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Towards an Idea of Digital Asset Ownership

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ABSTRACT

As traditional notions of property come into contact with nascent forms of digital assets, courts have questioned whether Fry LJ's seminal statement regarding the lack of a *tertium quid* between chooses in action or possession ought to continue to hold true in modern property law. This article argues to the contrary and contends instead for a third category of property to be developed. In doing so, it draws inspiration from the Law Commission's 2022 Consultation paper, and its proposed third category of property, 'Data Objects', and suggests several tweaks to the Law Commission's model. In Section II, this article argues that the proposal is myopic in some aspects, particularly in scope and associated remedies, and offers solutions to remedy this. In building on the Law Commission's proposal, Section III then offers a comparative study of how common law jurisdictions have treated digital assets and applies these lessons to show the weakness of *Ainsworth*, solidifying the case for a third category to be created. In Section IV, this paper returns full circle to Section II, proposing a reworked third category from the Law Commission's model, which is underpinned by a test based on the types of types of data concerned. This article suggests various entry points forward, and concludes that the effect of developing such a category, and consequently away from *Ainsworth*, will ground property law firmly back within the Hohfeldian 'bundle of rights' model, hence bringing the law back in line with policy and reality.

Keywords: technology Law, property Law, crypto tokens, digital assets, non-fungible tokens

I. INTRODUCTION

It is arguable that the law of property has hit a quandary following the exponential growth in digital assets across all areas of modern society. An appropriate place to set the stage for the problem the law is currently facing—and the problem this paper seeks to address—is the Consultation Paper by the United Kingdom Law Commission in 2022 on Digital Assets.[1] There, the Law Commission noted that the

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[1] Law Commission, *Digital Assets: Consultation Paper* (Law Com No 256, 2022).

English law of property has traditionally recognised only two categories of personal property, these being: (a) things in possession; and (b) things in action.[2] According to the Law Commission, such a bifurcation straddles the advent of digital assets rather uncomfortably, for digital assets 'nevertheless have the characteristics of other objects of property rights'.[3] Hence, the Law Commission suggests a change to the law of property—this being the creation of a third category of property, a category distinct from things in possession and things in action, termed as 'data objects'.[4] In doing so, the Law Commission sets out a set of criteria to determine when a thing would properly fall under the ambit of a 'data object', and applies it to various types of digital assets.

Section II of this paper therefore seeks to evaluate said proposal by the Law Commission, after exploring the basic concepts of the law of property. This paper argues that the current position adopted by the Law Commission remains myopic as to how it applies to other digital assets, particularly given that it focuses far too much on crypto tokens. Indeed, legal uncertainty continues to loom large as it relates to other digital assets, especially in the context of cloud storage and other intangibles. Further, this paper argues that the Law Commission's criteria for 'data objects' could be further reworked, specifically in its definition of 'data', as well as its associated legal remedies. To build on the Law Commission's proposal, Section III of this paper then seeks to explore how common law jurisdictions have treated digital assets in the context of the law of property, through analysing the policy set-up and the juridical technological discourse that has occurred to date. Finally, in Section IV this paper concludes that the Law Commission's proposal, whilst commendable, requires some tweaks. This paper will argue that the Hohfeld's 'bundle of rights' theory serves to inspire the right way forward as to how the law should develop in relation to digital assets.

II. The Law Commission's Proposal

As Soto argues, how legal systems seek to recognise property is essential, for property rights are recognised against the whole world; whilst personal rights are merely recognised against someone who has taken on a relevant legal duty.[5] Indeed, legal property finds itself as the 'indispensable process' that 'fixes and deploys capital', and mankind would be unable to 'convert the fruits of its labour into fungible, liquid forms that can be differentiated, combined, divided, and invested to produce surplus value' if a stable and consistent property framework is lacking.[6] The Law Commission properly noted that the advancement of digital assets would 'exponentially expand the scope of this productive process', as digital assets

[2] ibid para 1.14.
[3] ibid.
[4] ibid para 1.15.
[5] Hernando de Soto, *The Mystery of Capital* (Bantam Press 2000) 164.
[6] ibid.

enhance this process by 'enabling the communication of value via electronic means, which broadens the scope and access to markets and increases the transferability, composability, and liquidity of things of value'.[7] It is therefore important for legal property rights to facilitate said process.

It is trite that the law of property remains better described, rather than defined in a single term. As Edelman posits, the initial problem which faces any analysis of property rights is the 'lack of any coherent definition of property'.[8] Indeed, this quandary is reflected in statute within English law. The Insolvency Act 1986 defines 'property' as "money, goods, things in action, land and every description of property wherever situated and also obligations and every description of interest, whether present or future or vested or contingent, arising out of, or incidental to, property'. [9] In contrast, the definition of 'property' in the Tort (Interference with Goods) Act 1977 explicitly excludes 'things in action and money'.[10] This is justifiable insofar as diverging policy objectives ground the definition within the particular statutes, but it might not be helpful in working out a tenable classification of property in the round.

The Law Commission heralds an escape out of this quandary by endorsing an understanding of the concept of property as 'not a thing at all, but a socially approved power-relationship in respect of socially valued assets, things, or resources'.[11] This 'power relationship' formulation suggests that the legal construct of property consists of three elements: (a) the existence of an asset, thing or resource to which a power or right can relate; (b) the liberty of a person to use the asset, thing, or resource; and (c) the right of a person either to exclude or allow access by another person to that particular asset, thing, or resource. The formulation is underpinned by a relationship between a person and a thing, instead of the notion of a thing in itself. Nevertheless, the Law Commission correctly acknowledges that the logically prior question one must address is what kinds of things exactly can be the subject of a property right. As Professor Birks posits, suitable objects of property are 'the [thing] to which a [property right] relates'.[12] Whether something constitutes a thing, however, is an inherently fuzzy notion, particularly when one is trying to understand where the boundaries of what a 'thing' are.[13] Accordingly, guiding principles have been developed to facilitate effective analysis. The Law Commission observes that five often used criteria which have been developed in this regard: (a) the *Ainsworth* test; (b) that the thing must be rivalrous; (c) excludability; (d) separability; and (e) value.[14] The evaluation of these five

[7] Law Commission (n 1) para 1.5.
[8] James Edelman, 'Property Rights to Our Bodies and Their Products' (2015) 39 University of Western Australia Law Review 47, 52.
[9] Insolvency Act 1986, s 486.
[10] Torts (Interference with Goods) Act 1977, s 14(1).
[11] Law Commission (n 1) paras 2.10, 2.16.
[12] Peter Birks, *An Introduction to the Law of Restitution* (Clarendon Press 1985) 49.
[13] Law Commission (n 1) para 2.28.
[14] ibid para 2.36.

criteria will inform the analysis that follows in relation to both critiques the Law Commission's proposal and the possible ways forward.

A. THE *AINSWORTH* TEST

In *National Provincial Bank v Ainsworth*, Lord Wilberforce set out four characteristics which describe a 'thing' that constitutes 'property', these being that the thing must be 'definable', 'identifiable by third parties', 'capable in its nature of assumption by third parties', and 'have some degree of permanence or stability'.[15] Cutts construes the *Ainsworth* characteristics as somewhat of a 'negative threshold' test for considering when something might attract property rights.[16] In other words, a "thing" that does not fulfil the four characteristics would likely not be considered as attracting property rights. Notwithstanding this, it does not also necessarily follow that a thing will attract property rights just by fulfilling the *Ainsworth* criteria.[17] The *Ainsworth* criteria will be further explored in Section III of this article when discussing common law jurisprudence, but a preliminary comment might be made that this criterion, although helpful as a starting point, does not pull much weight when plunged into the murky depths of edge cases as might be common in digital assets.

B. RIVALROUS

Michels and Millard,[18] alongside several notable scholars, have argued that the concept of rivalrous is a core trait of things which attract property rights. A rivalrous product, as is often found in discourse relating to economics, is something whose 'use or consumption by one person, or a specific group of persons, inhibits use or consumption by one or more other persons'.[19] The Law Commission explicitly endorses this as one hallmark of a thing which attracts a property right for two reasons: first, as a rivalrous thing's capacity for use is not unlimited, competition arises as a natural consequence; second, the fact that an item is rivalrous would render the thing subject to control access, because use of the item inherently excludes another from being able to use it.[20] These two reasons reflect the core nature of the law of property, which has a primary social and economic

[15] *National Provincial Bank v Ainsworth* [1965] AC 1175 (HL) 1247–48 (Lord Wilberforce).
[16] Tatiana Cutts, 'Crypto-Property? Response to Public Consultation by the UK Jurisdiction Taskforce of the LawTech Delivery Panel' (2019) LSE Law Policy Briefing Papers 36/2019, 4 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3406736> accessed 19 March 2023.
[17] Law Commission (n 1) para 2.39.
[18] Johan David Michels and Christopher Millard, 'The New Things: Property Rights in Digital Files?' (2022) 81 Cambridge Law Journal 323.
[19] Tatiana Cutts, 'Possessable Digital Assets: Response to the Electronic Trade Documents Law Commission Consultation Paper No. 254 and Call for Evidence on Digital Assets 2021' (2021) LSE Law Policy Briefing Paper No 47, 1 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3895404> accessed 19 March 2023.
[20] Law Commission (n 1) para 2.68.

function to protect a person's ability to use a rivalrous thing by conferring on them property rights so as to enable them to retain access to said property. It might be noted that this criterion works in complement with excludability, the next criterion to be discussed.

