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Lan Luh Luh* and Kelvin FK Low**

Abstract

This chapter explores the legal challenges posed by technological innovations. We argue that legal classifications are critical as they determine the legal principles applicable to issues arising from the use of such innovations and consequential ramifications. However, certain innovations, such as computer programs and cryptoassets, disrupt these classifications, making it difficult for existing laws to apply effectively. The chapter delves into how computer programs were classified as goods due to their physical distribution, masking their disruptive nature. Similarly, cryptoassets are debated for their classification within traditional legal frameworks of personal property and securities law. Our chapter emphasizes the difficulty of not only addressing these disruptions but also detecting them, as some innovations are either overhyped or understated. We call for a more nuanced approach to legal classification, particularly when facing disruptive technologies.

X.1 Introduction

Legal classifications matter. If a contract is classified as falling within a particular category, certain implied terms but not others follow. If a transaction is classified as falling within a particular regulated category, then certain regulations follow but not others. Sometimes, however, technological innovations, may disrupt a legal classificatory scheme. Where the said disruption is clear and uncontested, the solution is obvious: the law either needs to expand one of its existing categories or invent an entirely new one. What is less clear is how the law should address claimed disruptions that are more hype than real or actual disruptions that have flown under the radar of the law's classificatory processes. This chapter considers two such technological disruptions – the humble and now ubiquitous computer program and the much hyped yet largely if not wholly aspirational cryptoasset – and posits that difficult as it may be to address disruptions, it is even harder to detect them in the first place.

X.2 Computer Programs as Goods: Physical Media as Trojan Horse

Computers are today ubiquitous and inseparable from modern life. Modern humans have so taken to the utility that computers provide that most of us carry at least one on our body almost all the time in the form of the modern smartphone: "[a] mobile phone with computing features".[1] Indeed, "[m]any current smartphones are essentially compact personal computers".[2] We are so attached to these compact personal computers that John Roberts CJ in *Riley v California*[3] remarked that they "are now such a pervasive and insistent part of daily life that the proverbial visitor from Mars might conclude they were an important feature of human anatomy." Lest one dismiss this observation as hyperbole, research

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[1] Andrew Butterfield, Gerard Ekembe Ngondi, and Anne Kerr (eds), *A Dictionary of Computer Science*, 7th edn. Oxford: Oxford University Press, 2016.
[2] Ibid.
[3] 573 US 373 (2014), 385.

confirms our attachment to our smartphones[4] and some philosophers consider that they extend our mind.[5] Our attraction – some say addiction – to our computers stem from the programs that they run:[6]

> By itself hardware can do nothing. The really important part of the system is the software. Programs are the instructions or commands that tell the hardware what to do.

According to the *Oxford Dictionary of Computer Science*, a program is "[a] set of statements that (after translation from programming-language form into executable form—see compiler) can be executed by a computer in order to produce a desired behaviour from the computer."[7] For much the same reasons as those given by Moon a quarter century ago, this chapter refers to "computer programs" rather than "computer software": "The term 'software' is less precise and is ambiguous."[8] According to Scott Baker J, the trial judge in the influential *St Albans City and District Council v International Computers Ltd*, "[t]he program itself is an algorithm or formula."[9]

Prior to the advent of the Internet and in its early days when download speeds were limited, computer programs were distributed by way of physical media. As Scott Baker J observed in *St Albans*, "[programs are] of necessity contained in a physical medium. A program in machine readable form must be contained on a machine readable medium, such as paper cards, magnetic cards, magnetic tapes, discs, drums or magnetic bubbles."[10] Such computer programs were then installed by the end user on their own computers so that the programs can run and function as intended. This dependence on physical media for distribution concealed the disruptive nature of computer programs as a matter of contractual characterisation in early cases because the medium served as a Trojan horse for the courts to squeeze the square peg of computer programs into the round hole of the category of contracts that is the sale of goods. Thus, on appeal, Sir Iain Glidewell remarked:[11]

> In both the Sale of Goods Act 1979, s 61, and the Supply of Goods ands Services Act 1982, s 18, the definition of goods includes "all personal chattels other than things in action and money". Clearly, a disk is within this definition. Equally clearly, a program, of itself, is not.

The question was whether a disk carrying a defective program that was sold or hired so that the program did not achieve its intended purpose could be considered a defect in the disk that would attract liability under either s 14 of the Sale of Goods Act 1979 or s 9 of the Supply of Goods and Services Act 1982. Sir Iain Glidewell hazarded to suggest, by way of dicta, that it could. His Lordship's reasoning bears setting out in full:[12]

> Suppose I buy an instruction manual on the maintenance and repair of a particular make of car. The instructions are wrong in an important respect. Anybody who follows them is likely to cause serious damage to the engine of his car. In my view, the instructions are an integral part of the manual. The manual, including the instructions, whether in a book or a video cassette, would in my opinion be "goods" within the meaning of the

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[4] Cynthia A Hoffner, Sangmi Lee and Se Jung Park, '"I miss my mobile phone!": Self-expansion via mobile phone and responses to phone loss' (2016) 18 New Media & Society 2452.
[5] 5 David J Chalmers, 'Extended Cognition and Extended Consciousness' in Matteo Colombo, Elizabeth Irvine, and Mog Stapleton (eds), *Andy Clark and His Critics*, Oxford: Oxford University Press, 2019, p 9 at p 12.
[6] *St Albans City and District Council v International Computers Ltd* [1995] FSR 686 at 698 (Scott Baker J).
[7] Butterfield et al, *A Dictionary of Computer Science*, above n 1.
[8] Ken Moon, 'The nature of computer programs: tangible? goods? personal property? intellectual property?' (2009) 31 EIPR 396.
[9] *St Albans City and District Council*, above n 6, at 698.
[10] Ibid, at 698.
[11] *St Albans City and District Council v International Computers Ltd* [1996] 4 All ER 481 at 493 (Sir Iain Glidewell).
[12] Ibid, at 493.

> 1979 Act, and the defective instructions would result in a breach of the implied terms in s 14.
>
> If this is correct, I can see no logical reason why it should not also be correct in relation to a computer disk onto which a program designed and intended to instruct or enable a computer to achieve particular functions has been encoded. If the disk is sold or hired by the computer manufacturer, but the program is defective, in my opinion there would prima facie be a breach of the terms as to quality and fitness for purpose implied by the 1979 Act or the 1982 Act.

Sir Iain Glidewell then went on to suggest that, even where a computer program was not supplied on a physical medium – as was the case in *St Albans*[13] – the common law would imply a similar term into this sui generis contract. According to his Lordship, this was because the test for the implication of such a term would be satisfied.[14] A similar result was reached in New South Wales by the Supreme Court in *Gammasonics Institute for Medical Research Pty Ltd v Comrad Medical Systems Pty Ltd*,[15] a case that involved a direct download of a computer program, albeit Fullerton J did not find it necessary to consider the correctness of the trial judge's implication of terms at common law.

Sir Iain Glidewell's reasoning in *St Albans* has been questioned by Bridge. "Under the Sale of Goods Act, a book would certainly be regarded as goods but information or advice therein would probably be subject to a due care standard." [16] As Bridge observed, "the real question in *St Albans* was whether the supplier of software owes the due care obligation of the supplier of services or the strict obligations of the seller of goods."[17] This is not to say that Bridge is suggesting that the contract for the direct supply of computer programs must be pigeonholed as either a supply of goods or a supply of services. Rather, he is merely reminding us that the two mainstay categories of supply contracts – for goods and services respectively – attract significantly different standards of implied terms, with those for the supply of goods significantly stricter than those for the supply of services. It is arguable that such a strict standard is inappropriate for computer programs. Coding, it has been said, is akin to "writing *War and Peace* – but with no typos."[18] According to a leading text:[19]

> Industry average experience is about 1-25 errors per 1000 lines of code for delivered software.

