indeed, the Law Commission itself acknowledges that the "greater use and adoption of NFTs has brought them recent mainstream recognition" (*see* Law Commission (2021a)) – which could explain their discussion here (and their lack of discussion in the Legal Statement previously issued by the UKJT).

35 Law Commission (2023b).

36 Law Commission (2021a).

37 Law Commission (2022b).

changing the legal state of, the title to, or the legal rights in the non-financial assets that they represent; and, second, whether English private law should be amended to address these expectations, or otherwise strengthen the link between digital tokens and any non-financial assets that may underlie them.

Ultimately, it is noted that the existing combination of expectations, market practice, common law and statute is currently insufficient to establish a particularly strong link between tokenised digital assets and underlying non-financial assets under English law. Additionally, it is argued that no reform should be undertaken to strengthen any such link. Indeed, English private law should go no further than providing a legal environment where market participants have the flexibility to develop their own legal mechanisms to establish and strengthen a link between digital tokens and the non-financial assets that they represent – which, incidentally, could include clarifying whether such tokens can be "possessed", or otherwise clarifying what particular protections applicable to "possessable goods" could also be extended to these digital tokens. Any further role in protecting the holders of digital tokens linked to non-final assets should be left for regulation and the framework that may come to govern the activity of token minters, or the activity of the platforms where such tokens are traded.

This work is organised as follows: Section 2 introduces the phenomenon of tokenisation, namely by clarifying key concepts and terminology, by discussing the main differences between tokenisation and the neighbouring notion of securitisation, and by assessing the expectations held by parties to transactions involving the tokenisation of non-financial assets; Section 3 examines the answers given by the UKJT and the Law Commission to the questions that pertain to the nature of digital tokens and the rights that parties may have over digital tokens, paying particular attention to the question of what is the nature and significance of the link that connects digital tokens and any underlying (non-financial) assets; Section 4 concludes.

2. The digital tokenisation of non-financial assets

Digital assets have taken the world by storm and play an increasingly significant role in contemporary society.[38] They can have intrinsic value (in the sense of being valuable in and of themselves), but they may also derive their value from the various ways in which they can be employed – and which include being used as a means of payment, or, more broadly, as a means of representation of assets

38 Law Commission (2023b).

or rights that are external to them.[39] Examples of digital assets with an intrinsic value include scanned documents, Excel spreadsheets, and YouTube videos – and examples of digital assets used as a means of payment include digital currencies like Bitcoin, Ethereum, or, indeed, the meme-inspired Dogecoin. The Doge NFT, on the other hand, exemplifies a digital asset that derives its value from the fact that it represents the Doge photo – itself a digital asset, to the extent that it was stored and published digitally (back in 2010).

The expansion of digital assets has been linked to a broad range of technologies that have transformed and broadly facilitated their creation, use and transfer, including electronic signatures, digital encryption technologies, smart contracts, and DLT.[40] Digital encryption technologies are the set of technologies that allow for the coding of information with the purpose of ensuring its safe storing and transfer – through a process known as "cryptography".[41] DLT, on the other hand, represent the set of technologies that allow the operation and use of distributed ledgers[42] (digital stores of information shared among a network of computers that update the ledger through previously-agreed consensus mechanisms)[43] – and which, as such, have been found to play an important role in supporting the distributed recording of (usually encrypted) data.[44]

Crucially, digital encryption technologies and DLT are both particularly well-suited for securely creating, transferring, and trading digital assets – and, namely, of recording who holds a particular digital asset at any point in time.[45] As such, they are often used together to facilitate the process by which assets (like the Doge photo) can be transformed into digital representations of their value/bundles of rights associated with those assets (like the Doge NFT). This phenomenon, known as (digital) tokenisation, can apply to both financial and non-financial assets, and raises important questions regarding the nature of those tokens and the nature of the link that connects them and the assets that underlie them – as well as, ultimately, the extent to which English private law might protect the expectations of parties in transactions pertaining to these assets.

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39 For a discussion, *see* Law Commission (2022b). Notably, tokens used as a means of payment can also be classed as "endogenous crypto-tokens" in the sense of representing a quantity of a notional unit of account that can be seen as being "intrinsic to its respective crypto-token system" (*see* ibid).

40 In the words of the Law Commission, "such technological development is set only to continue" (*see* Law Commission (2023b)).

41 Pither (2022).

42 Law Commission (2021a)

43 Ibid.

44 *See* European Commission (2023), *Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-Assets, and Amending Directive (EU) 2019/1937 (MiCA) – COM(2020) 593 final* ("Proposed MiCA"), article 3(2).

45 Law Commission (2021a).

Before examining the answer given by English private law to these crucial questions, this section clarifies some key terminology pertaining to tokenisation (*2.1*), analyses the relationship between tokenisation and securitisation (*2.2*), and examines the expectations held by parties transacting in digital tokens linked to non-financial assets (*2.3*).

2.1. Key concepts and terminology

Digital assets are becoming a ubiquitous presence in modern society, but discussions about their nature and the nature of the rights that might attach to them under English law should be preceded by a rigorous attempt to define their meaning. In particular, it is worth distinguishing the concept of *(i)* "digital assets" from neighbouring concepts such as *(ii)* "cryptoassets" and *(iii)* "tokenised digital assets".

The concept of *(i)* "digital assets" refers to the category of assets[46] that are non-tangible and exist only in digital (or electronic) form. As such, it is a very broad term – an "umbrella term"[47] – that can be usefully sub-divided into different categories of digital assets.[48] Indeed, there are many different types of digital assets, including "cryptoassets",[49] digital files valuable for their information (including databases), digital files that are both valuable for their information and have a specific function (including software programmes), digital records that provide evidence of particular rights (including DLT-powered ledgers), domain names, digital assets related to end user licence agreements, and other intangibles like carbon credits[50] and milk quotas,[51] for example.[52]

Chief among digital assets is the category of *(ii)* "cryptoassets", the sub-type of digital assets that rely on digital encryption technologies – and often on DLT and similar technologies – for ensuring their safe storage and transfer.[53] Another type of digital assets are then *(iii)* "tokenised digital assets", or "tokens": a sub-type of digital asset that can be traded, and which is typically used to represent something external to the digital asset – either another asset (or rights in that

46 The International Accounting Standards Board defines assets as any "resource controlled by an entity as a result of past events, and from which future economic benefits are expected to flow to [that] entity".

47 Pither (2022).

48 Law Commission (2021c).

49 Ibid.

50 *See Armstrong v Winnington* [2012] EWHC 10, [2013] Ch 156.

51 *See Dairy Swift v Dairywise Farms Ltd* [2000] 1 WLR 1177.

52 Law Commission (2021c).

53 Pither (2022).

asset), or a value that can be digitally exchanged and traded (as a form of payment).[54] As noted previously, non-fungible tokens (like the Doge NFT) are a good example of the first type of tokenised digital assets, while digital currencies (like Blockchain, Ethereum and, incidentally, Dogecoin) are good examples of the second.