C. Excludability

Another core trait of property is the factual ability of one to permit access to a thing and exclude others from its use.[21] Gray argues, however, that looking at excludability from a factual angle might not always be the most appropriate approach, and instead the proper analysis requires a *holistic evaluation*, which imbues a legal and social aspect into the overall examination.[22] Gray gives three examples. First, physical impracticability involves control over a thing, and some things are not excludable.[23] One example might include an open-air spectacle like a horse race, such as in *Victoria Park Racing v Taylor*;[24] another might be a beam from a lighthouse.[25] Second, Gray notes that 'the plaintiff who neglects to utilize relevant legal protection has failed… to raise around the disputed resource the legal fences which were available to him'.[26] Just like how the English property law accords weight to adverse possession, one might say that the failure to exercise one's right to legal protection renders a thing not excludable once the clock runs. Third, public policy might render certain things morally inappropriate to be controlled.[27] One such example would be how the law refuses to treat severed body parts as objects of property rights.[28]

But whilst important as a criterion, excludability only paints part of the picture as to what might constitute a property right. The Law Commission argues that an additional critical indicator of property rights is the criterion of separability.[29]

D. Separability

To attract property rights, the law also requires a thing to be 'subject matter independent of a person'.[30] This is illustrated by *R v Bentham*,[31] in which the House of Lords held that an unsevered hand was not a separable legal thing which could

[21] See Michael Bridge and others, *The Law of Personal Property* (3rd edn, Sweet & Maxwell 2021) para 1-006.
[22] Kevin Gray, 'Property in Thin Air' (1991) 50 Cambridge Law Journal 251, 269ff.
[23] ibid.
[24] *Victoria Park Racing and Recreational Grounds Co Ltd v Taylor* (1937) 58 CLR 479.
[25] Gray (n 22).
[26] ibid 274.
[27] Gray (n 22).
[28] See *Yearworth v North Bristol NHS Trust* [2009] EWCA Civ 37, [2010] QB 1 [30].
[29] Law Commission (n 1) para 2.72.
[30] Edelman (n 8) 53.
[31] *R v Bentham* [2005] UKHL 18, [2005] 1 WLR 1057.

be possessed. This was because 'one cannot possess something which is not separate and distinct from oneself… [and] a person's hand or fingers are not a thing'.[32] It is precisely this concept, according to Penner, which demands that intangible things such as talents, personalities, or friendships cannot be treated as property rights.[33] Penner further emphasises that what might be interesting about property rights in this regard is that 'there can be nothing special about any given property right in relation to a thing'.[34] This seems to point at elements of immutability—that one right, when transferred to another, will remain unchanged.

E. Value

The Law Commission highlights that value should be an important indicium for identifying what things should be considered as property but should not play a large role in this exercise, and suggests, in line with the power relationship formulation, that persons are more likely to seek the legal recognition and protection of valuable things than useless things.[35] In the Law Commission's view, however, a thing does not necessarily have to be imbued with value for it to attract property rights, for three reasons.[36] First, a thing which attracts property rights might not be valuable and could even attract negative value: a written-off car is at risk of incurring scrappage costs which may exceed the scrappage value, but one would scarcely say that the property rights in relation to the car are already non-existent.[37] Second, the concept of value is subjective and is at risk of volatility: value is relative, and a highly specialised item that is of great value to one might be largely worthless to another.[38] Third, information may have value, but it is not considered an appropriate object for property rights.[39]

F. Evaluation of the five criteria

The foregoing subsections have provided an overview into how the law of property has tried to wrangle definitional ambiguity into a more material framework. Insofar as the five criteria might be ranked in terms of importance, this article argues that rivalry, excludability, and separability are important in determining what constitutes property, and are furthermore inherent in the notion of a 'bundle of rights', a doctrine which this article will further dive into in the following section. As to value and the *Ainsworth* test, that such factors instead play

[32] ibid [8].
[33] JE Penner, *The Idea of Property in Law* (Clarendon Pres 1997) 112.
[34] ibid.
[35] Law Commission (n 1) para 2.80.
[36] ibid.
[37] ibid.
[38] ibid.
[39] ibid.

more of a guiding role and may not be the best way forward in bringing the law of property in line with digital assets.

Having set out the theoretical framework underpinning the idea of property, this article will now set out the broad scope of the Law Commission's proposal that a third category of personal property be developed. It will be argued that the Law Commission's proposal, although exciting, still leaves some issues to be addressed.

G. The case for digital assets as an independent class

The Law Commission argues that English law should 'explicitly recognize a third category of personal property to allow for a nuanced and idiosyncratic approach to the legal characterization of new things'.[40] As Allen and others argue, 'an analysis of the proprietary nature of digital assets' fundamentally mandates close engagement with the 'systems' they exist in, with the 'technical framework' and the 'social networks' of human actors being merely the core of the analysis.[41]

The Law Commission sets out a three-pronged test for classifying a thing as a data object. A thing is a data object if: (a) it is composed of data represented in an electronic medium, including in the form of computer code, digital, or analogue signals; (b) it exists independently of persons and exists independently of the legal system; and (c) it is rivalrous.[42] Each criterion will be examined in turn before critique is offered.

For the first criterion, the Law Commission requires that the thing in question be comprised of data which is represented in an electronic medium. The reason for this requirement is to bifurcate such assets from things in possession, which constitute of a collection of physical particles or matter within a defined boundary of three-dimensional spaces.[43] Next, they also use this criterion to acknowledge that an important part of data objects is that they have an 'informational quality' and are represented in an electronic medium which is optimised for processing by computers, and are 'uniquely instantiated' within a particular network or system.[44] In the Law Commission's view, it is the symbiotic connection between the use of specific data and the operation of 'socio-technological networks or systems' that allow said digital assets to take on characteristics or attributes that make them function more like objects than mere records.[45] Adopting such a criterion is further in line with one of the *Ainsworth* criteria—that the thing must have some form of definable or identifiable existence.[46]

[40] ibid para 4.94.
[41] ibid para 4.71.
[42] ibid para 5.10.
[43] ibid para 5.15.
[44] ibid para 5.18.
[45] ibid.
[46] ibid para 5.19.

For the second criterion, the Law Commission requires that the thing must: (a) exist independently of persons; and (b) exist independently of the legal system. This two-pronged criterion excludes things which do not have an independent existence (such as an unsevered body part) and creatures of law, such as things in action.[47] Limb (a) serves as a bastion for separability and reaffirms Michels and Millard's statement that 'to qualify as an object of property, a thing must be distinct from any person who might hold it'.[48] At the same time, it aligns with what might be implicit in *Ainsworth*, in that the object must be definable, identifiable, stable, and capable in its nature of being factually transferred to another. Viewed thus, limb (a) also deals with how a property can be asserted. A personal right can only be asserted against someone to whom it relates, whilst property rights can be asserted against the world.

Limb (b) of the second criterion requires the thing to exist independently of the legal system. This is to exclude things in action such as debt claims, which are creatures of the law which should stay in their domain.[49] This will also prevent certain statutorily created rights, such as intellectual property rights, from wandering into the domain of data objects, hence ensuring the stability of the law of property.

For the final criterion, the Law Commission requires that the thing be rivalrous, as has been discussed earlier. This criterion acts as a filter against pure information falling into the category of data objects and is in line with the proposition that 'property is rivalrous whereas information is not'.[50] Moreover, ensuring that rivalry remains an express criterion ensures that this category of objects remain consistent with the fundamental function of property law, which is to allocate rivalrous objects between individuals.

The Law Commission then tests its criteria against six different types of assets, including digital files and digital records, email accounts, certain in-game digital assets, domain names, assets connected with various types of carbon emission schemes, and crypto tokens.[51] It then provisionally concludes that not all digital assets will fall within the third category.

Ambitious as it may seem, this article argues that the Law Commission's proposal is flawed in three areas: (a) its applicability; (b) the requirement of there being the existence of data as the first criterion of its test of what constitutes a data object; and (c) its lack of clarity as to remedies. Each of these are discussed below.

[47] ibid para 5.22.
[48] Michels and Millard (n 18) 327.
[49] Law Commission (n 1) para 5.36.
[50] ibid para 5.51.
[51] ibid para 6.2.

H. Potential issues of applicability

The problems with the applicability of the Law Commission's suggested test for data objects are clear. Out of the six types of digital assets discussed by the Law Commission, only crypto tokens appear to meet the requirements of the test. It is submitted that the test is therefore myopic insofar as other digital asset classes are concerned. Only 6.2% of consumers held cryptocurrency in the United Kingdom in 2022,[52] compared to 74% of adults having sent or received emails[53] and 46% of internet users having used cloud computing services to store information in a closely surveyed period.[54] What this means is that the Law Commission's proposal as to data objects merely canvasses a niche area (that of crypto tokens), much to the detriment of many existing—and far more prevalent—digital assets. Unequal growth within the law of property would result. A proposal which only affords property rights in relation to crypto tokens and nothing else is also not a strong policy move to champion.