As early as in 1983, the courts have sought direction from legislature. In *Toby Constructions Products Pty Ltd v Computa Bar (Sales) Pty Ltd*, Rogers J observed:[20]

> The questions arising here are obviously of considerable importance to the computer industry, and I think it is appropriate that those who attend to matters of law reform should consider whether or not legislative action is required to ensure that the matter is put beyond argument.

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[13] The process of transfer of the program in the case effectively mimics the modern direct download except that installation of the program was effected by vendor rather than purchaser. "The evidence is that, in relation to many of the program releases, an employee of ICL went to St Albans' premises where the computer was installed taking with him a disk on which the new program was encoded, and himself performed the exercise of transferring the program into the computer.": Ibid, at 493.
[14] Ibid, at 494 (Sir Iain Glidewell). See also, more recently, *Computer Associates UK Ltd v Software Incubator Ltd* [2018] EWCA Civ 518; [2018] Lloyd's Rep 613.
[15] [2010] NSWSC 267.
[16] MG Bridge, *The Sale of Goods*, 4th edn, Oxford: Oxford University Press, 2019, [2.24].
[17] Ibid, [2.24].
[18] Mark Minasi, *The Software* Conspiracy, New York: McGraw-Hill, 2000, p 27.
[19] Steve McConnell, *Code Complete*, 2nd edn, Redmond: Microsoft Press, 2004, p 521.
[20] [1983] 2 NSWLR 48 at 51.

Perhaps surprisingly, despite the ubiquity of modern computing, there does not appear to be a clear consensus as to how "sales" of computer programs should be accommodated by the law. The temptation to simply extend the definition of "goods" to artificially include computer programs can be seen in both the New Zealand and Australian reforms. Thus, amendments to the Sale of Goods Act 1908 (NZ) introduced in 2003 now defines "goods" in s 2(1)(c) of the amended Act as including, "to avoid doubt, computer software." Australia's 2010 reform of its consumer law likewise defines "goods" in its Australian Consumer Law to include "computer software". As Edelman J remarked in *Australian Competition and Consumer Commission v Valve Corporation (No 3)*, "[t]his extension avoided debate about whether executable bits of digital data might fit with the idea of thinghood which would otherwise be an essential requirement for a 'good'."[21] The problem with such artificial extensions are several. The Australian reform, for example, only applies to consumer transactions, leaving untouched the position of non-consumers. This mirrors the position of the UK Consumer Rights Act 2015, which achieves a similar result for consumers but by dealing separately with digital content, a category significantly wider than computer programs, in Chapter 3 entirely distinctly from goods in its Chapter 2. As such, in both Australia and the UK, the *St Albans* and *Gammasonics* question of whether similar terms will be implied into contracts supplying computer programs by way of direct downloads to non-consumers remains live, many decades on from *Toby Constructions Products*. The New Zealand reform has the benefit of bringing clarity to both consumer and non-consumer contracts for the supply of computer programs but "[w]hile such an extension would resolve any doubts as to whether the common law would imply similar terms as to quality as the Sale of Goods Act 1979 or the Supply of Goods and Services Act 1982, it could potentially create difficulties in application in relation to the property aspects of those legislation since a direct download does not entail a strict transfer per se but rather a process of copying."[22]

As Bridge et al observed:[23]

> The issue of whether software licences are goods or property is important for two different reasons. First, and more prominently in the literature and the case law, it is generally thought that it is inappropriate for the law to provide lesser protection to a licensee simply because the medium of delivery is different. Secondly, and this is less well appreciated, it is a matter of some importance for the law to determine the proprietary status of licences more generally.

Whilst there has been significant emphasis on the question of whether computer programs are goods, there has been less consideration of whether, even assuming they are goods, the contract is one of sale at all. A rare decision on precisely this point is that of Akenhead J in *London Borough of Southwark v IBM UK Ltd*.[24] Thus, although his Lordship was prepared to treat the computer programs as goods for the purposes of the Sale of Goods Act 1979 because they were supplied by way of CD,[25] he nevertheless concluded that this was not a sale of goods at all. As Akenhead J noted, s 2(1) of the Sale of Goods Act 1979 defines a contract of sale of goods as one "by which the seller transfers or agrees to transfer the property in goods to the buyer for a money consideration, called the price." Yet "there was here no 'transfer' of property in goods for the purposes of the 1979 Act."[26] Rather:[27]

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[21] [2016] FCA 196 at [137].
[22] Michael Bridge, Louise Gullifer, Kelvin Low and Gerard McMeel, *The Law of Personal Property*, 3rd edn, London: Sweet & Maxwell, 2022, [8-026].
[23] Ibid, [8-026].
[24] [2011] EWHC 549 (TCC).
[25] Ibid, [96]-[97].
[26] Ibid, [95].
[27] Ibid, [95].

> What was provided by IBM was in effect a licence from Orchard to Southwark to use the software and, therefore, there is no transfer of property.

If correct, and the reasoning is impeccable since all computer program "sales" are effectively mere licences, then New Zealand's amendment of its Sale of Goods Act 1908 (NZ) would have been for nought. "Goods" may now capture "computer software" but their "sales" are nonetheless not relevantly sales.

Saidov and Green have suggested that such software contracts actually comprise two phenomena rather than one: an intellectual property transaction in the form of a licensing agreement and a goods transaction in the form of a sale:[28]

> Take, for example, the typical case of an individual who buys, say, a database package. Such a buyer *purchases* the program copy: possession of, and title to, that copy are transferred to him or her. In relation to that copy, the buyer has the superior possessory and proprietary right. He or she can exclude all others (including the seller) from that copy. Of course, he or she cannot reproduce, copy or distribute that program without permission from the seller; nor can he or she otherwise exploit its originality or individuality for his or her own commercial gain. This latter limitation, however, does not affect the sales transaction that has nevertheless occurred in relation to the physical copy of the program. A similar argument could, after all, be applied to the purchaser of a book; under the sales contract, the buyer has the ultimate proprietary and possessory rights over that copy of the book, against both the seller of the copy and the owner of the copyright in it (should they be separate parties). The fact that he or she does not also acquire (under a normal sales contract) the IP rights in the content is not taken to suggest that the book has thereby not been sold to him or her.
>
> [Emphasis in original]

The problem with this analogy by Saidov and Green is quite simply that, as Lord Penrose explained in *Beta Computers (Europe) Ltd v Adobe Systems (Europe) Ltd*:[29]

> The analogy with a printed book is, in my opinion, false. Even if one considered the wider field of printed material, there would be no true analogy. A book typically is intended to be read, not copied, as a way of enjoying or using the object. …there are no limitations on accessing the information which affect readers generally and which are inherent in the medium. There are no mechanisms which predetermine access to the written material.

By contrast, as Napier explained:[30]

> Every time a computer program is used (*i.e.* when it is run in a machine) copying has to take place. The program has to be copied internally by the machine. Such copying is, of course, a "restricted act" – something over which the copyright holder in principle has control. This is quite unlike the situation when, for example, a book is read and an individual, instead of a machine, thereby processes information derived from a copyright work. Whatever the physiological arguments, no legally relevant copying takes place as a consequence of reading and comprehension.