The relationship between digital assets, on the one hand, and cryptoassets and tokenised digital assets, on the other hand, is intuitively easy to grasp: not all digital assets are cryptoassets (or tokenised digital assets), but all cryptoassets (and tokenised digital assets) are digital assets. More interestingly, it is worth noting that most tokenised digital assets are cryptoassets (or, more specifically "crypto-tokens"). This is because tokens are, by their own nature, made to be traded – and the secure transfer of digital data (and thus digital tokens) is particularly well complemented by the use of cryptographic technology and DLT. As such, while not all tokens are crypto-tokens, most are.[55]

The focus of this article rests on assessing the extent to which English private law accommodates tokenised digital assets linked to non-financial assets, and whether legal reform is necessary or desirable to strengthen the link between such tokens and the assets that underlie them; for that reason, it is worth reflecting further on the process by which these digital tokens are created, and on how they are specifically different from the tokens that derive their value from financial assets.

2.2. The digital tokenisation of non-financial assets and securitisation

The term "tokenised digital assets" was previously defined as the sub-type of digital assets that are typically used to represent something external to those assets – either another asset (or rights in another asset), or a value that can be digitally exchanged and traded (as a form of payment).

54 The category of "tokenised digital assets" or "tokens" is similar but different to a class of digital assets that the European Commission calls "asset-referenced token" and which means "a type of crypto asset that purports to maintain a stable value by referring to the value of several fiat currencies that are legal tender, one or several commodities or one or several crypto-assets, or a combination of such assets" (*see* Proposed MiCA, article 3(1)(3)).

55 The significant complementarity between cryptoassets and tokenised digital assets explains why the term "crypto-token" is often used interchangeably with "tokenised digital asset", or (digital) "token". Indeed, the UK Law Commission exclusively uses the term "crypto-token" to refer to the tokenised digital assets that have been the object of their recent call for evidence and consultation papers.

The process by which these "tokenised digital assets" are created[56] – leading to the representation of something external to those assets by tokens typically issued on a DLT network – was earlier referred to as "tokenisation".[57] The resulting tokens can then be classified, in particular, according to their function and fungibility. According to their function, tokens can be classified as utility tokens (when they provide digital access rights to applications or services), security tokens (when they provide fractional ownership of underlying assets like real estate or companies), and currency tokens.[58] According to their fungibility, tokens are fungible or non-fungible, depending on whether they are interchangeable with other tokens of a similar kind, quality, and grade.[59] Arguably, there are also hybrid tokens, such as fungible tokens nested inside NFTs. Indeed, fractionalising an NFT – i.e., dividing its ownership into smaller fractions represented by tokens – could originate a series of (hybrid) fungible tokens, allowing multiple parties to "own" interchangeable fractions of a single (and, by definition, unique) NFT.[60]

In truth, "tokenisations" are not strictly new phenomena and have existed long before the digital era ushered in by advances in DLT and accompanying technological innovations. Indeed, in the world of finance, market players have long used "securitisations"[61] to capitalise on assets by selling interests in their

56 The issuer of digital assets will be the person who offers cryptoassets to interested parties or seeks the admission of such cryptoassets to a trading platform for digital assets (in line with the European Commission's definition of "issuer of cryptoassets" in Proposed MiCA, article 3(1)(5)).

57 *See* Fox (2021b). Notably, other authors have a narrower definition of "securitisation", covering only the "tokenisation" of non-financial assets (*see* the discussion below).

58 For a discussion of different types of tokens, *see,* i.a., Financial Conduct Authority (2019), and European Commission (2023).

59 *See* Law Commission (2021a). The Law Commission goes on to define NFTs as "tokens that can be used to represent unique digital or physical assets such as art or other rare items" and that "as such" are not directly interchangeable with other NFTs. While it is right that NFTs are, by definition, different from each other and interchangeable, that interchangeability reflects the features of the NFTs themselves – and not the features of the underlying asset. As also noted by the Law Commission, fungible tokens (and, in particular, security tokens) can also be used to provide interests in unique assets like real estate and companies – in particular, if not exclusively, when such fungible tokens result from the fractionalisation of pre-existing NFTs. For that reason, it appears preferable to define NFTs by reference to their own intrinsic uniqueness than by reference to the uniqueness of the assets that underlie them.

60 Briefly, the advantages of fractionalised NFTs are that they democratise access to the most valuable NFTs and – by allowing for the development of a secondary market for (fractionalised and therefore fungible) NFTs – add liquidity and price discovery to the NFT market. At the same time, they present unique challenges for public and private law: in particular, the question of whether they are securities, and the question of what legal rights attach to fractionalised NFTs (and shared ownership of fractionalised NFTs).

61 According to the Financial Conduct Authority, securitisation is broadly the 'process by which assets are sold to a bankruptcy-remote special purpose vehicle in return for immediate cash payment and that vehicle raises the immediate cash payment through the issue of debt securities in the form of tradable notes or commercial paper' (*see* Financial Conduct Authority (2023)). More broadly, still, any negotiable instrument representing an interest in a company could be seen as the product of securitisation, but, for the sake of simplicity, this article adopts the (narrower) definition of securitisation put forth by the FCA.

future value.[62] However, while securitisations have always been associated with the monetization of financial assets (i.e., with the monetization of assets capable of generating regular cash flow streams to investors in those assets),[63] the broader phenomenon of tokenisations also extends to non-financial assets[64] (i.e., to assets that do not usually generate regular cash flow streams).[65] Indeed, some would define "tokenisation" exclusively as the process of monetising non-financial assets.[66]

For the sake of rigour, this article defines (digital) "tokenisation" as the process by which (any) tokenised (digital) assets are created to represent something external to those assets by tokens (typically) issued on a DLT network,[67] regardless of whether the asset linked to the resulting tokens is financial or non-financial; the term "securitisation" is then used to refer to the sub-type of "tokenisation" that leads to the creation of tokens representing interests in financial assets. But regardless of semantics, one key question arises from the distinction between securitisations and tokenisations of non-financial assets: why would anyone ever purchase tokens linked to assets incapable of generating cash flows?

It is true that even in the absence of rights to regular cash flow streams – and depending on a variety of factors – holders of tokens linked to non-financial assets might nevertheless benefit from access to particular goods or services,[68] but they also face very significant limitations. In particular, and from a purely financial standpoint, they are left with only two (theoretical) options for recovering their initial investment: either transferring their token (or any interests in their token) or transferring the underlying non-financial asset (or any interests in that underlying non-financial assets) for a price. And both options are vulnerable to practical and legal problems: from a practical standpoint, there might not be a viable resale market for the tokens, for the (non-financial) assets that underlie

62 Schwarcz (2023).

63 The International Accounting Standard ("IAS") no. 32 defines financial asset as the type of asset that consists of cash or a contract establishing a right or obligation to deliver cash or another financial instrument – or, in other words, the type of asset that can generate cash flows.