I. The requirement of data in the first prong of the test

This brings us on to the second critique of the test proposed by the Law Commission. As discussed earlier, the first prong of the test of whether something is a data object is whether the thing is question is 'composed of data represented in an electronic medium, including in the form of computer code, electronic, digital, or analogue signals'. This appears to draw a distinction between physical states and what exists in the digital realm, creating the false impression that there might be objects which are only represented through 'analogue data' but lack a coded iteration. As Cutts puts it, the proper approach is that the inquiry ought instead consider 'how the characteristics of those assets are described and communicated by individuals operating within the systems that we use to deal with them, rather than the physical changes that those characteristics would cause'.[55] Indeed, Cutts points out that it is the code which represents the 'assets' we deal with in the digital realm, rather than 'the values of certain physical states that running the code may precipitate at any given moment'.[56]

[52] TripleA, 'United Kingdom: Cryptocurrency Information about the UK' (*TripleA*, 2022) <https://triple-a.io/crypto-ownership-united-kingdom-2022/#> accessed 19 March 2023.
[53] Anyi Petrosyan, 'Share of internet users who sent and received emails in the United Kingdom (UK) in 2020, by age group' (*Statista*, 29 August 2022) <https://www.statista.com/statistics/506315/sending-and-receiving-emails-in-the-united-kingdom-uk-by-age-group/> accessed 21 March 2023.
[54] Lionel Sujay Vailshery, 'Cloud computing in the United Kingdom – Statistics & Facts' (*Statista*, 3 February 2022) <https://www.statista.com/topics/3164/cloud-computing-in-the-united-kingdom-uk/#topicOverview> accessed 21 March 2023.
[55] Tatiana Cutts, 'Assets Represented by Computer Code: Response to "Digital Assets: Law Commission Consultation Paper 256"' (2022) LSE Law Policy Briefing Paper No 50, 3 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4259516> accessed 19 March 2023.
[56] ibid.

Thus, instead of questioning whether something is 'composed of data represented in an electronic medium', it might be more apposite to ask whether it is 'composed of data represented in computer code'.[57] Such a test properly reflects what the end-user interacts with, instead of abstract binary physical states which might exist on electronic mediums. As the world embraces virtual reality and machine learning begins to grow exponentially, an artificial focus on the 'electronic' or 'digital' implications of holding data might not be the best way forward. A tweak of the first part of the test is therefore necessary.

J. Remedies

The issue of remedies is one of the most important in any legal framework, and there are currently three main issues which render the Law Commission's proposal potentially unworkable.

First, in creating a third category in property, the Law Commission points out that various existing legal frameworks could be applied to data objects, such as breach of contract, following and tracing, restitutionary claims, and the like.[58] The Law Commission discusses how these remedies might apply to crypto tokens, instancing an example of proprietary restitution and the possible extension of the tort of conversion.[59] Yet the Law Commission omits to state how these remedies might apply to other digital assets. Insofar as other digital assets such as domain names and digital files are concerned, it remains unclear as to what legal remedies ought to be accorded in the event of a dispute relating to said assets. This is an issue which has cropped up across various jurisdictions. For example, in both England and British Columbia, disputes have emerged over over ownership of domain names.[60] Likewise, disputes have raged on both sides of the Atlantic with regard to ownership over digital files and access to emails.[61] How remedies such as a proprietary restitutionary claim might apply to other types of digital assets other than crypto tokens remain to be seen.

Second, the Law Commission argues that tracing (rather than following) provides the correct analysis of the process which ought to apply to locate and identify the claimant's property when said crypto tokens are transferred.[62] It has arguably erred in this respect. Cutts correctly argues that tracing and following are distinct concepts: tracing, as she puts it, is about 'characterising transactions by which [one identifies] substitute assets', whilst following is about 'pursuing assets

[57] ibid.
[58] Law Commission (n 1) para 19.88.
[59] ibid paras 19.73–19.76.
[60] *Hanger Holdings v Perlake Corporation SA* [2021] EWHC 81 (Ch), [2021] Bus LR 544; *Canivate Growing Systems Ltd v Brazier*, 2020 BCSC 232.
[61] As to domain names, see *Your Response Ltd v Datateam Business Media Ltd* [2014] EWCA Civ 281, [2015] QB 41; *Thyroff v Nationwide Mut Ins Co* 864 NE2d 1272, 1273 (NY 2007). As to access to digital files, *Fairstar Heavy Transport v Adkins* [2013] EWCA Civ 886; *Ajemian v Yahoo!, Inc* 84 NE3d 766 (Mass 2017).
[62] Law Commission (n 1) paras 19.47–19.52.

from one location to another'.[63] Two distinct types of cases seem to be ubiquitous in the case law. The first type involves an 'asset substitution in one set of hands', and the second type involves a 'bank transfer from one account to another'.[64] As Cutts argues, there is an underlying distinction between these two types of cases. In the context of bank transfers, said claims are traditionally 'reified', wherein the courts treat these cases as though they involve a transfer of an asset independent of the underlying account.[65] It is here where Cutts's 'dummy asset tracing' theory sheds light on the weakness of the Law Commission's proposal. Cutts argues the weakness of the bank transfer cases lies in that the courts are scarcely dealing with anything related to substitution, for courts are merely 'following a fictional cash asset from one location to another'.[66] The justification propounded by courts for engaging in this practice of 'dummy asset tracing' is usually that there would be liability if the facts had involved some dealings in physical monies.[67] Respectfully, this proposition is unjustifiable at both the individual and institutional level. For the former, as opposed to physical objects and coded entities (such as data assets), bank funds do not have any strict or visible parameters, and there is nothing much that a payee may do to discover a prior claim.[68] Insofar as there are tenable arguments for reversing a defective transaction, such arguments scarcely extend to recovery of funds against one who might not be privy to a transaction.[69] For the latter, as Cutts observes, the 'irrevocability of payment instructions' already provides any confidence that is needed for the free circulation of money.[70] These cases provide weak judicial grounding for the application of tracing in relation to crypto tokens, as the doctrine of 'dummy asset tracing' has led to an unyielding complexity of cases which involve tracing through multiple accounts, which might instead be better dealt with by 'standard principles of characterization'.[71]

Indeed, setting aside the dummy transaction doctrine does not render the current law otiose as it relates to crypto tokens. This is because transfer of crypto tokens can be subject to characterization through the doctrine of following. Given that crypto tokens operate in the domain of legal assets, no issues arising from a change in physical form (and thereby to changes in ownership because of specification) will arise. Instead, the main question would be the extent of the protection which we wish to accord to the original owners of crypto assets. The defence of innocent purchase can play a larger role in this picture, to coordinate the evolved ecosystem between crypto tokens, following, and equitable remedies.

Third, it is contended that the Law Commission has taken an unnecessarily narrow view to the extension of the tort of conversion. The Law Commission

[63] Cutts (n 55) 7.
[64] ibid.
[65] ibid.
[66] ibid.
[67] ibid 8.
[68] ibid.
[69] ibid.
[70] ibid.
[71] ibid 7.

argues that 'there is international precedent for extending the tort of conversion to objects of property rights that would fall within [the third category of personal property]' but concedes that such an extension would not extend to certain data objects such as digital files.[72] This concession should be reconsidered. This is because other jurisdictions have decided to extend the tort of conversion to domain names and digital files.[73] Apart from crypto tokens, therefore, it is also important for the tort of conversion to be extended to other digital assets, and this is something that the Law Commission should have considered.

K. An overall evaluation

Section II of this paper has evaluated the Law Commission's proposals as to property rights in digital assets, after exploring the basic concepts of the law of property. The current position adopted by the Law Commission remains myopic as to how it applies digital assets other than crypto tokens. Indeed, legal uncertainty continues to loom large as it relates to such assets, especially in the context of cloud storage and other intangibles. Further, the Law Commission's criteria for 'data objects'—particularly its definition of data—and associated legal remedies could be further reworked. Building on the Law Commission's proposal, Section III of this article then seeks to explore how common law jurisdictions have incorporated digital assets within the law of property, particularly through evaluating into the policy set-up and the juridical technological discourse that has occurred to date.

III. The Juridical Technological Discourse as it Relates to Cryptocurrencies and NFTs

Writing in 1991, Gray believed that 'before long [I] would have sold you a piece of thin air and you will have called it property'.[74] In the present day, Gray's surprisingly prescient statement has somehow morphed into reality. Today, a piece of 'thin air', such as an NFT, could very well be worth more than a physical copy of the same design. The paradigm ushered in by the recent NFT craze has therefore forced property lawyers and courts (and indeed the English Law Commission) to re-examine the substantive foundations of property law. Section III of the article will examine case law from different common law jurisdictions and argue that the approach taken by the Singapore High Court in *Janesh s/o Rajkumar v Unknown Person* is commendable and offers to usher in stable guidance for the English Law Commission, particularly as it develops its test for 'data objects'.[75]

[72] Law Commission (n 1) para 19.113.
[73] See, for example, *Kremen v Cohen* 337 F3d 1024 (9th Cir, 2003) and *Henderson v Walker* [2019] NZHC 2184.
[74] Gray (n 22) 252.
[75] *Janesh s/o Rajkumar v Unknown Person* [2022] SGHC 264.

A. The policy set-up

The fundamental policy set-up within which the juridical technological discourse takes place stems from how crypto assets offer a potential counter against what Zuboff terms as the 'surveillance economy'.[76] Financial transactions form a critical cog within the privacy ecosystem, for they reveal potentially huge amounts of information regarding the volume and transactions of purchases, location histories, and even social networks. Therefore, crypto tokens have been seen as a supposedly 'privacy enhancing' mechanism which serves to improve the security and reliability of transactions. Indeed, the exchange of assets without the need for a centralised financial institution, underpinned by a distributed ledger system which is a product of autonomous computers, does present huge potential for the modern economy, and has led regulators to believe that the 'next wave' of technological evolution is in crypto tokens.