Lord Penrose was therefore forced to the conclusion that "the only acceptable view is that the supply of proprietary software for a price is a contract sui generis which may involve elements of nominate

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[28] Djakhongir Saidov and Sarah Green, 'Software as Goods' [2007] JBL 161 at 174-175.
[29] 1996 SLT 604 at 609.
[30] BW Napier, 'The Future of Information Technology Law' (1992) 51 CLJ 46 at 58.

contracts such as sale, but would be inadequately understood if expressed wholly in terms of any of the nominate contracts."[31]

This conclusion challenges the view that the law of contract, like the law of property, attracts the *numerus clausus* principle so that there is a finite number of types of contract into which any contract must "fit".[32] If Lord Penrose is correct, the better view may be that most contracts will fit within a particular nominate type but exceptionally, a disruptive innovation may yet force the law to come to terms with an entirely different type of contract altogether. If at all it is possible to squeeze the sale of computer programs into the category of sale, it would have to be on the basis of the sale of a licence rather than a sale of the program itself.[33] After all, a program is simply information and there is no property in information.[34] It may be true that it has utility and thus value but the same can be said of much information that does not take the form of an algorithm more generally or a computer program more specifically. However, it bears remembering that "[j]ust as all that glitters is not gold, not everything that is valuable is the subject of a property right; it may be protected by contract only or some legal right other than property or even be completely unprotected as a matter of law."[35]

That computers and computer programs have had a revolutionary impact on modern life is indisputable.[36] Yet despite having had decades to process its impact, the law in many jurisdictions still falls short in its adaptation to this important new category of contracts because its disruptive impact was long hidden in its early medium of distribution. Because they were often distributed through chattels, goods served as the Trojan horse for sloppy thinking. The same may well be true of narratives, music, and movies.[37] Such sloppy analogies call to mind the 1924 satirical short story by the Chinese author 胡適 (Hu Shih), *差不多先生傳 The Life of Mr Close-Enough*.[38] After living a life settling for that which was close enough, on his deathbed, he fell to be treated by the close enough Dr Wong the veterinarian rather than Dr Wong the doctor. As the story teaches us, close enough is often not good enough.

X.3 Do Cryptoassets Break Our Old Wineskins?

By way of contrast to the hidden disruption that computer programs posed, cryptoassets burst into our collective imagination as a revolutionary innovation even more powerful than the Internet. Yet, almost 16 years on, this revolutionary potential remains as yet unmet unless one is searching for disrupting fraud[39] and illicit finance.[40] This relative lack of traction is sometimes compared to the Internet but the

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[31] *Beta Computers (Europe) Ltd*, above n 29, 609.
[32] James Penner, 'The Nature of Equitable Property, the Express Trust and the *Numerus Clausus*' (2025) J Eq (forthcoming), citing the unpublished works of Nick Sage and Irina Sakharova.
[33] Bridge et al, *The Law of Personal Property*, above n 22, [8-029].
[34] *Boardman v Phipps* [1967] 2 AC 46 at 127-128 (Lord Upjohn); *Oxford v Moss* (1979) 68 Cr App R 183.
[35] Kelvin FK Low and David Llewelyn, 'Digital Files as Property in the New Zealand Supreme Court: Innovation or Confusion?' (2016) 132 LQR 394 at 396.
[36] See, eg, Jospeh Migga Kizza (ed), *Social and Ethical Effects of the Computer Revolution*, Jefferson: McFarland, 1996; Daniel E Sichel, *The Computer Revolution: An Economic Perspective*, Washington: Brookings Institution Press, 1997.
[37] Kelvin FK Low, 'The Emperor's New Art: Cryptomania, Art & Property' [2022] Conv 378 at 395-398. Cf. Benjamin Hayward, 'What's in a Name? Software, Digital Products, and the Sale of Goods' (2016) 38 Syd L Rev 441.
[38] An English translation of the story is available courtesy of the University of Southern California's US-China Institute at https://china.usc.edu/sites/default/files/forums/The%20Life%20of%20Mr.pdf.
[39] FBI Internet Crime Complaint Center, 'Cryptocurrency Fraud Report 2023', 3 June 2024, at https://www.ic3.gov/Media/PDF/AnnualReport/2023_IC3CryptocurrencyReport.pdf.
[40] United Nations Office on Drugs and Crime, 'Casinos, Money Laundering, Underground Banking, and Transnational Organized Crime in East and Southeast Asia: A Hidden, Accelerating Threat', January 2024, at https://www.unodc.org/roseap/uploads/documents/Publications/2024/Casino_Underground_Banking_Report_2024.pdf.

comparison is inapt.[41] Usage of the Internet actually grew as quickly as the infrastructure permitted. It was thus held back by lack of infrastructure, low transmission speeds and high cost in the early years. Cryptoassets, and the underlying technology of the blockchain, piggyback this readymade infrastructure. Much of the novelty of cryptoassets and the blockchain – such as the use of private key or asymmetric cryptography that dates to the 1970s[42] - entails a repackaging of old technology and deployment to "solve" problems that have been oversimplified.[43] This results in some ironic results, such as the vast majority of transactions in an ecosystem designed to be decentralised and disintermediated occurring in the centralised books of large intermediaries.[44] The most interesting news out of the world of cryptoassets appears to be news about number go up[45] (or down). The more interesting question for lawyers lie in the two battles over classification in the common law world. Crypto-enthusiasts are keen to promote the idea that cryptoassets are a new asset class that mandates especial treatment by the law because they do not fit within existing classifications. In short, cryptoassets are new wine that break our old wineskins so it is imperative that we fashion new wineskins to better exploit this innovation. But is this true?

The two controversies, raging on opposite sides of the Atlantic, are respectively over (i) whether cryptoassets fit within the traditional English classification of personal property into things in possession and things in action; and (ii) whether almost all cryptoassets are likely to captured by the wide definition of securities under American law. Their recent fortunes, however, could not appear further apart. Crypto-enthusiasts in England, supported by the UK Jurisdiction Taskforce[46] and the Law Commission of England and Wales,[47] have loudly trumpeted the case for a category of third things (or *tertium quid*), supposedly on account of the unique characteristics of cryptoassets, culminating in the controversial Property (Digital Assets etc) Bill being tabled in Parliament. In the United States, like-minded enthusiasts are waging war on the Securities and Exchange Commission's (SEC's) efforts to regulate cryptoassets, arguing that cryptoassets' involvement in the capital markets should be treated differently from that by traditional securities and sui generis law should be enacted.[48]

X.3.1 Third Things or Sixth Sense? I See Ideational Objects?

Before we can explore what types of things cryptoassets are *within* a legal system, one must first consider whether they are things at all *outside* of it. The classical explanation of the breakthrough made by Satoshi Nakamoto when he invented Bitcoin – the original cryptoasset – is that in doing so, he solved the double spending problem associated with digital files. This is because the same digital file can be sent to multiple recipients, or even simply sent to a recipient but the original is kept by the transferor. In other words, a digital file is not rivalrous. By "solving" the problem, Satoshi Nakamoto fabricates digital rivalrousness. It is questionable if he indeed does so since a fork of a blockchain allocates the same cryptoasset to multiple users.[49] This can be problematic for hard forks but the crypto-community

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[41] Kelvin FK Low, 'Confronting Cryptomania: Can Equity Tame the Blockchain?' (2020) 14 J Eq 240 at 242-243.
[42] Whitfield Diffie and Martin E Hellman, 'New Directions in Cryptography' (1976) 22 IEEE Transactions on Information Theory 644. Cf William Stallings, *Cryptography and Network Security: Principles and Practice*, 7th edn, Boston: Pearson, 2017 at p 68.
[43] Kelvin FK Low and Eliza Mik, 'Pause the Blockchain Legal Revolution', (2020) 69 ICLQ 135; Kelvin FK Low, Edmund Schuster, and Wai Yee Wan, 'The Company and Blockchain Technology' in Christian Witting and Martin Petrin (eds), *Research Handbook on Corporate Liability*, Northampton: Edward Elgar, 2023, p 447.
[44] Matteo Solinas, 'Bitcoiners in Wonderland: Lessons from the Cheshire Cat' [2019] LMCLQ 433 at 447.
[45] Cf Zeke Faux, *Number Go Up: Inside Crypto's Wild Rise and Staggering* Fall, New York: Currency, 2023.
[46] UK Jurisdiction Taskforce, *Legal Statement on Cryptoassets and Smart Contracts* (2019).
[47] Law Commission of England and Wales, *Digital Assets: Final Report* (Law Com 412, 2023).
[48] This has been Coinbase's position all along: see Chris Prentice, Michelle Price and Mike Scarcella, 'US SEC says no to new crypto rules; Coinbase asks court to review', Reuters, 16 December 2023, at https://www.reuters.com/technology/us-sec-denies-coinbase-petition-crypto-rulemaking-2023-12-15/.
[49] For which, see Low and Mik, 'Pause the Blockchain Legal Revolution', above n 43, 163. Although these inconsistencies eventually resolve themselves, temporarily some cryptoassets may find themselves effectively "duplicated".

avoids the problem by treating the forked asset as a new cryptoasset unto itself. Tellingly, if one wished, we could adopt the same strategy for simple digital files but we do not. Simply put, cryptoassets are only rivalrous because forks are conceptualised as *new* assets rather than *duplicates* – the debating equivalent of defining a problem away. Moreover, even apart from forks, cryptoassets are only prevented from replication by code and malfunctioning code can lead to one cryptoasset spawning many – most famously in the case of the Bitcoin overflow bug which resulted in an output larger than the input.[50] Both forks and bugs reveal a key problem with the conceptualisation of cryptoassets as inherently rivalrous. Rivalrousness is a binary concept – something either is rivalrousness or it is not. The state of being almost rivalrous is as absurd as that of being almost pregnant.