64 Notably, the interaction between the parties could still be seen as a financial transaction – in the sense that the investor in the 'token' pays money in exchange for an interest in a (non-financial) asset and the originator of the 'token' raises finance based on that asset (*see* Schwarcz (2023)).

65 *See* ibid. For the purposes of this article, the other significant difference between (traditional) securitisation and the broader tokenisation phenomenon rests on the fact that the resulting tokens are originated, held and transferred as digital assets, typically within DLT networks.

66 Ibid, p. 6.

67 *See* Fox (n 15). Notably, other authors have a narrower definition of "securitisation", covering only the "tokenisation" of non-financial assets (*see,* i.a., Schwarcz (2023)).

68 This is the case with utility tokens, which the European Commission has defined as "a type of crypto-asset which is intended to provide digital access to a good or service, available on DLT, and is only accepted by the issuer of that token" (*see* Proposed MiCA, article 3(1)(5)).

them, or for any interests connecting to these assets, from a legal standpoint, holders of tokens linked to non-financial assets may be unable to dispose of the tokens themselves (or of any interests in those tokens) – or, in any case, of the non-financial assets from which those tokens derive their value (or any interests in those assets).[69]

In theory both problems could also arise in regard to (traditional) securitisation. From a practical standpoint, securities issued in the context of (traditional) securitisation processes are typically fungible, and investors would expect them to be somewhat liquid, but we only need to go as far back as the 2007-2009 Global Financial Crisis for examples of how fleeting this apparent liquidity can be.[70] From a legal standpoint, investors in these securities certainly appear to own them – but not the assets from which they derive their value.[71] In typical ("true sale") securitisation structures, such underlying assets are instead owned by an insolvency-remote special purpose vehicle ("SPV").[72]

But there are important advantages to being an investor in a (traditional) securitisation when compared to purchasing digital tokens that derive their value from non-financial assets. Most obviously, investors in (traditional) securitisations are typically entitled to regular cash flow streams. Crucially, (traditional) securitisations are also heavily regulated – at both EU[73] and UK level[74] – to protect investors from credit risks associated with the underlying assets, but also agency, model, legal, operational, counterparty, servicing, liquidity, and concentration risks. Finally, most investors in (traditional) securitisations are sophisticated investors who are better placed than retail investors to bargain for their own protection – with market practice reflecting a generalised adoption of several mechanisms that protect such investors from many of the risks inherent in securitisations.

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69 Schwarcz (2023).

70 For a discussion, *see,* i.a., Brown and Cleary (2010).

71 For a discussion of securitisation, *see,* i.a., Benjamin (2008).

72 In synthetic securitisations, only the risk of default pertaining to the assets is actually transferred to the SPV that issues the securities (*see* ibid).

73 Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent, and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012 ("EU version of the Securitisation Regulation").

74 In the UK, (traditional) securitisations are regulated by the Financial Services and Markets Act 2000 (Securitisation) Regulations 2018 (SI 2018/1288) ("UK Securitisation Regulations"), by the UK version of Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012 ("Securitisation Regulation") and by any on-shored regulation which was an EU regulation made under the EU version of the Securitisation Regulation.

As a result, underlying assets in securitisations are typically held beyond the reach of the originator's creditors or liquidators – often (as previously mentioned) by way of a "true sale" of such assets to an insolvency-remote SPV. Additional protections enjoyed by investors in securitisations include mechanisms that ensure that the SPV remains insolvency-remote, the appointment of trustees who can hold the benefits of covenants and rights (including rights pertaining to potential security given by the SPV over its assets) on behalf of its investors, mechanisms for ensuring that originators hold any payments that will eventually be channelled to investors on trust for the SPV, and risk retention and transparency requirements for originators. Finally, the securitisation market is well covered by information intermediaries – typically Credit Rating Agencies – which are hoped to mitigate any information asymmetries between originators and investors in securitisation schemes.[75]

No such protections are yet in place for holders of digital tokens issued by reference to non-financial (digital or physical) assets.

From a regulatory perspective, regulators are still coming to grips with the nature of these tokens and how best to regulate them (if at all). In this regard, NFTs in particular – which are the paradigmatic example of tokens resulting from the type of tokenisations that fail to give right to regular cash flow streams[76] – have been left out of tentative regulatory proposals at EU level,[77] and also remain unregulated at UK level,[78] although the question of whether fractionalised NFTs could be classified as securities (and, therefore fall under existing and proposed frameworks) could be more difficult to answer.[79]

As for the logically prior private law questions, it remains unclear whether digital tokens linked to non-financial (digital or physical) assets can be the object of property, as well as whether these tokens are actually "possessable"

75 For a discussion of CRAs (and the role that they played in the 2007-2009 Global Financial Crisis), *see,* i.a., Larosière (2009).

76 Schwarcz (2023).

77 *See* Proposed MiCA, recital (15) and article 4 (2)(c) – although it is worth recalling that MiCA is still under negotiations and both the European Parliament and the European Commission are rumoured to have expressed concerns over the exclusion of NFTs from the proposed act (*see* Schickler (2022)).

78 According to the FCA (following guidance from the UK Cryptoasset Taskforce Report), there are three categories of cryptoassets: exchange tokens, utility tokens, and security tokens. While security tokens and utility tokens that meet the definition of e-money are envisioned to fall under the permitter of any regulatory initiatives aimed at regulating cryptoassets (and may already fall under the scope of certain existing regulatory instruments), exchange tokens and other utility tokens are currently outside the UK's regulatory perimeter (*see* Financial Conduct Authority, 2019). Going forward, HM Treasury has promised to "continuing to assess the appropriate regulatory response to broader cryptoassets" currently outside the scope of the (actual or envisioned) regulatory perimeter (*see* HM Treasury (2022)). More recently, *see* HM Treasury (2023).

79 These questions fall outside the scope of this article.

(particularly as negotiable electronic instruments). Equally, the nature of the link between these tokens and the (non-financial) underlying assets from which they derive their value remains obscure – leaving wide open the question of what rights actually attach to the purchasing of these tokens. And, again, phenomena like the fractionalisation of NFTs raise questions as to whether further links in a long chain of tokenisations and re-tokenisations are to receive similar legal treatment.

Interestingly, much of the discussion surrounding the extent to which English private law should be changed to accommodate the creation, storage and transfer of digital tokens linked to non-financial assets starts from assumptions about the beliefs held by the parties to transactions involving those tokens – so that before examining the solutions provided by English private law to the questions surrounding the digital tokenisation of non-financial assets, this article examines the expectations nurtured by the parties minting, selling and buying the resulting tokens.