What crypto tokens serve to do would be to avoid the current problems engendered by the banking system. When a transaction is made using paper currency, all that a receiver has to do is to check that the currency is not counterfeit. In the case of digital transactions, the authentication is done by an intermediary like a bank, as most electronic transfers are done by one bank to another. Crypto tokens essentially attempt to remove this intermediary altogether by separating all trust institutions and creating a private ecosystem which is self-regulated.[77] The mechanisms adopted by crypto tokens—namely, distributed ledger technology, the authentication of transactions, and the ability to send and receive payments directly—reflect the emergence of a banking system of the future. This is what has led to the surge in interest with regard to such assets, and its increased adoption has led to increased debate across society as to how it might be regulated. This debate has trickled into the juridical discourse, to which we now turn.

B. The US

State law in the US has remained unclear as to whether cryptocurrencies *should* be treated as property. At the District Court level, *Currier v PDL Recovery Group, LLC* involved a case where a creditor had filed a request in a bid to liquidate BTC and ETH tokens held by the defendant on a crypto exchange.[78] The court ruled that '[its] ability to order satisfaction of a judgment with a defendant's personal property that is in possession of a third party is limited'. Simply put, the Court considered that the crypto tokens held by the defendant were intangible

[76] Shoshana Zuboff, 'Big Other: Surveillance Capitalism and the Prospects of an Information Civilisation' (2015) 30 Journal of Information Technology 75.
[77] T Rabi Sankar, 'Cryptocurrencies—An Assessment' (Bank for International Settlements 14 February 2022) <https://www.bis.org/review/r220217d.pdf> accessed 19 March 2023.
[78] *Currier v PDL Recovery Grp LLC*, No 14-12179, 2018 WL 4057394 (ED Mich Aug 27, 2018).

personal property and therefore, a liquidation order was denied to the plaintiff. Likewise, *Rasmussen v Smith* came to the same conclusion.[79] *Rasmussen* involved a court-appointed receiver suing various defendants to recover various crypto tokens. The Texas State Court granted summary judgment to the plaintiff and agreed that the original owner had property rights in the crypto tokens. Taking these cases together, juridical discourse at both the District and State level in the US seem to suggest a bright-line rule that cryptocurrencies can be considered as property.

The aforementioned cases, however, chafe uneasily against other District Court rulings, such as *Temurian v Piccolo*.[80] There, the Florida District Court denied the plaintiff's claim in conversion in relation to crypto tokens. Conversion in Florida law is defined as 'the wrongful exercise of dominion or control over property to the detriment of the rights of one entitled to possession'.[81] An action for conversion of money consists of three elements: (a) specific and identifiable money; (b) a deprivation of money belonging to another; and (c) an unauthorised act, which deprives the other of their money. The court considered that the Eleventh Circuit (Federal Law) had yet to decide whether cryptocurrencies were considered 'money' for the purposes of conversion. Although there had been cases where courts recognised cryptocurrencies as considered 'money' under the ambit of several federal money laundering statutes,[82] the court considered that even if this was the case, for the purposes of conversion 'money [must be] in a specifically identifiable fund such as an escrow account, a bag of gold coins, and the like'.[83]

Other courts, meanwhile, have developed rules relating to liability. In *Day v Boyer*, a Californian State Court awarded damages to a plaintiff who had purchased various crypto tokens but did not receive them.[84] Likewise, in *Smoak v Bitcoin Market*, a temporary denial of access to a plaintiff's wallet at a crypto exchange led to the grant of a default verdict by the Oklahoman State Court with damages calculated by reference to Bitcoin's price at the point in time when access was blocked.[85] Finally, in *Rensel v Centra Tech*, it remains notable that the court decided not to adopt a proprietary analysis, and instead awarded the plaintiffs damages without considering the possibility of ordering the return of the specific tokens transferred to the plaintiffs.[86]

Whilst there has yet to be any bright-line judicial statement at the Federal Court level affirming that cryptocurrencies can be considered a form of property, various guidance by top-level US regulators suggest that the US may move in such

[79] *Rasmussen v Smith*, No 3:18-CV-01034-M, 2020 WL 109863 (ND Tex Jan 8, 2020).
[80] *Temurian v Piccolo*, No 18-CV-62737, 2019 WL 1763022 (SD Fla Apr 22, 2019).
[81] *United States v Bailey*, No 6:01-CV-875-Orl-22KRS, 288 F Supp 2d 1261, 1269 (MD Fla 2003).
[82] *United States v Faiella*, 39 F Supp 3d 544, 545 (SDNY 2014); *SEC v Shavers*, No 4:13-CV-416, 2013 WL 4028182 (EDTex Aug 6, 2013).
[83] *Talisman Capital Alt Invs Fund, Ltd v Mouttet*, No 12-01842-LMI, 493 BR 640, 662 (Bankr SD Fla 2013).
[84] *Day v Boyer*, No 19-CV-01669, 2020 US Dist LEXIS 9959 (CD Cal Jan 21, 2020).
[85] *Smoak v Bitcoin Market, LLC*, No CIV-18-1096-PRW (WD Okla Jul 24, 2019).
[86] *Rensel v Centra Tech, Inc*, No 17-24500-CIV-KING/SIMONTON, 2018 US Dist LEXIS 106642 (SD Fla June 25, 2018).

a direction. Moving towards such a position is attractive from a public policy point of view, particularly given that the US is home to the largest number of crypto investors, exchanges, trading platforms, crypto mining firms, and investment funds.[87]

In this regard, the Securities and Exchange Commission (SEC) often views many crypto assets as securities. Indeed, the Commodity Futures Trading Commission (CTFC) calls Bitcoin a commodity[88], and the Treasury calls it a currency.[89] Going further, the Internal Revenue Service (IRS) defines cryptocurrencies as a 'digital representation of value that functions as a medium of exchange, a unit of account, and/or a store of value', requires investors to disclose their yearly cryptocurrency activities on tax returns, and has accordingly issued tax guidance.[90] The IRS also treats virtual currency and property for the purposes of US Federal Tax and applies the general rules for property transactions.[91] Such an approach might very well extend to other areas in US jurisprudence and might serve to inform the development of federal law in this context.

Absent express judicial guidance, the historical understandings of the foundations of property law might usefully be examined so to understand the current juridical discourse. There are two main views on the right to property in the US. Smith and Merrill illustrate the constant duel between traditionalists and supporters of the bundle of rights view; the former believe there is a core, inherent meaning in the concept of property, whilst the latter argue that a property owner only has a bundle of permissive uses over the property.[92] Traditionalists largely argue that three rights—the right to exclusion, the right to use, and the right to transfer—define property. In contrast, proponents of the bundle of rights view tend to argue that property is a bundle of rights defined by law and public policy, but that what remains in the bundle of rights is a matter of policy and the content of the right is inconsequential.[93]

This article argues that the bundle of rights view should find favour, particularly in the context of digital assets. Pioneered by Hohfeld, the bundle of rights view is underpinned by the theory that property does not consist of things, but

[87] Susannah Hammond and Todd Ehret, 'Cryptocurrency Regulations by Country' (Thomson Reuters 2022) 5 <https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf> accessed 19 March 2023.

[88] US Commodity Futures Trading Commission, 'Bitcoin Basics' (US Commodity Futures Trading Commission 2018) 1 <https://www.cftc.gov/sites/default/files/2019-12/oceo_bitcoinbasics0218.pdf> accessed 21 March 2023.

[89] US Department of the Treasury, 'Frequently Asked Questions' (*US Department of the Treasury*, 2023) <https://home.treasury.gov/policy-issues/financial-sanctions/faqs/topic/1626> accessed 21 March 2023.

[90] Internal Revenue Service, 'IRS Virtual Currency Guidance: Virtual Currency is Treated as Property for U.S. Federal Tax Purposes; General Rules for Property Transactions Apply' (*Internal Revenue Service*, 25 March 2014) <https://www.irs.gov/newsroom/irs-virtual-currency-guidance> accessed 19 March 2023.

[91] ibid.

[92] Thomas W Merrill and Henry E Smith, *The Oxford Introductions to US Law: Property* (Oxford University Press 2010).

[93] Richard A Epstein, *Takings: Private Property and the Power of Eminent Domain* (Harvard University Press 1985).

instead fundamental legal relations between people. Ownership, according to Hohfeld, is not binary, characterised by the simple and non-social relationship between a person and a thing, but instead is better viewed as a 'complex set of social relations in which individuals are interdependent'.[94] Whether and how courts should make value choices about what property law ought to prefer should depend on the 'policies society [has] decided to promote'.[95] This view seems to chime in accord with the Law Commission's position as explored in Section II, which holds that property as 'not a thing at all', but instead a 'socially approved power relationship'.[96] This view is particularly important with the advent of digital assets, as the policy set-up has shown that such objects have the potential to change the way that modern society fundamentally operates. The three-pronged test for data objects developed by the Law Commission (particularly when dealing with the factors of rivalry, excludability, and the like) are reflective of what deserves protection in the modern world, and crypto tokens do fulfil this test and deserve protection.