But there is another problem to the case for cryptoasset rivalrousness. Before we can address it though, we need to point out the elephant in the room. Cryptoassets are valuable as ledger entries, not as files. Both the file and the ledger entry may be *digital* but the similarities end there. Significantly, cryptoassets *can* be double spent but not in the same way as a digital file. A successful double spend attack, typically described as a 51% attack within the blockchain context,[51] entails an attacker spending "the same" token twice, but it does not result in a doubling of the ledger entries relating to said token. Such attacks entail an attacker successfully depriving the rightful owner of the said token by reorganising the ledger. This is of course an entirely different outcome to a double spending attack as traditionally conceived in respect of digital files, where the problem presents itself as both the transferor and the transferee possessing the same file. Realising this reveals the sleight of hand on the part of Satoshi Nakamoto when he "solves" the double spending problem – a problem associated with conceptualising digital files as property which transfer results in a copy, hence the doubling – by resorting to a digital ledger entry instead. But like a digital file, a digital ledger entry likewise requires a medium, which introduces a complication to the idea of a cryptoasset existing unto itself. While it may be true that, because of its decentralised nature, cryptoassets are independent of a single computing node, this is not the same as true independence from all nodes. Just as words on parchment cannot survive destruction of the parchment, ledger entries on thousands of nodes can likewise disappear through the destruction of those nodes. But the problem is not one of destruction per se; many property can be destroyed. The problem with the lack of independence of cryptoassets is that it can be destroyed through the entirely lawful actions of another. Just as words on a parchment can be blotted out by the owner of the parchment, so too the owners of the various nodes hosting the ledger entries can unilaterally decide to stop doing so. It may be difficult to conceive of a situation whereby every node deletes their copies of the relevant blockchain ledger (as the owner of each node is free to do) – especially in relation to the major cryptoassets such as Bitcoin and Ether – but this does not make it inconceivable. Indeed, given how many of the tens of thousands of cryptoassets that have been borne of the various bouts of cryptomania have fallen into disuse and become effectively moribund – it would be illogical to ignore this problem. Again – as with rivalrousness – near independence is not the same as independence.

It is thus difficult to escape the conclusion that "[t]he coin is just an ideational construct."[52] There is nothing wrong with ideational property. All intangible property, which today accounts for

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[50] See Kai Sedgwick, 'Bitcoin History Part 10: The 184 Billion BTC Bug', Bitcoin.com, 1 March 2019, at https://news.bitcoin.com/bitcoin-history-part-10-the-184-billion-btc-bug/.

[51] Cf. Angela Walch, 'Deconstructing "Decentralisation": Exploring the Core Claim of Crypto Systems' in Chris Brummer (ed), *Cryptoassets: Legal, Regulatory, and Monetary Perspectives*, Oxford: Oxford University Press, 2019, p 39 at pp 57-58. Note that the percentage of control required to reorganise ledger entries will depend on the particular consensus protocol. Ethereum, which relies on proof of stake as opposed to Bitcoin's proof of work, is susceptible to a 34% attack: Olga Kharif, 'Ethereum Centralization Debate Rages on After Much-Hyped Upgrade', Bloomberg, 23 September 2022, at https://www.bloomberg.com/news/articles/2022-09-23/ethereum-centralization-debate-rages-on-after-ballyhooed-crypto-upgrade.

[52] David Fox, 'Cryptocurrencies in the Common Law' in David Fox and Sarah Green (eds), *Cryptocurrencies in Public and Private Law*, Oxford: Oxford University Press, 2019, p 139 at [6.53].

much of the world's wealth, is essentially ideational. Unlike tangible property, which has a real and independent existence apart from belief, ideational property is, to borrow the expression from the historian Harari, an inter-subjective phenomenon.[53] Cryptoassets are interesting in that they sustain the inter-subjectivity through a socio-technical system but this in and of itself is of little interest to the law. The idea of copyright long predates formal legal protection of the same through the Statute of Anne 1710[54] but until such formal legal recognition, it was not property in law. This is because, as Crossley Vaines reminds us, "[c]hoses in possession are tangibles, choses in action intangibles: they are not rights over intangibles; the intangible thing or *res incoporalis* is the right itself."[55] The former are *in rem* rights because they entail *erga omnes* rights over a *res* that is separate from the legal rights; the latter are rights without *res*, the reification of which involves enabling separability from an original holder, *not* universal exgibility. This is clearest from a close study of the reification of the original thing in action, being the debt, a mere *in personam* right.[56] It does not mean, however, that all intangible property or things in action must take the form of *in personam* rights. Many forms of intangible property, such as intellectual property, take the form of abstract *erga omnes* rights. But in common with their *in personam* brethren, these *erga omnes* rights themselves form the *res* itself. In short, tangible property or things in possession are concerned with rights *over* things whereas intangible property or things in action are concerned with rights *as* things.

The real substantive questions therefore are whether or not the law ought to recognise these ideational constructs as property to facilitate end users having resort to legal recourse and how it ought to do so (ie what rights should it confer upon holders). These are interrelated questions but raise very different and difficult questions. The former arguably entails addressing policy concerns such as the environmental harm that some cryptoasset systems cause, the widespread use of cryptoassets for the commission of fraud and other illicit purposes, and their apparent lack of productive utility. Yet these concerns curiously go unaddressed in the Law Commission's *Final Report* despite the cataclysmic events within the industry in the period between the Law Commission's *Consultation Paper* and *Final Report*. 2022 In brief, the Terra stablecoin depegged shortly before the publication of the *Consultation Paper*, leading to a wave of bankruptcies within the industry among many stalwarts such as Three Arrows Capital, Celsius, and FTX, in circumstances subsequently shown to be rife with fraud and deception. Published in June 2023, a reader of the *Final Report* would find nary a mention of any of these scandals, which have been whitewashed from existence. The latter results in one of the most curiously drafted Bills of all time. Following what must be one of the most verbose consultations of all time,[57] the British people were bestowed a Bill that says almost nothing at all. As the joint response of the Commercial Bar Association and the Chancery Bar Association to the *Supplemental Consultation* pointed out:[58]

> The draft bill gives no guidance on how wide this definition of a 'thing' is: does it include an email address? What about an idea for a book? Is happiness a 'thing'? To

[53] Yuval Noah Harari, *Sapiens: A Brief History of Humankind*, New York: Harper, 2015, pp 116-118.
[54] Benedict Atkinson and Brian Fitzgerald, *A Short History of Copyright*, Cham: Springer, 2014, p 10.
[55] J Crossley Vaines, *Personal Property*, 4th edn, London: Butterworths, 1967, p 14.
[56] Kelvin FK Low, 'Cryptoassets and the Renaissance of the *Tertium Quid*?' in Chris Bevan (ed), p 463 at pp 471-472.
[57] The *Consultation Paper* is a massive 529 pages long (Law Commission of England and Wales, *Digital Assets: Consultation Paper* (CP 256, 2022)); the *Final Report* is 283 pages long (Law Commission, *Final Report*, above n 47); the *Short Consultation on Draft Clauses* that is 24 pages long (Law Commission of England and Wales, *Digital Assets as Personal Property: Short Consultation on Draft Clauses* (2024)); and the *Supplemental Report* is 70 pages long (Law Commission of England and Wales, *Digital Assets as Personal Property: Supplemental Report and Draft Bill* (Law Com 416, 2024)), for a total of 906 pages. This excludes the *Consultation Responses* (1,084 pages) and *Responses to Consultation on Draft Bill* (122 pages). All inclusive, the total page count for the entire project, excluding tables of contents, would be 2,112 pages in total.
[58] Law Commission of England and Wales, *Digital Assets as Personal Property: Responses to Consultation on Draft Bill* (2024), p 40.