2.3. The digital tokenisation of non-financial assets and parties' expectations

Non-financial assets are traditionally harder to monetize than financial assets: unlike traditional securitisation processes, the tokenisation of non-financial assets offers no expectations of cash flows, nor a steady stream of income. Still, recent technological developments – chiefly digital encryption technologies and DLT – have breathed considerable life into the market for tokens linked to non-financial assets. Thanks to the wonders of modern technology, market players can now more easily convert assets into provably scarce digital tokens that can be quickly traded with players across the globe using trust-less peer-to-peer networks relying on digital bases that record ownership, and which are shared among a network of computers that approve and sync additions to those databases through agreed consensus mechanisms.

This has resulted in an exploding market for digital tokens representing non-financial assets – namely NFTs – and while the market for these (non-fungible) tokens has considerably shrunk since its 2021 high,[80] it still represented a global volume of about US $1.7 billion in the third quarter of 2022.[81] But what accounts for the growth of this market? What do the creators and sellers of digital tokenised non-financial assets have to offer to purchasers of these assets? And

80 Kräussl and Tugnetti (2022).

81 *See* the 2022 Q3 Quarterly NFT Market Report published *in* Market Tracker (2023).

what do parties expect when they enter into transactions pertaining to digital tokens linked to non-financial assets?

Ultimately, the more important question that this article tries to answer does not pertain so much to what parties usually do or expect when they enter into transactions related to digital tokens linked to non-financial assets – but the extent to which English private law accommodates these tokens and, in particular, the extent to which it recognises a link connecting them to any underlying assets. Still, policymakers and regulators around the world have often used market practice and the expectations that parties may nurture in their dealings as a starting point for deciding how those dealings should be governed. Indeed, "aligning legal and commercial expectations is key for well-run, efficient, fair markets"[82] – and, in an ideal world, "the expectations of the people who deal in tokenised assets [should] match the legal reality that underpins their transactions".[83] In other words, market practice and parties' expectations within a given legal system could have a role to play in influencing how that system addresses the transactions covered by those market practices and expectations – and that is arguably as true for the digital tokenisation of non-financial assets as it once was (and still is) for traditional securitisation.

There is limited empirical data on the market practices and expectations surrounding the market for digital tokens linked to non-financial assets, but it appears that the issuers of these assets – and NFT issuers in particular – use their contracts with token-holders to routinely recharacterize token sales as intellectual property licensing agreements, allowing them to claw back many of the rights that holders of this type of tokens could otherwise assume they have when they purchase them.[84] This might be because although this type of tokens has been around for over a decade, the market for digital tokens linked to non-financial assets is still very young – with issuers, sellers and buyers all grappling with the legal nature of these new tokens and finding no obvious answers in most jurisdictions. At the same time, it appears that the explosive growth experienced by this market since 2020 is overwhelmingly due to retail buyers – who currently make up 80% of all NFT transactions[85] and who might lack the negotiating power required to bargain for their own protection.

So, what is actually known about the expectations of these holders of tokens representing non-financial assets in regard to these transactions? A survey of the existing literature reveals significant agreement over the fact that at least

82 Fairfield (2022).

83 Fox (2021b).

84 For a comprehensive list of examples, *see* Fairfield (2022).

85 Shumba (2022).

many of the holders of digital tokens assume that they "own" these tokens, and limited discussion of whether such players assume that they also "own" the assets that underlie them.[86] It is thus worth dividing these expectations into two broad categories of beliefs before analysing them: (i) expectations of rights over the digital tokens; and (ii) expectations of rights over the non-financial assets underlying the tokens.

When it comes to the first category of expectations – *(i)* expectations of rights over the digital tokens – the UK Law Commission itself acknowledges that "digital assets are generally treated as property by market participants".[87] Elsewhere in the literature, it has also been argued that "NFTs [in particular] are expressly sold on the basis of narratives of ownership", so that "the legal regime for digital personal property [should] evolve to support token-holder expectations for a kind of online ownership that has until now not been available".[88] More specifically, it has been noted that "the owner of an NFT expects to be free of upstream owners, the creator of the NFT, and anyone else when she uses, displays, or transfers the NFT to someone else."[89]

By contrast, the second category of expectations – *(ii)* expectations of rights over the non-financial assets underlying the tokens – appears to divide policy-makers and academics. On the one hand, the UK Law Commission has, in the past, ventured to note that "parties…may expect that when the tokens transfer on the system, so does the title to the digital or physical things represented by the token or the legal rights in that thing"[90] – and Fox seems to suspect that "if asked", many of the holders of digital tokens linked to non-financial assets "would expect their transactions on the ledger to change the legal state of things behind the DLT system".[91] At the same time, others would argue that holders of these tokens are merely "looking to resale value"[92] – and that "the aftermarket [for these tokens] is the entire point" of transacting in them.[93] And looking at some of the most popular NFT marketplaces (including Fractional.art, Mintable, OpenSea, Rarible and Superrare), it would seem that the deal that the holders of digital tokens linked to non-financial assets get does seldom involve them acquiring any ownership rights over the assets that underlie these tokens.

86 *See,* i.a., Law Commission (2021a) and Fairfield (2022).

87 Law Commission (2023b).

88 Fairfield (2022).

89 Ibid.

90 Law Commission (2023b).

91 Fox (2021b).

92 Schwarcz (2023).

93 Fairfield (2022).

For instance, the terms and conditions that govern transactions conducted through NFT marketplace Rarible determine that " [i]n the absence of an express legal agreement between the creator of a Collectible and purchasers of the Collectible, there cannot be any guarantee or assurance that the purchase or holding of the Collectible confers any license to or ownership of the Collectible Metadata or other intellectual property associated with the Collectible or any other right or entitlement, notwithstanding that User may rightfully own or possess the NFT associated with the Collectible".[94]

Similarly, the terms and conditions used by NFT marketplace Mintable note that NFT creators "retain all ownership rights in [their] User Content",[95] and OpenSea (another NFT exchange) too clarifies that "NFTs exist only by virtue of the ownership record maintained in the associated blockchain (e.g., Ethereum network)…. Opensea and/or any other Opensea party cannot effect or otherwise control the transfer of title or right in any NFTs or underlying or associated content or items".[96]

Looking at OpenSea, in particular, it is worth noting that options for NFT minters/creators include freezing the non-financial assets linked to the NFT that they are minting and options for NFT buyers include checking whether the non-financial assets linked to their NFTs are frozen, which seems to indicate: first, that the underlying non-financial assets are owned and can be modified by the NFT creator, unless they freeze them (in which case no one, and not even the NFT creator, can modify them); and, second, that NFT buyers are informed that they do not own the underlying non-financial asset (and can check how vulnerable they are to its modification).[97]

Ultimately, there then appears to be generalised consensus that parties to transactions in digital tokens linked to non-financial assets might expect to have "ownership" rights regarding those tokens – but it is considerably less clear whether such parties actually expect to have significant "ownership" (or analogous) rights over the non-financial assets that underlie them. Indeed, there is no empirical evidence that parties to transactions pertaining to digital tokens linked to non-financial assets expect that a particularly strong link will connect those tokens to any underlying assets – and, looking at a sample of terms and conditions regulating these transactions, it does not even appear that such a strong link does often actually exist in practice.