Certainly, in the US, it is likely that the bundle of rights view will find favour such that cryptocurrencies and NFTs are recognised as property, particularly given the direction that various top-level regulators have been moving towards in reining such digital assets into the definition of 'property'. Whilst there has yet to be any US case ruling expressly on whether NFTs can be considered property, it is likely that normative principles will continue to underpin the analysis.

C. ENGLAND

Across the Atlantic, the judicial position as it relates to cryptocurrencies and NFTs is far less ambiguous. Indeed, the English High Court in *AA v Persons Unknown* has mostly swept any uncertainty formerly brewing in English law as it relates to cryptocurrencies.[97]

AA v Persons Unknown involved a dispute tackling the question of whether Bitcoin can constitute 'property' which was capable of being a subject of a proprietary injunction. In short, it involved a defendant who had infiltrated the security systems of an insured customer using malware, which caused the forced encryption of all the computer systems. The defendants then offered the plaintiffs a decryption tool, upon the transfer of over USD $1.2 million worth of Bitcoin. This was essentially an act of blackmail, although the incident response company instructed by the plaintiff did eventually manage to negotiate the ransom down to USD $950,000 (109.25 Bitcoins), a sum which was paid.

The argument before the High Court ultimately centred around the issue of whether a proprietary injunction should be granted over the transferred

[94] Wesley Newcomb Hohfeld, 'Some Fundamental Legal Conceptions as Applied in Judicial Reasoning' (1913) 23 Yale Law Journal 16, 19. See also Denise R Johnson, 'Reflections on the Bundle of Rights' (2007) 32 Vermont Law Review 247, 251.
[95] Johnson (n 94) 251–252.
[96] Law Commission (n 1) para 2.10.
[97] *AA v Persons Unknown* [2019] EWHC 3556 (Comm), [2020] 4 WLR 35.

Bitcoins. To succeed in obtaining a proprietary injunction, the plaintiffs had to first show that the cryptocurrencies were property. Prior to *AA*, the judicial position in England was much like the US, in that a clear bright-line rule had yet to take shape. In September 2018, the High Court in *Elena Vorotyntseva v Money-4 Service Ltd* granted a freezing order over BTC and ETH.[98] The court held that there was no suggestion that cryptocurrency 'cannot be a form of property or that a party amenable to the court's jurisdiction cannot be enjoined from dealing with or disposing of it'.[99] Although this case was favourable to the argument that cryptocurrencies are indeed property, scarce reasoning was given. Likewise, in the unreported case of *Robertson v Persons Unknown*, cryptocurrencies were once again viewed by the court as property.[100] This case involved an application by the claimant for an asset preservation order (APO) to secure the 80 BTC and a Bankers Trust order to reveal the identity of the wallet holder. The Court acknowledged that various difficulties came before it, including, but not limited to, the fact that Bitcoin was neither a property that a party can take physical possession of, nor did it create a property right which could be obtained or enforced through legal action. However, the court skirted around this, invoking the Singapore Court of Appeal case of *Quoine v B2C2* to support the view that cryptocurrencies constituted property.[101]

Scarce reasoning plagued English law until *AA v Persons Unknown*. In *AA*, Bryan J recognised that the difficulty in treating cryptocurrencies as property was that they fell neither into the categories of choses in action nor choses in possession.[102] Cryptocurrencies, according to Bryan J, did not constitute the former because they did not embody any right that was capable of being enforced by action, and did not constitute the latter because they were neither tangibles nor can they be possessed.[103] Therefore, they sat uneasily against Fry LJ's seminal statement in *Colonial Bank v Whinney*, that 'all personal things are either in possession or action. The law knows no *tertium quid* between the two'.[104]

To rebut Fry LJ's position, Bryan J relied on the UK Jurisdiction Taskforce's (UKJT) Legal Statement on Cryptoassets and Smart Contracts. [105] According to Bryan J, it was 'fallacious to proceed on the basis that the English law of property recognizes no forms of property other than choses in possession and choses in action'.[106] Indeed, insofar as *Colonial Bank* stood as a bastion against the proposition that cryptocurrencies should be recognised as property, the UKJT

[98] *Elena Vorotyntseva v Money-4 Ltd (t/a Nebeus.com)* [2018] EWHC 2596 (Ch).
[99] ibid [13].
[100] *Robertson v Persons Unknown* (Com Ct, 15 July 2019).
[101] *Quoine Pte Ltd v B2C2 Ltd* [2020] SGCA(I) 02.
[102] *AA* (n 97) [55].
[103] ibid.
[104] *Colonial Bank v Whinney* (1885) 30 Ch D 261 (CA) 285.
[105] UK Jurisdiction Taskforce, 'Legal Statement on Cryptoassets and Smart Contracts' (The LawTech Delivery Panel November 2019) <https://resources.lawtechuk.io/files/4.%20Cryptoasset%20and%20Smart%20Contract%20Statement.pdf> accessed 19 March 2023.
[106] *AA* (n 97) [58].

reasoned that 'it is not clear…whether Fry LJ intended this [narrow dualistic] view',[107] and that the Court of Appeal in *Colonial Bank* did not 'explicitly address the issue of exhaustive classification between things in action and things in possession and said nothing about the definition of property'.[108] Hence, Bryan J was able to conclude that *Colonial Bank* was not to be treated as 'limiting the scope of what kinds of things can be property in the law'.[109]

Another hurdle, however, was *Your Response v Datateam Business Media*.[110] There, Moore-Bick LJ said that *Colonial Bank* made it 'very difficult to accept that the common law recognizes the existence of intangible property other than [things] in action', but even if it did, the decision in *OGB Ltd v Allan*[111] 'prevents [the court] from holding that property of that kind is susceptible of possession so that wrongful interference can constitute the tort of conversion'.[112] Although Moore-Bick LJ considered that there 'was a powerful case for reconsidering the dichotomy between [things] in possession and [things] in action and recognizing a third category of intangible property', the court held that it was not allowed to do so because of *OGB*.[113]

Notwithstanding, the UKJT noted that *Your Response* did not stand for the proposition that intangible things other than things in action could never be property at all. Indeed, the only proposition it stood for was that they could not be the subject of certain remedies. One must distinguish between a database containing purely information, which was the subject matter in *Your Response*, and intangible assets with special characteristics, as may be the case in cryptoassets.[114] Likewise, in *Swift v Dairywise Farms Ltd*, the court held that a milk quota could be the subject of a trust;[115] whilst in *Armstrong v Winnington*, the court held that EU carbon emissions could be the subject of a tracing claim as a form of 'other intangible property', even though it was neither a thing in possession nor a thing in action.[116] Indeed, other English statutes define property in terms which assume that intangible property is not limited to things in actions as well.[117]

In *AA*, Bryan J therefore affirmed the view of the UKJT and the that of Singapore Court of Appeal in *Quoine v B2C2*, and concluded that cryptocurrencies properly constituted property under English law as they satisfied Lord Wilberforce's four criteria in *Ainsworth*, set out in Section II.A above.[118] It should nevertheless be added, however, that *AA v Persons Unknown* was decided on an

[107] UK Jurisdiction Taskforce (n 105) para 74.
[108] ibid para 76.
[109] ibid para 77.
[110] *Your Response* (n 61).
[111] *OGB Ltd v Allan* [2007] UKHL 21, [2008] 1 AC 1.
[112] *Your Response* (n 61) [26].
[113] ibid [27].
[114] UK Jurisdiction Taskforce (n 105) para 81.
[115] *Swift v Dairywise Farms Ltd* [2001] EWCA Civ 145, [2001] 1 BCLC 672.
[116] *Armstrong DLW GmbH v Winnington Networks Ltd* [2012] EWHC 10 (Ch), [2013] Ch 156.
[117] UK Jurisdiction Taskforce (n 105) para 83.
[118] *AA* (n 97) [59].

interim application, and hence the claimant only needed to reach the threshold that there was a serious issue to be tried.

Academics such as Bridge and Gullifer are likely to approve of the result of *AA v Persons Unknown*. Indeed, they acknowledge that whilst one view is that there exist only two categories of personal property, this being Fry LJ's two categories as set out in *Colonial Bank*, there also exists another category of 'intangible property'.[119] Indeed, they highlight that recent developments in relation to intangible property generally, and more specifically crypto assets, have reignited the debate and support such a view.[120]

In *Lavinia Deborah Osborne v Persons Unknown*, the reasoning in *AA v Persons Unknown* was further extended to NFTs, albeit not in the level of detail as was addressed by Bryan J.[121] The claimant asserted that two digital artworks from a particular NFT collection, which she had purchased through an NFT marketplace, had been stolen from her online digital wallet. The court held that there was a realistically arguable case that NFTs could be treated as property under English law.[122] The court's position was that there was no other reason to treat NFTs in any other different way and assumed as a matter of English law that they were to be treated as property.[123]

Whilst cases remain scarce, it is submitted that *AA v Persons Unknown* sets a solid foundation for the juridical discourse relating to cryptocurrencies and NFTs. Nevertheless, a comparative study would offer valuable insights which may serve to pave the way forward for cross-fertilisation between common law jurisdictions.

