

PROPERTY RIGHTS OVER CRYPTOCURRENCIES: A CONFLICT-OF-LAWS PERSPECTIVE*

Francesca C. Villata, PhD, Full Professor

University of Milan, Department of International,
Legal, Historical and Political Studies
Via Conservatorio 7, 20 122 Milan, Italy
francesca.villata@unimi.it

Lenka Válková, PhD, Assistant Professor

University of Milan, Department of International,
Legal, Historical and Political Studies
Via Conservatorio 7, 20 122 Milan, Italy
lenka.valkova@unimi.it

ABSTRACT

The paper tackles the conflicts of laws on property rights over cryptocurrencies, starting from characterization issues. Building upon the distinctive nature of cryptocurrencies as “pure” de facto assets, that do not give a claim against an issuer, and the relevance of control over said assets as a suitable alternative to the traditional possession, the paper supports the characterization in terms of “assets”, over which property rights may, subject to the relevant lex causae, be constituted and enjoyed. By examining the available options for a conflict-of-law regime and considering the first legislative efforts conducted in this area of law both at the supranational and national level, the elective situs approach is identified as the most appropriate, possibly backed by some regulatory requirement, whilst different approaches are envisaged for the fall-back rule applicable to cryptocurrencies originated in, respectively, permissioned and permissionless DLT systems.

Keywords: *characterization, conflict of laws, cryptocurrencies, property rights, DLT systems*

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1. INTRODUCTORY REMARKS ON CRYPTOCURRENCIES AND PIL ISSUES

According to Coinmarketcap,¹ as of February 2023 over 9000 different cryptocurrencies are traded globally and the worldwide crypto market cap amounts to USD 1,07 trillion.² Among them, Bitcoin is the best known³ and most present on the market, with a market share of around 45% (even 65% in June 2020).⁴ Moreover, Bitcoin was not only the prototype of all cryptocurrencies, revealed to the world by the legendary⁵

¹ CoinMarketCap, *Today's Cryptocurrency Prices by Market Cap*, [https://coinmarketcap.com/], Accessed 28 February 2023.

² Because of the recent collapse of important players in the crypto market, such as the FTX Exchange, and the consequent turbulences in the worldwide crypto market, the market cap has significantly decreased in size compared to November 2021, when it amounted to USD 2,47 trillion. Cf Conlon, T., Corbet, S., Hu, Y., *The Collapse of FTX: The End of Cryptocurrency's Age of Innocence*, SSRN, 2022, [https://ssrn.com/abstract=4283333 or http://dx.doi.org/10.2139/ssrn.4283333], Accessed 28 February 2023.

³ *Wright v McCormack* [2021] EWHC 2671 (QB), para. 5, whereby “[a] cryptocurrency is a digital asset designed to work as a medium of exchange, in which individual coin ownership records are stored in a ledger existing in a computerised database using cryptography to secure transactions, to control the creation of additional coins, and to verify the transfer of coin ownership. It does not exist in physical form (as paper money does) and is typically not issued by a central authority. Bitcoin is probably the best-known cryptocurrency.” See also Karim, M.; Tomova, G., *Research Note: Cryptoasset consumer research 2021*, Financial Conduct Authority, 2021, [https://www.fca.org.uk/publications/research/research-note-cryptoasset-consumer-research-2021], Accessed 28 February 2023.

⁴ European Parliament resolution with recommendations to the Commission on Digital Finance: emerging risks in crypto-assets - regulatory and supervisory challenges in the area of financial services, institutions and markets [2020] (2020/2034(INL)), P9_TA(2020)0265, Recital N.