94 Rarible (2023).

95 Mintable (2023).

96 OpenSea (2023).

97 *See* OpenSea's website live at *https://opensea.io/tos* (31.01.2023).

The final part of this article assesses whether English private law should be amended to address the expectations of parties to transactions involving digital tokens linked to non-financial assets – or, in any case, whether the law should step in to help protect the holders of these tokens, namely by strengthening the link between digital tokens and the non-financial assets that may underlie them.

3. Challenges to Private Law and unanswered questions

At this point, it has been argued that while there is some agreement in the literature, and even among policymakers, that the holders of digital tokens that derive their value from non-financial assets may assume that they "own" these tokens,[98] there is considerable lack of empirical evidence as to whether those same token-holders *actually* believe that they have "ownership" or analogous rights over the non-financial assets that underlie them.

Regardless of what market practice or parties' assumptions might be, the remainder of this article analyses whether English private law accommodates these expectations – first, by examining the nature of digital tokens linked, in particular, to non-financial assets (*3.1*), and second, by exploring the strength of the link that may connect those digital tokens to the non-financial assets that underlie them (*3.2*).

3.1. The nature of digital tokens

The first category of expectations that market participants buying digital tokens linked to non-financial assets appear to nurture in regard to their investment pertains to the nature of those digital tokens.

Specifically, acquirers of digital tokens linked to non-financial assets – much like any other holders of digital assets – seem to expect the law to recognise them as the "owners" of those assets and attribute to them the rights that normally attach to the "ownership" of assets.[99] Specifically, such token-holders appear to expect to have personal property rights in those tokens, in the sense of having a set of legal rights exactable against those assets, and enforceable against the world at large.[100] Additionally, holders of digital tokens linked to non-financial assets – and who are in control of those tokens (namely by having knowledge of

98 *See,* i.a., Law Commission (2023b) and Fairfield (2022).

99 The concept of "ownership" is used here because it is "a concept that they layperson readily understands", although property law has "wider concerns than ownership" (*see* Smith (2020)).

100 Bridge (2015).

the specific private key that unlocks them)[101] – may expect the law to attribute to them the rights that normally attach to the "possession" of those tokens.[102]

This section examines the validity of these two expectations – first, determining the extent to which digital tokens linked to non-financial assets can be categorised as personal property (*3.1.1*) and, second, assessing whether such tokens can be "possessable" (*3.1.2*).

3.1.1. Digital tokens as property

There is current ambiguity as to whether digital assets in general – and digital tokens linked to non-financial assets in particular – can be categorised as personal property. In the words of the Law Commission, this remains "an important area of legal uncertainty that requires further consideration".[103]

As noted, property is a legal concept used to describe a set of rights that can be exercised over a thing and which can be enforced against the world at large.[104] Briefly, English property law then recognises two broad classes of property: personal property and land, with the residual category of personal property comprising all the property that is left after subtracting land (or "real property").[105] Personal property can then be further sub-divided into (at least) two categories: "things in possession" and "things in action". Things in possession are tangible, movable things ("tangible personality"), which, when forming the subject matter of a transaction, are called "goods".[106] By contrast, things in action are comprised by so-called "intangible personality" and have been traditionally seen as giving rise to rights of property that can be enforced by court action.

101 According to the Legal Statement recently published by the UKJT, "knowledge of the private key [that permits transfers or other dealings in the digital asset to be authenticated by digital signature] confers practical control over the asset" (*see* UK Jurisdiction Taskforce (2019)).

102 For a recent discussion of the rights that attach to possession, *see* Rostill (2021).

103 At the same time, it is worth noting that 'property is a comprehensive term and can be used to describe many different kinds of relationship between a person and a thing' (*see* Law Commission (2021c)).

104 UK Jurisdiction Taskforce (2019).

105 *See* Bridge (2015). The deep division in property law between personal property law and land has long historical standing, resulting in land law and personal property law evolving differently in a number of respects.

106 Notably, not all things in possession are actually deemed to be "goods" under the Sale of Goods Act 1979 and the Consumer Rights Act 2015 ("CRA 2015") (*see,* i.a., *Lipkin Gorman v Karpnale Ltd* [1991] 1 AC 548, 575 (HL)). The CRA 2015, in particular, defines "goods" as "any tangible moveable items", including water, gas, and electricity only if they are put up for sale in a limited volume or a set quantity – with the Explanatory Note to the CRA 2015 clarifying that the category includes "anything physical which you can move ('any tangible moveable item')".

Historically, classifying items as either tangible or intangible property has been a fairly straightforward exercise,[107] but advances in technology have increasingly required the law to re-examine the meaning of "tangible" and rethink the traditional distinction between things in possession and things in action. Now, because the category of things in action started being seen as the residual category of personal property – with intangible personality comprising all that remains of the personal property category (or, more rigorously, of the chattels personal category) upon removing tangible personality – most innovative developments have earned that classification. In particular, the category of "things in action" has been deemed to include various forms of intellectual property.[108]

More recently, it has been noted that the classification of particular things as property is not overly constrained by existing statute or case law, and should in fact be determined on an individual basis, depending on the characteristics of these things, as well as on the purpose behind the enquiry into their nature. From this functional perspective, determining whether rights in a particular thing can be deemed proprietary will then depend on whether they are definable, identifiable by third parties and capable in their nature of assumption by third parties – as well as on the extent to which they are exclusive, controllable, permanent, and stable.[109]

Equally, courts have been debating whether to recognise a third category of personal property rights that might capture things that are clearly not things in possession, but which also do not fit comfortably in the traditional definition of things in action (as things giving rise to rights enforceable by action).[110] And given the lack of authoritative decisions limiting the categories of property in law, it appears that even intangible assets that seem to have little else in common with the assets traditionally captured by the category of things in action – in the sense that they may not give rise to property rights that can be enforced by court action – can be seen as property, potentially falling under a third category of personal property.[111] Indeed, it would appear that recent case law developments

107 Bridge (2015).

108 Ibid.

109 *See National Provincial Bank v Ainsworth* [1965] AC 1175 and, more recently, *Fairstar Heavy Transport NV v Adkins* [2013] EWCA Civ 886. For a list of cases that have looked at these features as indicators that a particular thing should be treated as property, *see* UK Jurisdiction Taskforce (2019) at p. 12.