D. New Zealand

The New Zealand case of *Ruscoe v Cryptopia* offers valuable judicial insights relating to cryptocurrencies and NFTs.[124] The nub of the argument in this case centred on whether cryptocurrencies were property for the purposes of section 2 of New Zealand Companies Act 1993.[125] If they were, they would then be held on trust for account holders following the liquidation of a company. Section 2 defined 'property' as 'property of every kind whether tangible or intangible, real or personal, corporal or incorporeal, and includes rights, interests, and claims of every kind in relation to property however they arise'.[126] It was accepted by Gendall J that 'property' in the context of the Act was a 'wide' concept which included 'money', even though that was not expressly included in within the section itself.[127]

[119] Bridge and others (n 21) para 1-107.
[120] ibid.
[121] *Lavinia Deborah Osborne v Persons Unknown* [2022] EWHC 1021 (Comm).
[122] ibid [13].
[123] ibid [15].
[124] *Ruscoe v Cryptopia Ltd* [2020] NZHC 728, [2020] 2 NZLR 809.
[125] ibid [70].
[126] Companies Act 1993 (NZ), s 2.
[127] *Ruscoe* (n 124) [70]–[75].

In *Ruscoe*, the court was firm in holding that cryptocurrencies were property for the purposes of New Zealand law. Indeed, like Bryan J in *AA v Persons Unknown*, the court approved of the contents of the UKJT statement.[128] According to the court, there were heavy public policy reasons against ruling otherwise, because this would have unsatisfactory implications for 'New Zealand's law, including insolvency law, succession law, law of restitution, and commercial law'.[129]

In setting the stage up for the proposition that cryptocurrencies constituted a form of property, the court cited the Singapore case of *Quoine v B2C2*.[130] This case involved a claim for breach of trust, which could only succeed if the bitcoins in question were an asset that could form the subject matter of the trust. On the 'property' question, the Singapore Court of Appeal however declined to make an affirmative decision as to whether cryptocurrencies could constitute a form of property. Instead, Menon CJ commented that 'there may be much to commend the view that cryptocurrencies should be capable of assimilation in the general concepts of property… [however] there are questions as to the type of property that is involved'.[131] Despite the tentative nature of the proposition, it clearly gave judicial support for the argument that cryptocurrencies can constitute a form of property, and *Ruscoe* certainly latched on and further developed on this proposition.

The court in *Ruscoe*, in exploring the boundaries of the legal concept of "property", further discussed two New Zealand cases. The first of these was *Dixon v R*. There, the New Zealand Supreme Court held that a digital copy of a CCTV footage was 'property' in the context of section 2 of the Crimes Act 1961 seemed to endorse the view that computer data would meet the general definitions of property.[132] Indeed, the reason why the digital footage was not merely "information" in *Dixon* was because it could be identified, had a value, was capable of being transferred, and had a physical presence, albeit one that could not be detected by the means of unaided sensors.[133] The second was *Henderson v Walker*.[134] There, Thomas J held that in principle, a common law action in conversion was available with respect to certain conduct which had occurred in relation to computer data. The digital files were both excludable and exhaustible, and were therefore capable of cognitive and manual control—both essential requirements for the tort of conversion.[135] As to excludability, this was because digital files had a material presence, which could physically alter the medium on which they are held. This physical presence, according to the court, allowed others to be excluded from the digital asset, either by physical control of the medium or by using password

[128] ibid [64]–[65].
[129] ibid [66].
[130] ibid [77]–[83].
[131] *Quoine* (n 101) [144].
[132] *Dixon v R* [2015] NZSC 147, [2016] 1 NZLR 678 [51].
[133] *Ruscoe* (n 124) [95]–[96].
[134] *Henderson v Walker* [2019] NZHC 2184.
[135] ibid [264], [266].

protection.[136] As to exhaustibility, the court held that digital files could be deleted or modified to render them useless or inaccessible.[137] In *Ruscoe*, Gendall J considered that the reasoning of Thomas J could reasonably be extended to wrongful interferences with cryptocurrencies or digital assets, as any person who had gained unauthorised access to the private key attached to cryptocurrencies and used them 'would permanently deprive the proper possessor of the [cryptocurrencies] of that property and its value".[138] On the basis of these two cases, Gendall J was therefore able to reach the view that the proposition that information is not 'property' did not apply to where digital assets were concerned. [139]

What, then, might be the appropriate threshold test to determine whether something constituted property within New Zealand? Gendall J ruled that the *Ainsworth* test ought to apply and applied Lord Wilberforce's four criteria to the cryptocurrencies in issue.

First, the asset had to be definable. In other words, the asset must be capable of being isolated from other assets, whether of the same or of other types and identified. Gendall J held that this was satisfied for cryptocurrencies. This was because 'computer-readable strings of characters recorded on networks of computers established for the purpose of recording those strings… [were] sufficiently distinct to be allocated to a particular accountholder on the network'.[140] The cryptocurrencies involved in the present case contained a public key, which was responsible for allocating each string to a unique user. The working of the system, according to Gendall J, was that 'the distribution of the data across a large network of computers, when combined with cryptography that prevents individual networks from altering historical data over the network, assists in giving that data stability'.[141] Thus, viewed as a whole, cryptocurrencies were certainly definable. Furthermore, the public key allocated to a cryptocurrency can be viewed as more identifiable than some asserted rights. There is therefore a compelling reason to accept that cryptocurrencies would be able to fulfil the first limb of the *Ainsworth* test.

The second requirement of *Ainsworth* is that the asset needs to be identifiable by third parties. According to Gendall J, 'the unique strings of data recording the creation and dealings with cryptocurrency are always allocated via the public key to a particular accountholder connected to the system', and in the context of cryptocurrencies:

> [t]he degree of control necessary is achieved… by the computer software allocating to each public key a second set of data made available only to the holder of the account (the private key) and requiring the

[136] ibid [265].
[137] ibid [266].
[138] *Ruscoe* (n 124) [93].
[139] ibid [98].
[140] ibid [105].
[141] ibid.

> combination of the two sets of data in order to record a transfer of the cryptocurrency attached from one public key to another.[142]

These features therefore prohibit involuntary transfers and the ability to transfer the cryptocurrency data twice.[143] In this regard, the second limb of *Ainsworth* is likely satisfied.

The third requirement of *Ainsworth* is that the right must be capable of assumption by third parties. Gendall J viewed that cryptocurrency met this requirement, and the fact that they were the subject of active trading markets furthered such an argument.[144]

The fourth requirement of *Ainsworth* is that the thing in question must have some degree of permanence or stability. Gendall J opined that the 'blockchain methodology which cryptocurrency systems deploy… greatly assist in giving stability to cryptocoins', and that '[t]he entire life history of a cryptocoin is available in the public recordkeeping of the blockchain'.[145] Indeed, a particular cryptocoin is in 'existence and stable until it is spent through the use of the private key, which may never happen [as] standard cryptocurrency systems do not provide for the arbitrary cancellation of coins'.[146] Viewed thus, cryptocurrencies are likely to fulfil the fourth limb of *Ainsworth* as well.

It remains to add that the public policy argument that 'some types of cryptocurrencies are used by criminals for the transmission of funds across borders and as a means of laundering the proceeds of past criminal activity' was viewed by Gendall J as an unpersuasive argument against recognising cryptocurrencies as property, as such issues were not unique to cryptocurrencies, and the increasing use by the traditional banking sector of cryptocurrencies was indicative of a need to recognise such assets as property to spur commercial development.[147]

E. AUSTRALIA

The position in Australia supports the proposition that digital assets are indeed property. In *Hauge v Cordiner (No 2)*, the New South Wales District Court approved the claimant's cryptocurrency investment reserves (which were in Bitcoin) as security for costs.[148] Whilst this was opposed by the defendant because cryptocurrencies were a highly unstable form of investment,[149] Gibson DCJ contended that cryptocurrencies, although 'volatile', were 'a recognized form of

[142] ibid [109]–[112].
[143] ibid [113].
[144] ibid [114]–[116].
[145] ibid [118].
[146] ibid.
[147] ibid [129]–[130].
[148] *Hauge v Cordiner (No 2)* [2020] NSWDC 23.
[149] ibid [30].

investment'.[150] He cited *Noicos v Dawson* in support of this argument.[151] In this case, White J noted that although the applicants for the freezing orders were cryptocurrency investment dealers, they were nonetheless considered to be able to offer an undertaking as to damages in relation to injunctive relief.

In all, therefore, common law jurisdictions are beginning to recognise cryptocurrencies as a credible source of value, and there has been a subtle push towards the position that cryptocurrencies—and other digital assets—are indeed property.

F. Singapore

Having conducted an overview of the law in most common law jurisdictions, we are left with one overhanging question. *Prima facie*, it appears that most common law jurisdictions are open towards recognizing cryptocurrencies and NFTs as a form of property, but the route that courts have taken towards that conclusion diverge. Insofar as the *Ainsworth* test (which has been adopted by the English and New Zealand courts) provides a solution, its appropriateness remains debatable. This article argues that the recent Singapore High Court case of *Janesh s/o Rajukumar v Unknown Person* in the Singapore High Court provides a timely development in this flourishing area of the law.[152] The ruling of this case is significant, as it marks the first instance in Asia where a court has explicitly recognised an NFT as a form of legal property and digital assets with proprietary rights attached to them.