⁵ “Satoshi Nakamoto” is the pseudonym used by the person, or persons, who developed Bitcoin. In that regard, a dispute was filed before English courts between Dr. Craig Wright, a national of Australia who has lived in the United Kingdom since December 2015 and is a computer scientist with a particular interest in cryptocurrencies, including Bitcoin, maintaining that he is Satoshi Nakamoto, and Roger Ver, a bitcoin investor and commentator on bitcoin and other cryptocurrencies, who was born in California, U.S., and moved to Japan, which he described in evidence as the global centre for cryptocurrencies, in 2005. In 2014 he renounced his US citizenship and became a citizen of St. Kitts & Nevis, although he continues to live in Japan. Mr. Ver does not accept that Dr. Wright is Satoshi Nakamoto. Dr. Wright claims that he was libeled by Mr. Ver in a YouTube video posted on the Bitcoin.com YouTube channel, a tweet containing the YouTube video, and a reply on Mr. Ver’s Twitter Account posted from BkkShadow some 8 minutes after the tweet from Mr. Ver. These publications were alleged to be defamatory, in that Dr. Wright “had fraudulently claimed to be Satoshi Nakamoto, that is to say the person, or one of the group of people who developed Bitcoin.” Cf. *Wright v Ver* [2020] EWCA Civ 672 (29 May 2020) declining English jurisdiction on the controversy, based on the argument “that England and Wales is not clearly the most appropriate place to bring this action for defamation.” Furthermore, Dr. Wright also sued journalist Peter McCormack for defamation in 2019 over tweets or, a series of tweets, he had made in which he either directly, or by innuendo, called Wright a fraud for his claim that he was Bitcoin inventor Satoshi Nakamoto: cf. *Wright v McCormack* [2021] EWHC 2671 (QB).

Satoshi Nakamoto on 31 October 2008,⁶ but it also represents the paradigm around which the legal discourse on distributed ledger technologies (DLTs) and crypto assets was, at least initially, developed.

Technological features of cryptocurrencies have been raising a number of challenges for lawyers and, namely, for private international lawyers, in that (i), cryptocurrencies are intangible, (ii) they exhibit a wide range of different financial features⁷ that, to add further complexity, evolve in parallel with technological developments, (iii) the identity of cryptocurrency users – *i.e.*, everyone who is involved in the process of creation and transfer of cryptocurrencies⁸ – is, at minimum, not easy to trace, since it is protected through pseudonyms or, even, full anonymity, (iv) they are set for more than one usage, *i.e.*, both as a payment instrument and a form of investment (albeit a very risky one!).⁹ Even more relevant, (v) they have an intrinsically cross-border reach, since they are based on decentralized distributed ledgers, potentially spanned all over the world, with no connections to any particular state, allowing value to be transferred between users across borders at a very high speed, not conditional on the location of the transferor and the transferee. Finally, (vi) it is extremely difficult to impose legal restrictions on

⁶ Nakamoto, S., *Bitcoin: A Peer-to-Peer Electronic Cash System*, Bitcoin, 2009, [https://bitcoin.org/bitcoin.pdf], Accessed 28 February 2023.

⁷ Cf. European Central Bank (ECB), *Virtual currency schemes – a further analysis*, 2015, pp. 9 ff [https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf], Accessed 28 February 2023; and Houben R.; Snyers, A., *Cryptocurrencies and blockchain: Legal context and implications for financial crime, money laundering and tax evasion*, European Parliament, 2018, pp. 31 ss. [https://www.europarl.europa.eu/cmsdata/150761/TAX3%20Study%20on%20cryptocurrencies%20and%20blockchain.pdf], Accessed 28 February 2023, providing a synthetic description of the 10 cryptocurrencies with the highest market capitalization.

⁸ Yet, Article 14 of the Regulation (EU) 2023/1113 of the European Parliament and of the Council of 31 May 2023 on information accompanying transfers of funds and certain crypto-assets and amending Directive (EU) 2015/849, [2023] OJ L 150/1, requires that the crypto asset service provider of the originator ensures that transfers of crypto assets are accompanied by the name of the originator, the originator's account number, where such an account exists and is used to process the transaction, and the originator's address, official personal document number, customer identification number or date and place of birth. Moreover, the crypto asset service provider of the originator must ensure that transfers of crypto assets are accompanied by the name of the beneficiary and the beneficiary's account number, where such an account exists and is used to process the transaction. In that respect, it is worth mentioning that pursuant to Article 3 n 21 of the same Regulation “‘originator’ means a person that holds a crypto-asset account with a crypto-asset service provider, a distributed ledger address or a device allowing the storage of crypto-assets, and allows a transfer of crypto-assets from that account, distributed ledger address, or device, *or, where there is no such account, distributed ledger address, or device, a person that orders or initiates a transfer of crypto-assets*” (Italics added), whereby a “‘distributed ledger address’ means an alphanumeric code that identifies an address on a network using distributed ledger technology (DLT) or similar technology where crypto-assets can be sent or received” (*cf* Article 3 note 18).