110 For a discussion of recent case law developments, *see* Law Commission (2022b).

111 Indeed, English courts have shown a willingness to treat assets that do not embody legally enforceable rights (and which cannot as such be strictly classified as things in action) as a form of property belonging to a third kind of personal property (*see*, in particular, *Armstrong v Winnington* [2012] EWHC 10, [2013] Ch 156). For a discussion, *see* UK Jurisdiction Taskforce (2019).

positively illustrate an "iterative process of carving-out a category of personal property that is distinct from things in possession and from things in action".[112]

Turning now back to digital assets: how do these assets – and, in particular, digital tokens linked to non-financial assets – fit into the discussion? Can they be seen as personal property? And, if so, do they belong to any of the two traditional categories of personal property recognised by English Law – or, instead, to a third, burgeoning category of personal property?

The Legal Statement published in 2019 by the UKJT suggests that the legal and proprietary status of digital assets depends on those of their features which are novel – and goes on to identify those features, including intangibility, cryptographic authentication, use of a distributed transaction ledger, decentralisation, and rule by consensus. It then suggests that digital assets with these unique characteristics broadly "have all the indicia of property": first, the conjugation between the public parameters of the digital asset and the technology behind digital ledgers (typically supported by DLT) ensure that the asset can be defined and identified with certainty by anyone with access to the ledger; second, the cryptographic authentication process typically awards private key holders full control over the digital asset, satisfying requirements for exclusivity; third, digital assets are typically designed with transferability in mind, making them capable of assumption by third parties and assignable; fourth, digital assets on digital ledgers are often issued with a view of permanence, which is partially made possible by the various consensus mechanisms used by these networks (and which typically also ensure their stability).[113]

But it is not just that digital assets have a series of unique characteristics that make them particularly suitable for being characterised as property – additionally, the UKJT notes the absence of additional features that could disqualify digital assets from being property. In particular, most digital assets are comprised by more than just data, which is relevant since information has not been historically treated as property[114] – particularly given that most information can be easily duplicated, can be easily used at the same time by different people and cannot really be transferred (but only transmitted); as such, it struggles with requirements of exclusivity. Most digital assets, however – and certainly all cryptoassets issued on DLT networks – are hosted by systems that are specifically designed to prevent the double-spending problem.[115]

112 Law Commission (2022b).

113 For a discussion, *see* UK Jurisdiction Taskforce (2019).

114 *Your Response v Datateam Business Media* [2014] EWCA Civ 281, [2015] QB 41.

115 UK Jurisdiction Taskforce (2019).

Much like the UKJT, the Law Commission too recognises that "some digital assets are capable of attracting property rights" (even when they do not fit comfortably with the traditional distinction between things in possession and things in action). Specifically, digital assets will be able to attract property rights provided that: first, they are comprised by data represented through an electronic medium (including computer code, electronic, digital, or analogue signals); second, they exist independently of persons and of the legal system; and third, they are rivalrous.[116]

A different question is whether digital assets – and, in particular, digital tokens linked to non-financial assets – fit into the traditional dichotomy between "things in possession" and "things in action". In answering this question, the Legal Statement issued by the UKJT suggests that even though many digital assets do not really look like things in action (in the sense that they do not give rise to rights of property that can be enforced by court action), that should not mean that they cannot be seen as property – arguably of a third kind. Building on the work developed by the UKJT, the Law Commission has then proposed the recognition of a third category of personal property – provisionally labelled "data objects" – that allows for a more nuanced examination of new and emerging categories of assets (including, in particular, digital assets).[117] Equally, a nascent literature on digital assets appears open to the idea that English private law should recognise a third category of personal property that can deal with both the digital assets of the present and any novel categories of assets that might develop in the future.[118]

In the end, acknowledging the existence of a third category of personal property distinct from the two more traditional categories of personal property with the purpose of accommodating the new world of digital assets requires careful consideration of what should be the boundaries of this new category of personal property – and it is worth keeping in mind that certain digital assets, like pure information, cannot (and should not) be the object of property rights.[119] At the same time, it seems clear that a third category of personal property different from the two existing categories of personal property allows the system to reflect more accurately "the idiosyncrasies of digital assets", particularly to the extent that such idiosyncrasies could "mean that the automatic application of legal

116 Law Commission (2022b).

117 Ibid.

118 In particular, *see* Sarra and Gullifer (2019), Allen (2018), Fairfield (2015), and Green (2021).

119 Law Commission (2021c).

rules developed for assets that fall within the two existing categories of personal property would be unsuitable in the context of those digital assets".[120]

Ultimately, recognising digital tokens as potentially attracting personal property rights – and acknowledging, in addition, that they might belong to a third category of property has critical consequences for their legal treatment.

Specifically, recognising digital tokens as potentially attracting personal property rights has the effect of allowing the owner of a digital token that is recognised as a form of personal property to enjoy proprietary rights that are recognised against the whole word, as opposed to personal rights that are only recognised against the individual persons who have assumed a legal obligation to the token owner. The proprietary nature of these rights is particularly important in a number of specific scenarios, including upon insolvency – at which point proprietary claims typically enjoy priority over contractual claims by creditors – if the object of property is ever lost or unlawfully taken, or when determining if the object of property can be a security interest, or held on trust.[121]

The exact type of property attributed to a particular asset can also be important, as certain proprietary remedies are only available in regard to particular types of property. Indeed, finding that digital assets might fit better into a distinct third category of personal property distinct from the categories of "things in action" and "things in possession" raises crucial questions as to what rights attach to those assets. In particular, it is worth examining whether digital assets fitting into this third category of personal property can be "possessable" – a feature that has often been the exclusive remit of things in possession.[122]

3.1.2. Digital tokens as "possessable" property

Not all classes of property are "possessable" under English private law. Traditionally, things in action – intangible personality – cannot be "physically possessed", resulting in a number of limitations applicable to this category of assets, such as the inability to become the subject of possessory lien, or the subject of actions in conversion.[123] More broadly, the notion of "possession" is thought to apply only to physical things[124] – with important consequences for how digital assets can be transferred, secured and protected under English law.[125]

120 Ibid.

121 UK Jurisdiction Taskforce (2019).

122 Ibid.

123 Bridge (2015).

124 Law Commission (2023b).

125 Ibid.

Unsurprisingly, the Legal Statement issued by the UKJT in 2019 was adamant in stating that digital assets cannot be physically possessed – which should then limit the rights attaching to those assets.[126] Similarly, the Law Commission has also stated that "the concept of possession should not apply to data objects" (such as digital assets) – even if earlier discussions seemed to contemplate the possibility of extending the notion of "possession" to things that existed only in electronic form when such extension was required to achieve equivalence between paper and electronic counterparts, and provided that they met criteria that allowed them to replicate certain key features of paper trade documents (in line with international market practice).[127] Instead, the Law Commission ultimately proposed that the concept of "control" – rather than the concept of "possession" – should apply to digital assets. Such a concept is analogue to the common law concept of possession, while notably lacking the element of intention that characterises situations of possession. Indeed, a person will be in "control" of a digital asset by merely being able to: first exclude others from that asset; second, put that asset to the uses of which it is capable; and third, identify themselves as the person with the two abilities formerly described.