In *Janesh*, the claimant was the proud owner of an NFT known as the Bored Ape Yacht Club ID #2162 (hereinafter 'Bored Ape NFT'). The claimant acquired the NFT when he purchased it for 15.99 ETH on Opensea, an online NFT marketplace, on 6 August 2021. He was a regular user of NFTfi, a community platform functioning as an NFT-collateralised cryptocurrency lending marketplace. One NFT he often used as collateral was said Bored Ape NFT due to its rarity and value.[153] Whenever he used the NFT as collateral, the claimant was careful to specify that: (a) the Bored Ape NFT would be transferred to NFTfi's escrow account until full repayment of the loan was effected; (b) in the event that the claimant was unable to make full repayment of the loan on time, he would inform the lender who should provide reasonable extensions of time for repayment; (c) at no point should the lender use the 'foreclose' option of NFTfi's Smart Program on the Bored Ape NFT without first granting the claimant reasonable opportunities to make full repayment of the loan and retrieve the Bored Ape NFT from the escrow account; and (d) at no point would the lender obtain ownership, nor any right to sell or dispose of the Bored Ape NFT.[154] The lender could only, at best, hold on to the Bored Ape NFT, pending repayment of the loan.[155]

[150] ibid [31].
[151] *Noicos v Dawson* [2019] FCA 2197.
[152] *Janesh* (n 75).
[153] ibid [11].
[154] ibid.
[155] ibid.

Things went well for the claimant, until he reached out to the defendant sometime around January 2022 for a loan for 45 ETH. This was for a period of 90 days, with interest payable at 33% per annum. This loan was eventually repaid.[156] In March 2022, the defendant offered the claimant another loan, for another 150,000 DAI (an alternate form of cryptocurrency). This was for 30 days with interest payable at 45% per annum.[157] In April 2022, the claimant told the defendant that he needed some more time to repay the loan, which the defendant agreed. Thereafter, the claimant informed the defendant two days later that he had reached out to another user to repay the outstanding amount, and the defendant thereafter agreed to the new refinancing loan arrangement.[158] However, the defendant then changed his mind and contended that he would not accept any refinancing loan, which led him to threaten the exercise of the 'foreclose' option on the NFT.[159] The claimant thereafter found the NFT for sale on Opensea, and sought a proprietary injunction against the defendant to prohibit the defendant from dealing in any way with the NFT.[160]

The nub of the case was therefore the question of whether NFTs could give rise to proprietary rights. There, the court noted that NFTs, when distilled to 'the base technology, are not just mere information, but rather, data encoded in a certain manner and securely stored on the blockchain ledger', and to characterise NFTs as mere information 'would ignore the unique relationship between the encoded data and the blockchain system which enables the transfer of this encoded data from one user to another in a secure, and verifiable fashion'.[161] The real objection to treating information as property, according to the court, depended on the 'function it is used for rather than the plain fact it is information'.[162] For NFTs, the information concerned was 'a string of computer code that does not provide any knowledge to those who have read it', which instead 'provides instructions to the computer under a system whereby the "owner" of the NFT has exclusive control over its transfer from his wallet to any other wallet'.[163] The court also observed that there had been growing support for 'deploying property concepts to protect digital assets' and cited various cases such as *Money-4 Ltd* for this proposition.[164]

The court also canvassed *AA v Persons Unknown*.[165] Whilst the English and New Zealand courts have accepted the *Ainsworth* criteria as the *prima facie* test for whether something may constitute property and approved of the UKJT statement to the effect that Fry LJ did not limit the scope of what could constitute property in *Colonial Bank v Whinney*, the court in *Janesh* instead cited Low's commentary in

[156] ibid [16].
[157] ibid [17].
[158] ibid [19].
[159] ibid [19]–[21].
[160] ibid [25].
[161] ibid [58].
[162] ibid.
[163] ibid.
[164] ibid [59].
[165] ibid [60]–[62].

criticism of the UKJT statement.[166] Indeed, the UKJT statement, heavily relied on by Bryan J in *AA* for the proposition that crypto assets could still constitute property, was viewed by Low as containing a lacuna.[167] This was because of the following portion of the statement:

> Thus, to the extent that the House of Lords [in *Colonial Bank*] agreed with Fry LJ on the classification issue, that seems to have been on the basis that the class of things in action could be extended to all intangible property (i.e. it was a residual class of all things not in possession) rather than on the basis that the class of intangible things property should be restricted to rights that could be claimed or enforced by action.[168]

Low viewed the preceding portion of the UKJT statement as an 'oxymoron', as the only way the statement could have 'ma[de] any sense [was] by disassociating the category of things in action in its first half from the narrow view of the enforceability of rights in the sense of Hohfeldian claim rights in its second'.[169] The Court in *Janesh* succinctly summarises Low's dissent in the following form. According to the UKJT, the House of Lords in *Colonial Bank* agreed with Fry LJ on the classification issue, seemingly on the view that the class of chose in action could be extended to all intangible property ('View A'), and not the view that the class of intangible property should be restricted to rights that could be claimed or enforced by action ('View B').[170] This was, however, paradoxical. This is because if a 'chose in action' (as expressed in View A) was referred to in the traditional sense (that is, rights or claims enforceable by action), this would render View A the equivalent of View B.[171] This, however, was not what was expressed in the UKJT's statement (as is reproduced above). Indeed, the use of the word 'rather' in the statement seems to suggest that View A and View B stand for contrasting positions. In this regard, according to Low, the only way out of this rabbit hole was to read the 'chose of action' referred to in View A as not referring to rights that could be claimed or enforced by action. The natural inference of this play on logic was to render View A as going beyond 'mere rights enforceable by action'.[172] According to the court in *Janesh*, such a position might accord with the historical roots of property law in the round.

The reason for this conclusion is that in the past, the term 'chose in action' initially encompassed all rights which were enforceable by action, which included,

[166] *Janesh* (n 75) [63]; Kelvin FK Low, 'Bitcoins as Property: Welcome Clarity?' (2020) 136 Law Quarterly Review 345, 347–348.
[167] Low (n 166) 347–348.
[168] UK Jurisdiction Taskforce (n 105) para 76.
[169] Low (n 166) 348.
[170] *Janesh* (n 75) [65].
[171] *Janesh* (n 75) [66].
[172] ibid.

amongst other things, rights to a debt, or action on a contract.[173] However, choses in action were later extended to cover 'documents such as bonds, which evidenced or proved the existence of such rights of action'.[174] Subsequently, the ambit of what a chose in action constituted expanded, and the term consequently included instruments such as bills of lading, and even policies of insurance. In accepting policies of insurance—which in substance, were documents to title of what 'was essentially an incorporeal right to property'—as falling within this category, the stage was then set for the expansion of 'choses in action' to include other things which were 'even more obviously property of an incorporeal type'.[175] This included things such as patents and copyright.[176] In this regard, adopting an expansive interpretation of View A would likely accord with the historical roots of property law, and might therefore be preferable.

Notwithstanding this, the court recognised that the meaning of terms such as 'choses in action' or 'intangible property'—as is commonly used in judicial discourse—might not be entirely clear cut. Adopting Low's perspective (in expanding View A) would lead us to the position that both terms are co-extensive, which would open the gateway for the application of Fry LJ's '*tertium quid*' in answering the question of whether crypto assets were indeed property under the common law. The court noted that there was support for such a view. Indeed, insofar as the objection exists that crypto assets cannot constitute property because they are neither tangibles nor choses in action, there is authority in *Ruscoe* to suggest that this objection is but a red herring.[177] The court in *Janesh* observed that the most that this objection could reach was to say that cryptocurrencies would have to be instead classified as choses in action.[178] Moreover, it would be paradoxical for the law to acknowledges a simple debt as qualifying for proprietary status, but to deny the same status to crypto assets, when the latter has more proprietary features than the former.[179] Hence, there remains an overhanging question amongst courts as to the exact status of crypto assets, alongside the trend the law should develop towards.

The court in *Janesh* further acknowledged that the ongoing uncertainty surrounding this debate may have played a role in the widespread use of the *Ainsworth* criteria in determining whether crypto assets should be considered property. In most cases involving litigation on such assets, such as *Ruscoe*, there has remained a trend of counsel omitting to push the point that the common law 'only recognised two classes of personal property', with the consequence that crypto assets did not fall into either class.[180] The lack of dissent by counsel against the doctrinal

[173] Michael Bridge, *Personal Property Law* (4th edn, Oxford University Press 2015) 229.
[174] WS Holdsworth, 'The History of the Treatment of "Choses" in Action by the Common Law' (1920) 33 Harvard Law Review 997.
[175] ibid 998.
[176] *Janesh* (n 75) [64].
[177] *Ruscoe* (n 124) [123].
[178] *Janesh* (n 75) [67].
[179] *Ruscoe* (n 124) [124].
[180] *Janesh* (n 75) [68].

foundations of property law as it relates to crypto assets has therefore led to courts adopting *Ainsworth* as a useful framework in judging this question during the interim.[181]

However, the *Ainsworth* test is not without its flaws, as acknowledged by the court in *Janesh*. Low has argued that the *Ainsworth* test 'mixes up the various meanings which common lawyers give to the word property', as what may be the subject matter of a trust, or the subject matter of a proprietary injunction, is much wider than what the *Ainsworth* test encompasses.[182] In other words, Low suggests that the *Ainsworth* test is overly restrictive and may not be the most appropriate criterion in determining what ought to be considered property under the law, and this view was tentatively acknowledged by the court in *Janesh*.[183] Despite these acknowledged flaws, the court, recognising the limitations of the present case and the tendency of common law courts to apply the *Ainsworth* test without question, then proceeded to use the *Ainsworth* test to determine whether NFTs constituted property, albeit with some hesitation owing to the possibility that a different conclusion could have been reached if more fuller submissions had been presented.[184]