> date the Courts have not considered it necessary to determine whether cryptocurrencies are 'things', or what that concept may mean, but the draft Bill could force the Courts to do so, creating disputes and litigation where currently there is none. After all, prima facie, all 'things' are capable of being the object of personal property rights under the draft Bill.

The response of the City of London Law Society is to similar effect.[59]

This lack of guidance was confirmed by Deputy High Court Judge Richard Farnhill in a decision rendered shortly after the Bill was introduced in Parliament:[60]

> Finally, even if Parliament were to act it might not address the issues that are said to be a concern. The Law Commission's draft Property (Digital Assets etc) Bill does not seek to say whether crypto-assets, or certain classes of them, are property. It simply clarifies that something can be property that is neither a chose in action nor a chose in possession. Assuming that Bill became law, it is not clear what the judge would be expected to do, given that Parliament would have spoken but would not have resolved the types of concerns that Professor Grower and Professor Stevens raise.

Although the High Court concludes that the cryptoasset in dispute was a third thing, the learned judge remained open to the idea that rights attached to it.[61] If so, then third thing categorisation served not so much as a necessary new category of things as the Law Commission suggests but as a category that enables a judge to pronounce property without having to articulate its precise contours in terms of legal rights. That can of worms can effectively be kicked down the road to a future court. The position of this handful of English trial courts and the recommendations of the Law Commission is not only contrary to English appellate precedent from the 19th,[62] 20th,[63] and 21st[64] centuries, it is also out of step with the trajectory of other common law courts. In New Zealand, the classificatory debate was dismissed by Gendall J as a "red herring".[65] In Singapore, Jeyaretnam J has held that cryptoassets are things in action in *Bybit Fintech Ltd v Ho Kai Xin*,[66] and in Australia, Jackman J has suggested extra-judicially that the category of things in action is wide enough under Australian jurisprudence to encompass cryptoassets.[67] The authority of the Law Commission is also seriously undermined by its clear misrepresentation of the authorities to give the impression that its recommendations are stronger than is the case.[68]

Not only does the draft Bill resolve little uncertainty for the courts in terms of how to settle cryptoasset disputes, it arguably destabilises English personal property law as it invites litigants to dispute settled classifications of other existing intangible property, all for a classification carrying uncertain implications, again exacerbating conflicts in litigation. As one of the consultees to the draft Bill, Professor Lionel Smith, points out, "[i]t would introduce a kind of incoherence into fundamental property law."[69] The exercise is thus not simply much ado about nothing but rather a series of unfortunate reports. No wonder another consultee, the legal historian Professor Joshua Getzler,

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[59] Ibid, pp 26-32.
[60] *D'Aloia v Persons Unknown, Bitkub* [2024] EWHC 2342 (Ch), [172].
[61] Ibid, [166].
[62] *Colonial Bank v Whinney* (1885) 30 Ch D 261 at 285 (Fry LJ, dissenting) but approved on appeal in *Colonial Bank v Whinney* (1886) 11 App Cas 426.
[63] *Allgemeine Versicherungs-Gesellschaft Helvetia v Administrator of German Property* [1931] 1 KB 672.
[64] *Your Response v Datateam Business Media* [2014] EWCA Civ 281, [2015] QB 41.
[65] *Ruscoe v Cryptopia Ltd (in Liq)* [2020] NZHC 728, [2020] 2 NZLR 809, [123].
[66] [2023] SGHC 199, [36].
[67] Jackman J, 'Is Cryptocurrency Property?', Speech to the Commercial Law Association, 21 June 2024, at https://www.fedcourt.gov.au/digital-law-library/judges-speeches/justice-jackman/jackman-j-20240621.
[68] Kelvin FK Low, "Third Thing or Sixth Sense? I See Ideational Objects?" in Paul Babie and Mark Giancaspro (eds), *Private Law and Digital Assets*, Cham: Springer, forthcoming.
[69] Law Commission, *Responses to Draft Bill*, above n 58, 102.

remarked that "this clumsy reform brings the process of law reform and legislation in this country into disrepute, and will be derided in other jurisdictions".[70] In characteristic fashion to this project, the Law Commission in its *Supplemental Report* misinterprets Getzler's critique (which criticises the introduction of a third thing category, not the recognition of cryptoassets as property) so as to suggest that its recommendations are consistent with other common law jurisdictions,[71] which may be true so far as treating cryptoassets as property is concerned but which is simply untrue so far as the introduction of a third thing category is concerned.

X.3.2 Cryptoassets: Technological Disruption or Manufacturing Regulatory Arbitrage?

Whereas English lawyers have been obsessing over whether cryptoassets have broken the traditional classification of English personal property into things in possession and things in action, American lawyers faced a more insidious classificatory debate. In a move reminiscent of the tobacco industry's strategy of producing scientific uncertainty to undercut regulations to limit the harms of smoking, the crypto industry has encouraged the wholesale fabrication of legal uncertainty as to the susceptibility of crypto-tokens to securities regulation.[72] The early skirmishes revolved around initial coin offerings (ICOs), which resembled initial public offerings (IPOs), but with coins in place of shares. Although they were not the first to raise money through a token sale,[73] Ethereum's token sale is probably the most well-accounted. According to Laura Shin, a crypto journalist:[74]

> [T]he crowdsale was legally questionable. They were essentially holding what looked like an initial public offering, and in the United States, all IPOs must be registered with the SEC unless they qualify for an SEC-approved exemption. The Ethereum crew not only didn't *want* to register the IPO but weren't typical candidates for one since they didn't have a working product, or revenue, or the money to hold an IPO. Ethereum would not qualify for any of the exemptions either. They were essentially doing what many would call an initial public offering without following the law.
>
> [emphasis in original]

Many of the by-now staple crypto-community retorts to the SEC's attempts to regulate cryptoassets as securities were also developed by the Ethereum team. By dressing up the token as a product that had some sort of utility within the network, and by disclaiming the ability to dictate changes to the system, it was thought that token sales designed to generate income to develop the network could skirt securities laws.[75] By 2017, ICOs became a fad and drove cryptoasset prices to then all-time highs before prices came crashing back to earth following regulatory pushback. In September 2017, China banned both

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[70] Ibid, 59.
[71] Law Commission, *Supplemental Report*, [2.80]. This entire project is rife with non-responses to criticism. See, eg, Peter Watts and Kelvin FK Low, 'The Case for Cryptoassets as Property' in Sinéad Agnew and Marcus Smith (eds), *Law at the Cutting Edge: Essays in Honour of Sarah Worthington*, Oxford: Hart Publishing, 2024, p 281 at p 298, in a postscript: "In the Report, it disagreed with our criticism in this chapter of the Consultation Paper's discussion of fragile rivalrousness but without explaining how our analysis is mistaken."
[72] Cf. Kelvin FK Low and Megumi Hara, "The Folk-Law Behind Blockchain Narrative Economics" in John Flood and Lachlan Robb (eds), *Blockchain and Society Handbook* (De Gruyter, forthcoming).
[73] That honour goes to Mastercoin in July 2013: see Laura Shin, 'Here's the Man Who Created ICOs and This is The New Token He's Backing', Forbes, 23 September 2017 at https://www.forbes.com/sites/laurashin/2017/09/21/heres-the-man-who-created-icos-and-this-is-the-new-token-hes-backing/.
[74] Laura Shin, *The Cryptopians: Idealism, Greed, Lies, and the Making of the First Big Cryptocurrency Craze*, New York: PublicAffairs, 2022, p 35.
[75] Cf. Ibid, pp 70-71.