Crucially, "control" is a somewhat underdeveloped concept that is in many ways unfamiliar to English private law, and which does not attract the same level of protection that applies to "possessable goods". In particular, "possessability" would make digital assets transferable by way of delivery, would allow claimants to claim in conversion for interference with digital assets, and would allow digital assets to become the object of possession-based arrangements like bailment – as well as to be used as collateral in possession arrangements like pledges.[128] Additionally, "possessable goods" enjoy a particular set of additional protections under the Sale of Goods Act 1979 and the Consumer Rights Act 2015.

The main argument made by the Law Commission for excluding the owners of digital assets from the protection enjoyed by owners of "possessable goods" is that market practice in relation to these assets "does not, and never has, centred around or relied on either the factual or legal concepts of possession".[129] Indeed, there is no empirical evidence that owners of these assets might expect English private law to protect them in the *exact* same way that it protects owners of "possessable goods" – and the existing literature mostly points to owners of digital assets expecting these assets to be treated like "property" and award basic property rights, like being able to use, display or transfer the token

126 UK Jurisdiction Taskforce (2019).

127 Law Commission (2022a).

128 Law Commission (2022b)

129 Law Commission (2021a).

without interference from any "upstream owners".[130] More convincingly, Fox further argues that a number of rules applying to goods make a poor fit with digital assets.[131]

Ultimately, although the use of the concept of "control" leaves owners of digital assets less protected than fully extending the concept of "possession" to this type of assets would, it does not appear that the *exact* level of protection attached to "possessable goods" is expected (or frequently contracted for) by parties to transactions involving this type of assets. Additionally, bluntly equating (all) digital assets with "possessable goods" would subject them to a regime that was not conceived with this type of assets in mind, and which arguably fails to consider the many nuances of their nature. Finally, clarifying the inapplicability of the protection mechanisms inherent in "possession" to digital assets – and educating dealers in those assets as to that inapplicability – could have the important effect of adding legal certainty to English private law while helping empower purchasers of digital assets to protect themselves through contract.

At the same time, it is argued that there was a middle ground available between bluntly extending all the rules applicable to "possessable goods" to all digital assets and entirely excluding them from the scope of such rules – namely applying the regime governing "possessable goods" only to certain types of digital assets (with certain characteristics), or clarifying the non-applicability of certain protection mechanisms typically associated with "possession" to digital assets (to the extent that they could be seen as incompatible with their nature). Such an option would have had the advantages of, first, avoiding the use of an unclear and underdeveloped concept like "control", and second, erring on the side of protecting the potentially vulnerable purchasers of these digital assets. This would be particularly important in the case of (often retail) buyers of digital tokens linked to non-financial assets, who have no claim to a stream of cash flows arising from these tokens and only really stand to gain from their purchase to the extent that such assets offer other (non-financial) benefits or enjoy a healthy secondary market.

3.2. Rights over non-financial assets underlying digital tokens

The second category of expectations that owners of digital tokens whose value derives from non-financial assets could have in regard to those tokens pertains to the nature of the link that unites such tokens and the non-financial assets

130 Fairfield (2022).

131 Fox (2021a).

that underlie them – as well as the extent to which that link gives token-owners rights over those underlying assets.

Unlike investors in securitisations, the owners of digital tokens linked to non-financial assets have no expectations of receiving a steady flow of financial benefits from those tokens and – aside from any utility that they might derive from ownership – the ability of token owners to profit from their purchase is contingent on the existence of a liquid market where such assets can be easily sold and purchased. Which begs the question: what expectations do these market players actually have in regard to the connection between their digital tokens and the non-financial assets that underlie them? And what role might English private law play in strengthening that connection?

When it comes to the expectations that parties to transactions in digital tokens linked to non-financial assets might have, it was noted earlier that there is no agreement in the literature (and no empirical evidence) to suggest that such parties usually expect that "ownership" rights over those tokens automatically give "ownership" (or analogous) rights over the assets that underlie them. Parties that do want those rights can contract to strengthen the link between token and non-financial asset – but otherwise they put themselves at the mercy of the English private law system. Under this system, digital tokens could in principle be recognised as documents of title giving rise to proprietary rights over the non-financial assets to which they are connected – but only upon established mercantile usage, or explicit statutory provision.

Crucially, it appears that there is neither established mercantile usage, nor are there explicit statutory provisions that allow for the broad recognition of digital tokens (linked, in particular, to non-financial assets) as documents of title.[132]

Showing that a certain usage has become an established mercantile custom requires demonstrating that such usage is notorious, certain, reasonable, and generally regarded as legally binding.[133] In practice, this is very hard to do and – in the case of digital tokens linked to non-financial assets (and NFTs in particular) – it would appear that purchasers and sellers themselves actually often include provisions in their terms of services that actively negate many of the rights that would arise from documents of title (even if purchasers might be unaware of such provisions).[134] There is also an absence of provisions recognising that DLT systems (where digital tokens linked to non-financial assets are typically traded) can operate as legally constituted registers of title in the same way that land and securities registrations do – and, in the absence of legislation specifically

132 UK Jurisdiction Taskforce (2019).

133 Wortley (1959).

134 *See* the discussion above at 2.3.

providing for such a result, off-chain assets will not move in tandem with the tokens that represent them.[135]

Ultimately, the UK legislature is then left with two options: either embracing the *status quo* and making peace with the fact that the link between tokenised assets and the assets that underlie them is very tenuous indeed – in which case further regulation pertaining to how at least some of these products are created, advertised and commercialised could become particularly urgent – or introducing statutory reform with the purpose of recognising tokenised digital assets as documents of title, or otherwise strengthening the connection between digital tokens and the off-chain assets to which they refer.