On the first *Ainsworth* criterion, that is, definability, the court in *Janesh* held that this was easily fulfilled in the context of a NFT because 'metadata is central to an NFT, which distinguishes one NFT from another'.[185] On the second criterion, this being that the 'asset must have an owner being capable of being recognized by third parties', the court held that 'where NFTs are concerned, the presumptive owner would be whoever controls the wallet which is linked to the NFT', and thus excludability is achieved because one cannot deal with the NFT 'without the owner's private key'.[186] On the third criterion, that the 'right must be capable of assumption by third parties', the court held that the 'nature of the blockchain technology gives the owner the exclusive ability to transfer the NFT to another party, which underscores the "right" of the owner'; and that such NFTs are 'clearly the subject of active trading in the markets'.[187] On the final requirement, that there must be 'some degree of permanence or stability', the court considered that the 'NFT concerned has as much permanence and stability as money in bank accounts, which nowadays exist in the form of ledger entries and not cold hard cash'.[188]

Two lessons emerge in the wake of *Janesh*. First, it might be said that the utility of the *Ainsworth* test has finally been questioned by a common law court, and it will be interesting to see whether this test should continue holding water as the law develops. Second, it seems that NFTs are clearly able to satisfy the *Ainsworth*

[181] ibid.
[182] Low (n 166) 348–349
[183] *Janesh* (n 75) [69].
[184] ibid.
[185] ibid.
[186] ibid [70].
[187] ibid [71].
[188] ibid [72].

criteria, and this analysis will likely be relied upon by future courts when deciding the question of whether NFTs (and other digital assets) constitute property.

G. A PRELIMINARY CONCLUSION

The cases discussed above show that common law courts have also found themselves in a quandary. In the absence of express policy guidance, the *Ainsworth* test has been forcibly applied to address the domain of digital assets. Although helpful as a starting point, the *Ainsworth* criteria cease to hold weight when plunged into the murky depths of edge cases as might be common in digital assets. *Janesh*, however, suggests that there might indeed be a case for the development of another class of property beyond *Colonial Bank*'s antiquated bifurcation. Moreover, the Hohfeldian bundle of rights theory and its associated policy-based reasoning appears to be gaining ground within the juridical discourse, with courts recognising the potential implications that digital assets could have on wider society. In Section IV, this article will argue that the proper way forward is not the *Ainsworth* test, but through the proposal raised by the Law Commission, subject to certain tweaks.

IV. THE WAY FORWARD

As Low argues, the problem with the *Ainsworth* criteria is that the test 'mixes up the various meanings by which common lawyers use the term "property"'.[189] What qualifies as property in one context may not qualify as property in another. For example, Low helpfully illustrates that in *Ainsworth*, the criterion was used to deny proprietary status of an *in rem* right a 'deserted wife's right to absolve the bank of liability'.[190] In *B2C2*, the question at hand was whether 'cryptoassets were sufficiently property so as to be the subject matter of a trust'; but the use of property in this case was clearly different, because '*in personam* contractual rights may also be held on trust'.[191] Likewise, in *AA v Persons Unknown*, the proprietary injunctions were actually '*in personam* debt claims against a bank' at common law.[192]

The *Ainsworth* test is therefore rendered substantively hollow, and *Janesh* underscores the need to develop a new test for property that is suitable in the context of cryptocurrencies and NFTs. This section proceeds on this basis by examining the literature surrounding the present state of the law and suggests a way forward out of the current uncertainty.

Most academics have expressed a general intuition that a property rule should apply, even though the exact nature of crypto assets remains ambiguous. According to Fox, the subsisting property law framework can and should apply to

[189] Low (n 166) 349.
[190] ibid.
[191] ibid.
[192] Ibid.

crypto tokens, by segmenting crypto tokens as a special subset of intangible assets.[193] Even though a transaction might not be reversible on the blockchain system, traditional property principles should apply to allow tokens which were stolen or fraudulently transferred to be recovered, even if the blockchain system might not indicate whether said transaction is otherwise lawful.[194] Ng backs this up, arguing that in the context of theft, 'there is every reason to characterize the issue as proprietary'.[195] A property principle would most certainly serve as a steady hand to guide the law forward in this area, though one may question if *Ainsworth* should be the chosen one.

Notwithstanding, various scholars have expressed caution against recognizing crypto assets as property. Hewitt rightly points out that there remains the risk of 'blanket liens'— according to her, should banks gain an interest in all the proprietary rights held by a business, the moment Bitcoin is transferred to said business, the lien would then apply automatically, hence hindering liquidity.[196] But although this might create problems in relation to insolvency law, Sarra and Gullifer argue that Bitcoin should still be viewed as property notwithstanding the underlying difficulties, for the very reason that a crypto asset is an asset which has value.[197]

The fundamental question is therefore as follows: what exactly is property? Babie, Brown, Giancaspro, and Catterwell address this question accurately. Citing Ziff, they argue that the question might be answered in a bifurcated manner.[198] The first consists of an 'attributes approach', which mandates a court to locate an 'external indicator' that property does exist in the item in consideration by attempting to draw analogies between the novel case at hand and previously decided cases.[199] Such an approach, however, assumes that property as a static concept, an assumption which sits uneasily with technological developments. The better view is Ziff's 'functional approach'. According to Ziff, a judge must always remember that property is about a relationship consisting of the legal rights of use, excludability, and alienability.[200] The nub of the inquiry should instead focus on whether the relevant relationship exists at that point in time in respect of the thing or asset

[193] David Fox, 'Cryptocurrencies in the Common Law of Property' in David Fox and Sarah Green (eds), *Cryptocurrencies in Public and Private Law* (Oxford University Press 2019).
[194] ibid.
[195] Michael Ng, 'Choice of Law for Property Issues Regarding Bitcoin Under English Law', (2019) 15 Journal of Private international Law 315, 322.
[196] Evan Hewitt, 'Bringing Continuity to Cryptocurrency: Commercial Law as a Guide to the Asset Categorization of Bitcoin' (2016) 39 Seattle University Law Review 619, 629–630.
[197] Janis Sarra and Louise Gullifer, 'Crypto-claimants and Bitcoin Bankruptcy: Challenges for Recognition and Realization' (2019) 28 International Insolvency Review 242, 251.
[198] Paul Babie and others, 'Cryptocurrency and the Property Question' (*Faculty of Law Blogs: University of Oxford*, 12 May 2020) <https://blogs.law.ox.ac.uk/research-and-subject-groups/property-law/blog/2020/05/cryptocurrency-and-property-question> accessed 19 March 2023. See also Bruce Ziff, *Principles of Property Law* (7th edn, Carswell 2018).
[199] Babie and others (n 198).
[200] ibid.

in question. In the words of Ziff, this involves the consideration of how 'property, as a tool of social life, should be used'.[201]

This suggestion brings us full circle back to the Law Commission's proposal in Section II. There is a case for a third category of property, termed 'data objects' (as the Law Commission calls it). This third category of 'data objects', diverging from the Law Commission's proposal, should be defined by the following criteria: (a) it is composed of data represented in computer code; (b) it exists independently of persons and exists independently of the legal system; and (c) it is rivalrous. Such a definition incorporates digital assets into a proper Hohfeldian model, and correctly recognises the relationship that digital assets enjoy with society at large. There are various entry points for further research in this regard. Scholars should look towards how this third category might be expanded to accommodate more digital assets. This will allow other digital assets, such as digital files or domain names to be properly covered. Next, scholars might consider looking into how the tort of conversion might apply beyond that of crypto tokens, particularly given the fact that courts in other jurisdictions have held that digital assets can indeed be the subject of a conversion claim. Finally, scholars should investigate the doctrines of tracing and following. It is argued that the doctrine of following is the proper approach in this area, but the question remains as to whether, and if so how, the innocent purchaser defence might operate in this context.

V. Conclusion

In Section II, this article has evaluated the Law Commission's proposal for a third category of property. It has argued that the Law Commission's current proposal could be made more nuanced. It is inapplicable to digital assets other than cryptocurrency, legal uncertainty continues remains in relation to such assets, particularly in the context of cloud storage and other intangibles. Further, this article has argued that the Law Commission's criteria for 'data objects'—particularly its definition of data— and associated legal remedies could be further reworked. To build on the Law Commission's proposal, Section III of this article has explored how common law jurisdictions have treated digital assets in the context of the law of property, particularly through zooming into the policy set-up and the juridical technological discourse that has occurred to date. The conclusion, in Section IV, is that the Law Commission has presented a commendable proposal, though some tweaks are needed, particularly in the context of the test for 'data objects' and its associated remedies.

This paper proposes that the third category of property should be defined by the three-pronged test as set out earlier, though tweaked in terms of the type of data concerned (with the requirement being that it should be represented by computer code). Such a third category of property finds further support in cases across common law jurisdictions, with the recent case of *Janesh* calling into question

[201] ibid.

the future applicability of the *Ainsworth* test. Indeed, developing the law in this direction, and away from *Ainsworth*, would ground the future development of digital assets firmly within the Hohfeldian 'bundle of rights' theory, thereby reorienting the law of property in accord with policy and reality.