ICOs[76] and cryptoasset exchanges.[77] On 11 December 2017, then SEC Chairman Jay Clayton issued a public statement in which he suggested that ICOs involved the offer and sale of securities and that the SEC's Division of Enforcement would police ICOs vigorously for violations of federal securities laws.[78] Initially however, not even this public statement and the dismal track record of ICOs[79] could dampen demand. In the first half of 2018, despite the rout in cryptoasset prices more generally, ICOs attracted a record $12 billion.[80] But eventually, ICOs lost their lustre and became overshadowed by newer forms of hype such as the non-fungible token (NFT)[81] mania that began in 2020. Nevertheless, despite the fall from grace of ICOs, the battle to avoid regulation by the SEC by the crypto-community at large rages on.

The US is currently the largest and most influential crypto asset market in the world with 20 per cent of Americans (or over 50 million people) owning some form of crypto assets as of 2023.[82] Therefore, how the US regulates crypto assets is extremely important to crypto-markets as a whole. In contrast to many other jurisdictions, the US takes a flexible and multipronged approach to regulating crypto assets depending on the characteristics of the asset and how the asset is being used. A cryptoasset can be classified as a commodity or security and be regulated by the relevant authorities accordingly. Although what is a commodity[83] and security[84] is legally distinguishable, it is not easy to decisively classify them as one or the other as they can share attributes of both a commodity and a security.[85]

When a cryptoasset functions as a "virtual currency", it can be considered as "goods" exchanged in a market for a uniform quality and value and thus fall within the common definition of "commodity"[86] as well as the Commodity Exchange Act's (CEA) definition of "commodities" as "all

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[76] Gabriel Wildau, 'China central bank declares initial coin offerings illegal', Financial Times, 4 September 2017, at www.ft.com/content/3fa8f60a-9156-11e7-a9e6-11d2f0ebb7f0.

[77] Gabriel Wildau, 'Beijing set to shut bitcoin exchanges to ensure price stability', Financial Times, 11 September 2017, at www.ft.com/content/b2f1d198-96df-11e7-a652-cde3f882dd7b.

[78] Jay Clayton, 'Statement on Cryptocurrencies and Initial Coin Offerings', SEC, 11 December 2017, at https://www.sec.gov/news/public-statement/statement-clayton-2017-12-11.

[79] See Hugo Benedetti and Leonard Kostovetsky, 'Digital Tulips? Returns to Investors in Initial Coin Offerings' (2021) 66 Journal of Corporate Finance 101786.

[80] Benjamin Robertson, 'Crypto Bulls Pile Into ICOs at Record Pace Despite Bitcoin Rout', Bloomberg, 2 August 2018, at https://www.bloomberg.com/news/articles/2018-08-02/crypto-bulls-pile-into-icos-at-record-pace-despite-bitcoin-rout.

[81] Even NFTs face the danger of being classified as securities. In 2023, the SEC settled with Impact Theory, a media and entertainment company, over allegations that it had engaged in an unregistered offering of securities through its sale of NFTs: SEC, In the matter of Impact Theory – Order instituting cease-and-desist proceedings pursuant to section 8A of the Securities Act of 1933, making finds and imposing a cease-and-desist order, Release No. 11226, 28 August, 2023 at https://www.sec.gov/files/litigation/admin/2023/33-11226.pdf. More recently, the NFT marketplace, OpenSea, received a notice from the SEC that the latter would be taking enforcement against it as an unregistered exchange trading in securities: Aoyon Ashraf, 'OpenSea gets "Wells Notice" from SEC, Which Calls NFTs Sold on Platform "Securities"', CoinDesk, 28 August 2024, at https://www.coindesk.com/policy/2024/08/28/opensea-gets-wells-notice-from-sec-calling-nfts-sold-on-platform-securities/.

[82] This is according to a 2023 survey done by Coinbase, the largest cryptocurrency exchange platform in the US. See Tyler Passarella, 'Regulation of digital assets in the United States of America', The Tokenizer, 6 June 2023, at https://thetokenizer.io/2023/06/06/regulation-of-digital-assets-in-the-united-states-of-america/.

[83] Commodity Exchange Act, 1936, 7 USC § 1(a) (9).

[84] The primary definitions from the Securities Act of 1933 and the Securities Exchange Act of 1934 define securities as specific instruments such as a "note, stock, treasury stock, security future, security-based swap, bond, debenture" and any instruments that fall into broad categories like "investment contracts" or "any interest or instrument commonly known as a "security"" (see 15 USC § 77b (a)(1)). Some types of securities like stocks are per se securities under the Acts, but other types of instruments will require further analysis to see if falls within the tests laid down in *SEC v W J Howey Co,* 328 US 293 at 297 (1946) as an "investment contract".

[85] Taylor Anne Moffett, 'CFTC & SEC: The wild west of cryptocurrency regulation', (2023) 57 U Rich L Rev 713 at 720.

[86] Mitchell Prentis, 'Digital metal: regulating bitcoin as a commodity', (2015) 66 Case W Res L Rev 609, 626.

other goods and articles ... in which contracts for future delivery are presently or in the future dealt in". As such, they would fall under the jurisdiction of the Commodity Futures Trading Commission (CFTC),[87] which regulates the trading of futures and derivatives of commodities and the registration of futures commission merchant (FCM) under the CEA.[88] It also has jurisdiction, albeit limited,[89] to pursue instances of fraud and manipulation in the commodities market. Some notable crypto companies where enforcement actions were taken against by CFTC in the last five years include Tether,[90] Bitfinex,[91] Ooki DAO[92] and more recently, KuCoin[93] and Binance.[94] As disclosed in its 2023 annual enforcement report, CFTC brought 47 actions involving conduct related to crypto asset commodities, representing more than 49 per cent of all actions filed in the year of 2023.[95] This is more than twice the number of actions brought in 2022.[96]

However, when a cryptoasset presents itself as an "investment opportunity" to its users, it can fall under the definition of an "investment contract" and be considered as a "security" under the Securities Act of 1933 (the Securities Act).[97] Under section 5 of the Securities Act, all issuers must register non-exempt securities with the Securities and Exchange Commission (SEC) and the SEC can take enforcement actions against whoever violates this section. In addition, an exchange that allows the trading of these "securities" would itself need to be registered with SEC under section 5 of the Securities Exchange Act of 1934 (the Exchange Act). To help companies understand SEC's position on crypto assets, a department of the SEC had in 2019 issued written guidelines as to the circumstances under which it would make the SEC more likely to view a given crypto asset as a "security."[98] This is important as compared to CFTC, the SEC has wider enforcement power against crypto asset companies

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[87] *CFTC v. McDonnell*, 287 F. Supp. 3d 213 at 228-229 (E.D.N.Y. 2018)

[88] Section 6 of the CEA.

[89] CFTC's regulatory power over spot trading (in contrast to futures trading) of commodity is limited to only prevention of fraud and manipulation of the commodities market: Soumen Datta, 'SEC vs. CFTC: inside the battle for control of the crypto landscape', BSC NEWS, 16 May 2023, at https://www.bsc.news/post/sec-vs-cftc-inside-the-battle-for-control-of-the-crypto-landscape.

[90] Tether was made to pay a civil monetary penalty of US$41 million: CFTC, 'CFTC order Tether and Bitfinex to pay fines totaling $42.5 million', Release Number 8450-21, 15 October 2021, at https://www.cftc.gov/PressRoom/PressReleases/8450-21.

[91] Bitfinex was made to pay a civil monetary penalty of US$1.5 million: Ibid.

[92] Ooki DAO and its predecessor bZeroX and the latter's founders were made to pay a civil monetary penalty of US$250,000: CFTC, 'CFTC imposes $250,000 penalty against bZeroX, LLC and its founders and charges successor Ooki DAO for offering illegal, off-exchange digital-asset trading, registration violations, and failing to comply with Bank Secrecy Act', Release Number 8590-22, 22 September 2022, at https://www.cftc.gov/PressRoom/PressReleases/8590-22.