In favour of changing the law to strengthen the connection between digital tokens and the assets that underlie them, it could be argued that buyers of digital tokens linked to non-financial assets are in a particularly vulnerable position, given that they are not entitled to regular cash flows, and given that the secondary markets for selling these assets are almost non-existent, or, in any case, fairly illiquid.[136]

At the same time, changing the law in this way would raise a number of practical difficulties. First, recognising particular DLT networks as legally constituted registers – whereby off-chain non-financial assets would move in line with the digital tokens that represent them – would require coming up with criteria for determining which features must be present in such networks before they can be recognised as legal registers, and it is not clear that we currently know enough about a type of technological development as recent as DLT to come up with satisfactory criteria. Second, although it is suggested that digital tokens can be the object of property rights, it appears that rights over such tokens might belong to a new (and still underdeveloped) category of property rights – so that the parallel between "negotiable instruments represented by paper documents" and these tokens should perhaps not be pressed too far,[137] or at least not at this point in time.[138]

From a more practical perspective, it can also be argued that to the extent that the tokenisation of non-financial assets uncovers new opportunities for artists and other small and medium-sized entrepreneurs to profit from their work – in particular by expanding the investor base for a type of assets that are typically very illiquid – automatically strengthening the rights of investors over

135 Fox (2021b).

136 Schwarcz (2023).

137 Fox (2021b).

138 These types of practical difficulties might not be as prominent in every jurisdiction. For example, Liechtenstein has opted to approve a statute explicitly creating a legal link between digital tokens and the assets that underlie them (*see* Liechtenstein's Token and TT Service Provider Act (2020)).

the underlying assets could significantly decrease the attractiveness of this type of arrangements and prevent transactions by parties with complementary interests. To the extent that SME access to finance is linked to economic growth, radical reform could have a negative impact on the economy.[139] Additionally, recognising and protecting a legal link between digital tokens and underlying (non-financial) assets would potentially prevent (or make more difficult) their fractionalisation – which might be key to solving the main problems associated with investment in these tokens, including lack of liquidity and the lack of an appropriate mechanism for determining prices.[140]

Crucially, even if parties to transactions in digital tokens linked to non-financial assets might be broadly unaware of what they are buying, the fact is that there is no empirical evidence that such parties generally nurture an expectation that (proprietary) rights over those tokens will also give them (proprietary) rights over the assets that underlie them. Indeed, it is suggested that notions by policymakers or found in the literature that the parties to transactions in digital tokens may expect off ledger (non-financial) assets to move in step with their token transactions[141] are based on anecdotal evidence rather than systematic empirical research. If it is true that the alignment of legal and commercial expectations is usually desirable,[142] the fact is that there is no empirical evidence that commercial expectations of a particularly strong link between digital tokens and the assets that underlie them actually exist. Indeed, and looking at a sample of terms and conditions that may govern transactions in these assets, the contrary might be true.[143]

Ultimately, it is then laudable that the Law Commission has recommended against the UK Parliament enacting any provisions establishing a strong(er) statutory link between digital tokens and the (off-chain assets) that they represent – at least at this point in time. Although the Law Commission's earlier Call for Evidence had suggested that parties to transactions in this type of tokens could indeed hold the expectation that "when the tokens transfer on the system, so [would] the title to the digital or physical things represented by the token or the legal rights in that thing",[144] the truth is that there is no evidence that that is usually the case. Ultimately, it is argued that English private law should do no more

139 Schwarcz (2023).

140 The question of whether fractionalised NFTs should come under the scope of financial regulation is a different matter, and one that falls outside the scope of this paper.

141 *See,* i.a., Fox suggesting that "if asked, many of [the parties to these transactions] would expect their transactions on the ledger to change the legal state of things behind the DLT system" (Fox (2021b)).

142 Fairfield (2022).

143 *See* the discussion above at 2.3.

144 Law Commission (2021a).

than preserve and foster the freedom of any parties that might want to strengthen the link between token and underlying asset – and provide them with a legal environment where they can do so through contract.[145]

4. Conclusion: letting sleeping dogs lie

Out of all the categories of digital assets that have emerged in the last decades, none has captured the interest of policymakers and regulators quite like cryptoassets. Many of the discussions raise questions of how the issuance and trading of these cryptoassets should be regulated – particularly in the context of financial markets – but a necessarily prior question pertains to their nature (and the nature of the rights that might attach to them) as a matter of private law. Indeed, it is generally agreed that cryptoassets can be particularly difficult to map into existing private law concepts – namely concepts of personal property.[146]

The digital tokenisation of non-financial assets raises particularly interesting questions. Because the holders of tokens linked to non-financial assets have no claim to a stream of cash flows arising from these assets, they can only really benefit from their purchase to the extent that such tokens offer other (non-financial) benefits, or to the extent that such tokens can be sold at a profit (assuming the existence of a secondary market for their sale and purchase). The inherently vulnerable position in which the holders of digital tokens linked to non-financial assets find themselves thus begs the question: what are these market players actually being offered and what expectations do they nurture in regard to the tokens that they purchase and the non-financial assets that underlie them?

This article has analysed the (provisional) answers given by the UKJT and the Law Commission to these questions: first, the question of whether (tokenised) digital assets should be treated as property under private law; second, the question of whether (tokenised) digital assets should be treated as being "possessable" under private law; and, finally, what is the nature of the connection that unites digital tokens and the (non-financial) assets that may underlie them.

In the end, there appear to be good reasons for recognising that digital assets can be treated as property under private law: indeed, parties to these transactions appear to nurture the (legitimate) expectation that these digital assets give rise to proprietary rights, and there is nothing in either the nature of these assets, or English private law that prevents digital assets from being treated as a form of property – and, indeed, as belonging to a third category of property

145 Law Commission (2022b).

146 Law Commission (2021c).

that can be developed by English courts with the particular idiosyncrasies of these digital assets in mind. The answer to the question of whether these assets should be "possessable" is less clear. On the one hand, it is apparent that several rules that apply to "possessable goods" are a poor fit with digital assets – and there is no empirical evidence that owners of digital assets expect to be protected in the *exact* same way that English private law protects the owners of these goods (even if some protection might be expected). At the same time, the Law Commission's suggestion to use the notion of "control" to characterise the relationship between the owners of digital assets and those assets relies on an underdeveloped legal concept and may leave the often-retail buyers of digital tokens linked to non-financial assets – in particular – somewhat unprotected. It is therefore suggested that a middle ground solution based around the notion of "possession" (and in assessing which of the protective mechanisms inherent in "possession" could apply to digital assets on a case-by-case basis) would be more satisfactory.

As for the question of whether English private law does (or should) establish a strong(er) link between tokenised digital assets and underlying non-financial assets, it is argued that the combination of expectations, market practice, common law and statute is currently insufficient to establish such a link – and, indeed, that no reform should be undertaken with that objective in mind. On the one hand, it is true that purchasers of tokens linked to non-financial assets enter a particularly vulnerable position – and that such vulnerability could be addressed in particular by establishing or strengthening the connection between those tokens and the assets that underlie them. At the same time, there is no empirical evidence in support of the idea – sometimes entertained by policy-makers and the literature – that investors in this type of assets buy them with the expectation that such a connection exists. Indeed, even a superficial analysis of the terms and conditions that govern the transactions taking place in the most popular NFT marketplaces appears to suggest otherwise.

Ultimately, it is recommended that English private law should merely concern itself with creating a legal environment where market participants have the contractual freedom to create their own legal means of connecting digital tokens to the non-financial assets they represent. This can involve determining what protections for "possessable goods" can be applied to these digital tokens – but any further protection for holders of digital tokens linked to non-final assets should be handled by regulation and the framework that may in the future be established for token minters and trading platforms. Otherwise, it might be better to just let sleeping dogs lie.

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