[93] KuCoin was accused of, inter alia, operating an illegal crypto asset derivatives exchange, or financed retail commodity transactions without registering with the CFTC as a FCM and failed to implement an effective KYC programme: CFTC, 'CFTC charges KuCoin with operating illegal digital asset derivatives exchange', Release Number 8884-24, 26 March 2024, at https://www.cftc.gov/PressRoom/PressReleases/8884-24.

[94] Binance, its founder Changpeng Zhao and its chief compliance officer Samuel Lim were charged in March 2023 with actively soliciting US customers to enter into crypto asset derivative transactions directly on its Binance platform. In December, a US Federal Court (District Court for the Northern District of Illinois) entered orders against the defendants. Zhao was made to pay US$150 million, Binance to pay US$2.7 billion and Lim to pay US$1.5 million in civil monetary penalty to CTFC: CTFC, 'Federal court enters order against Binance and former CEO, Zhao, concluding CFTC enforcement action', Release Number 8837-23, 18 December 2023, at https://www.cftc.gov/PressRoom/PressReleases/8837-23.

[95] CFTC, 'CFTC releases FY 2023 enforcement results', Release Number 8822-23, 7 November 2023, at https://www.cftc.gov/PressRoom/PressReleases/8822-23.

[96] In 2022, the Commission brought 18 actions involving conduct related to digital assets, representing more than 20 per cent of all actions filed during the year of 2022: CFTC, 'CFTC releases annual enforcement results', Release Number 8613-22, 20 October 2022, at https://www.cftc.gov/PressRoom/PressReleases/8613-22.

[97] William Hinman, 'Digital asset transactions: when Howey met Gary (plastic)', 14 June 2018, at https://www.sec.gov/newsroom/speeches-statements/speech-hinman-061418.

[98] Strategic Hub for Innovation and Financial Technology of SEC, Framework for "investment contract" digital assets, April 2019, at https://www.sec.gov/files/dlt-framework.pdf.

and it is better resourced.[99] The crypto industry has been fearful to have the crypto assets regulated as securities because of SEC's ferocious regulatory appetite and hard stance. For example, the SEC considers an initial coin offering (ICO) similar to a normal initial public offering (IPO) and within its jurisdiction if the purpose of the ICO is to raise finance or to invite participation in investment opportunities.[100] In 2017 and 2018, the SEC took actions against Plexcorps[101] and AriseBank[102] in separate actions charging the two companies of conducting fraudulent ICOs. The SEC has also stepped in to regulate DeFi on the ground that lending and borrowing of crypto assets using DeFi technology does not change the fact that these smart contracts still constituted "debt instruments" within the meaning of "securities" under the Securities Act.[103] More recently, SEC took actions against Coinbase, the largest cryptocurrency exchange in the US in terms of trading volume, for, inter alia, operating as an unregistered exchange, broker and clearing agency of crypto assets offered and sold as "investment contracts" and thus securities.[104]

Therefore, whether a transaction or an economic arrangement involving a crypto asset qualifies as an 'investment contract" is crucial. The test was first announced in the landmark decision of the US Supreme Court in *SEC v W J Howey Co* as whether it was one involving "an investment of money in a common enterprise with profits to come solely from the efforts of others".[105] In that case, the Supreme Court held that the arrangement between a "citrus grove" land seller and its buyers were more than just land sales contracts. The seller sold to the buyers various parcels of land along with a promise to share with them any profits that were generated from his cultivation of the parcels. The Supreme Court decided that the transactions amounted to "investment contracts" within the definition of "security" and that the SEC could regulate them. The *Howey* test essentially comprises of three elements: (1) an investment of money, (2) in a common enterprise and (3) with profits to be derived solely from the effort of others.[106] The courts have said on various occasions that the term "investment contract" is not limited to contract in the legal sense but includes "contract, transaction, or scheme",[107] and in analysing whether a contract, transaction, or scheme is an investment contract, "form should be disregarded for substance and the emphasis should be on economic reality" and the "totality of circumstances."[108] Yet this has not stopped the industry from publicly suggesting that in the absence of "a formal contract between the seller of a digital coin and an investor", the arrangement cannot "constitute a securities transaction."[109] Perhaps unsurprisingly, all the cases to date[110] show that this is not so, even the much

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[99] John Joy, 'The Race to Regulate Crypto: CFTC vs SEC', Juristnews, 24 November 2021, at https://www.jurist.org/commentary/2021/11/john-joy-crypto-sec/.

[100] SEC, 'Cryptocurrency/ICOs', at https://www.sec.gov/securities-topics/ICO.

[101] SEC, 'SEC v PlexCorps, Dominic LaCroix, and Sabrina Paradis-Royer Case No. 17-cv-7007 (CBA) (RML) (EDNY)', at https://www.sec.gov/enforcement/information-for-harmed-investors/plexcorps.

[102] SEC, 'SEC halts alleged initial coin offering scam', at https://www.sec.gov/news/press-release/2018-8.

[103] Soumen Datta, 'SEC vs CFTC: inside the battle for control of the crypto landscape', BSC NEWS, 16 May 2023, at https://www.bsc.news/post/sec-vs-cftc-inside-the-battle-for-control-of-the-crypto-landscape. See also SEC, 'SEC charges decentralized finance lender and top executives for raising $30 million through fraudulent offerings', Release Number 2021-145, 6 August 2021, at https://www.sec.gov/news/press-release/2021-145

[104] *SEC v Coinbase,* 23 Civ 4738 (KPF), 1:23-cv-04738, (SDNY).

[105] *Howey*, above n 84, at 301.

[106] Some commentators split the final element into two: see eg Peter Rosenberg, 'When they Howey, We all Howey', Fordham Journal of Corporate & Financial Law Blog, at https://news.law.fordham.edu/jcfl/2020/01/05/when-they-howey-we-all-howey/.

[107] *SEC v Ripple Labs, Inc*, 20 Civ. 10832 (AT) at 14; *SEC v Terraform Labs Pte Ltd*, 23-cv-1346 (JSR) at 30; and *SEC v Coinbase*, above n 104.

[108] *SEC v Ripple* Labs, ibid, at 11. See also *SEC v Coinbase*, ibid, at 57.

[109] Matthew Goldstein and David Yaffe-Bellany, 'Is cryptocurrency like stocks and bonds? Courts move closer to an answer', The New York Times, 26 January 2024, at https://www.nytimes.com/2024/01/26/technology/cryptocurrency-stocks-bonds-courts-move-closer-to-an-answer.html.

[110] *SEC v Ripple Labs*, above n 107; *SEC v Terraform Labs*, above n 107; and *SEC v Coinbase*, above n 104.

ballyhooed *SEC v Ripple Labs, Inc*.[111] The industry suggestion that the absence of some "post-sale obligation" on the part of the issuer to cryptoasset investors somehow excludes the operation of securities regulation is simply untrue. As the court in *SEC v Coinbase* explained, "[s]uch a requirement, however, is not formal, but formalistic and cannot be read into the *Howey* test."[112]

The element that has proven itself the most controversial is the third element of the *Howey* test. In *SEC v Ripple Labs, Inc*, Judge Analisa Torres had no problem holding that the institutional buyers who bought the XRP tokens directly from Ripple had the requisite expectation that they would derive profits from Ripple's efforts because of Ripple's active marketing campaign touting "XRP as an investment tied to the company's success".[113] However, she held that this element was not satisfied with "programmatic" transactions in the secondary market as the "[b]uyers could not have known if their payments of money went to Ripple, or any other seller of XRP… Therefore, the vast majority of individuals who purchased XRP from digital asset exchanges did not invest their money in Ripple at all."[114] Where these "programmatic sales" were concerned, although the public buyers bought directly from Ripple, they did so without realising this as the transactions were effected on cryptoasset exchanges on a blind bid/ask basis. Since these individuals could not know if their payments of money went to Ripple or some other third party seller, Judge Torres felt that the "economic reality of Programmatic Sales … does not establish the third *Howey* prong."[115] It is not clear how the knowledge or otherwise of an investor whether their investment was paid directly to Ripple or indirectly so via an earlier investor should affect his expectation that any profits they would make would derive from the efforts of Ripple. Supposedly, according to Judge Torres:[116]

> There is no evidence that a reasonable Programmatic Buyer, who was generally less sophisticated as an investor, shared similar "understandings and expectations" and could parse through the multiple documents and statements that the SEC highlights, which include statements (sometimes inconsistent) across many social media platforms and news sites from a variety of Ripple speakers (with different levels of authority) over an extended eight-year period.

Such reasoning leads to the strange conclusion that (more sophisticated) institutional investors were protected whereas (less sophisticated) retail investors who bought through the secondary market platforms were not given statutory protection even though the Ripple marketing campaign was aggressively made available to the public generally.[117] From a securities law perspective, which traditionally favours protecting (less sophisticated) retail investors over (more sophisticated) institutional investors, this outcome is somewhat perverse.

It should therefore come as no surprise that Judge Torres' analysis was rejected in *SEC v Terraform Labs Pte Ltd.* Judge Jed Rakoff declined to draw a distinction between the coins based on the manner of sale as "*Howey* makes no such distinction between purchasers" and it "has no impact on whether a reasonable investor would objectively view the defendants' actions and statements as evincing a promise of profits based on their efforts."[118] Instead, Judge Rakoff focused on how the defendants, Terraform and its founder, CEO and majority shareholder, Do Hyeong Kwon, actively represented to investors that the continued profitability of the TerraUST coin and its underlying protocol depended on the broader development Terraform "ecosystem" which would grow in proportion to the volume of transactions on the blockchain. To encourage more transactions, the defendants promised

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[111] Ibid.
[112] *SEC v Coinbase*, above n 104.
[113] *SEC v Ripple Labs*, above n 107, at 19.
[114] Ibid, at 23.
[115] Ibid, at 23.
[116] Ibid, at 25.
[117] Ibid, at 21.
[118] *SEC v Terraform Labs*, above n 107, at 41.

investors that they would devote much of the company's earnings to expanding and improving the Terraform ecosystem and its crypto asset products. Judge Rakoff accepted SEC submission that the second element of "common enterprise" was fulfilled "wherever there is "horizontal commonality" between purchasers and a given defendant."[119] In *Terraform*, horizontal commonality was demonstrated through the defendants' use of proceeds from LUNA[120] coin sales to develop the Terraform blockchain and their representations that these improvements would increase the value of the LUNA tokens themselves. The third element of "profits deriving from the effort of others" was also fulfilled as the defendants had on many occasions through different platforms – social media posts, investor conferences, monthly investor reports, and at one-on-one meetings with investors – repeatedly touted to the investors of the possibility of profiting from the whole Terraform ecosystem.

This "ecosystem" approach of analysing how a particular crypto asset is developed and used and therefore whether it falls within the definition of "investment contract" also found favour with Judge Katherine Polk Failla in the case of *SEC v Coinbase*. In this case, the Coinbase tried to argue that cryptoassets should not be classified as securities as they are more akin to collectibles like Beanie Babies or baseball card,[121] an odd argument if one is to believe the industry's claims that they will revolutionise finance unless one believes that the missing link in finance has been Beanie Babies. This argument was flatly rejected by Judge Failla:[122]

> *When a customer purchases a token on Coinbase's platform, she is not just purchasing a token, which in and of itself is valueless; rather, she is buying into the token's digital ecosystem, the growth of which is necessarily tied to value of the token.* This is evidenced by, among others, the facts that (i) initial coin offerings are engineered to have resale value in the secondary markets …, and (ii) crypto-asset issuers continue to publicize their plans to expand and support the token's blockchain long after its initial offering ... In a similar vein, developers advertise the fact that capital raised through retail sales of tokens will continue to be re-invested in the protocol, leading token holders reasonably to expect the value of the tokens to increase in accordance with that protocol ... Therefore, the sale of an investment contract, here, necessarily includes the investment in the token's broader enterprise, manifested by the full set of expectations and understandings surrounding the sale and distribution of the asset.
>
> In this way, the offer and sale of cryptocurrencies can be distinguished from commodities or collectibles Unlike in the transaction of commodities or collectibles (including the Beanie Babies discussed during the oral argument …), which may be independently consumed or used, a crypto-asset is necessarily intermingled with its digital network — a network without which no token can exist.
>
> [emphasis added]

[119] Ibid, at 39.
[120] The LUNA coins were created by Terraform as a "companion" cryptoasset to TerraUST, a stablecoin pegged to the USD, with its peg maintained by an algorithm in response to trading between the two but which instead resulted in a predictable and predicted death spiral: see Ryan Clements, 'Built to Fail: The Inherent Fragility of Algorithmic Stablecoins' (2021) 11 Wake Forest L Rev 131.
[121] Blake Montgomery, 'Cryptocurrency like Beanie Babies, says Coinbase in US regulator's lawsuit', The Guardian, 18 January 2024, at https://www.theguardian.com/technology/2024/jan/18/coinbase-cryptocurrency-lawsuit-beanie-babies-securities-sec.
[122] *SEC v Coinbase*, above n 104, at 59.

However, more recently in the latest case of *SEC v Binance Holdings Ltd, et al*,[123] Judge Amy Berman Jackson refused to follow the "ecosystem" approach, siding instead with Judge Torres in *Ripple* and so drawing a distinction again between direct and secondary sales.[124]

Barring the intervention of Congress, this impasse in the lower courts can only be resolved by appellate courts, perhaps even the US Supreme Court. However, given that the US Supreme Court in *Reves v Ernst & Young*, commenting on the Securities Act as well as earlier Supreme Court decisions, including *Howey*, suggests that "Congress painted with a broad brush", recognising "the virtually limitless scope of human ingenuity, especially in the creation of 'countless and variable schemes devised by those who seek the use of the money of others on the promise of profits,"[125] the results in *Ripple* and *Binance* look distinctly odd, if not outright perverse. Given the flexibility of the *Howey* test, and other precedents, the old "securities" wineskin should quite easily accommodate cryptoassets within its classification. The American experience is also enlightening for jurisdictions that lack such a flexible definition of securities. It is a simple matter to extend your securities regulation to cryptoassets – either by enacting a flexible definition along the lines of *Howey* or simply by adding cryptoassets to your traditional definition of securities such as stock or shares. The only question is whether there is political will to do so. To the industry's claim that subjecting cryptoassets to the same rules and regulations as traditional securities will stifle innovation, one of two simple retorts ought to suffice. First, the industry has had more than 15 years to innovate but has not delivered on a single promise at scale. Nor is it only a problem of empty promises: the industry has delivered tremendous harm, often of the sort that securities laws are designed to prevent.[126] Secondly, if an innovation can only succeed if it competes on an uneven playing field, does it succeed as such or because it was allowed to bring a gun to a knife fight?

X.4 Conclusion

Provided the law's classification is sufficiently broadly drawn, technological innovation will not seriously require said classification to be redrawn or new categories to be introduced. The law of contract, for example, has survived the invention of telegraphy, telephony, fax, emails, the World Wide Web, instant messaging and more without requiring wholesale reinvention. This is not to say, however, that innovations will never require a rethinking of old categories or the invention of new ones. Difficult as that may be, the more difficult issue may well be detecting disruptions in the first place. Some truly disruptive innovations, such as computer programs, may be hidden from view for a variety of reasons. Others, touted as disruptive, such as cryptoassets, may not really be the case. Some readers may disagree with our examples and perhaps time may prove us wrong in one case or the other or even both but that would only go to prove our point that detecting disruptions is even harder than addressing them.

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[123] 23 Civ 1599, ECF No 248 (DDC June 28, 2024).
[124] Ibid, at 38.
[125] 494 US 59 (1990), at 61.
[126] Cf Matt Levine, 'The Crypto Story', Bloomberg, 25 October 2022, at https://www.bloomberg.com/features/2022-the-crypto-story/.