⁹ European Parliament resolution of 8 October 2020, *op. cit.*, note 4, Recital L.

their circulation, including territorial restrictions, not only because of the decentralized nature of said ledgers, but also because of their proclaimed inherent autonomy *vis-à-vis* the law. In fact, certain technical features of the systems on which the mere existence of cryptocurrencies depend, such as the automated functioning of those systems— based on smart contracts, as well as on consent mechanisms relying on cryptographic techniques, collective validation of the transactions, and continuous chains of blocks, unmodifiable without the consent of the majority of participants to the system (or good hacking skills...) –, make those systems not only tamper resistant, but also difficult to subjugate to any legal constraints.

Looking at cryptocurrencies from a legal perspective, according to the many definitions provided by various institutional players, in their attempt to grasp the distinctive features of cryptocurrencies that are relevant for the purpose of establishing a sound and effective legal framework, coherent with the policy objectives pursued by those institutions, the following elements have been commonly identified.

Firstly, the core of all definitions, including legislative ones,¹⁰ lies in the notion of cryptocurrencies as digital representations of value,¹¹ originated in distributed led-

¹⁰ Directive (EU) 2015/849 of the European Parliament and of the Council on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC, [2015] OJ L41/73, as amended by Directive (EU) 2018/843 of the European Parliament and of the Council of 30 May 2018, [2018] OJ L156/43, and Directive (EU) 2019/2177 of the European Parliament and of the Council [2019] OJ L334/155, Art. 3 n 18 (“virtual currencies” means a digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess a legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored and traded electronically”) and Recital 10; *cf. e.g.*, the Italian implementing rule provided in decreto legislativo No. 231 of 21 November 2007, Gazz. Uff., No. 290 of 14 December 2007 - Suppl. Ord. No. 268, Art. 1 para. 2 *litt.* Qq, as amended by Art. 1 para. 1 *litt.* h of decreto legislativo No. 125 of 4 October 2019, Gazz. Uff., No. 252 of 26 October 2019: “valuta virtuale: la rappresentazione digitale di valore, non emessa né garantita da una banca centrale o da un’ autorità pubblica, non necessariamente collegata a una valuta avente corso legale, utilizzata come mezzo di scambio per l’acquisto di beni e servizi o per finalità di investimento e trasferita, archiviata e negoziata elettronicamente.” See also Uniform Law Commission, Uniform Regulation of Virtual-Currency Businesses Act (URVCBA), Sec. 102 n 23: “Virtual currency: (A) means a digital representation of value that: (i) is used as a medium of exchange, unit of account, or store of value; and (ii) is not legal tender, whether or not denominated in legal tender;” Lehmann, M., *National Blockchain Laws as a Threat to Capital Markets Integration*, Uniform Law Review, Vol. 26, No. 1, 2021, pp. 162 ff.

¹¹ He, D. *et al.*, *Virtual Currencies and Beyond: Initial Considerations (IMF Staff Discussion Note)*, International Monetary Fund, 2016, p. 7, [https://www.imf.org/external/pubs/ft/sdn/2016/sdn1603.pdf], Accessed 28 February 2023; European Banking Authority (EBA), *EBA Opinion on ‘Virtual Currencies’*, 2014, p. 20, para. 11, [https://www.eba.europa.eu/sites/default/documents/files/docu-

gers via a process called “mining,”¹² making use of those ledgers to allow remote peer-to-peer exchanges of that value¹³ and relying on cryptographic techniques to achieve consensus on the validation of the transfer.¹⁴ Cryptocurrencies are not *per se* legal tender (unless any state or other monetary authority establish that they are),¹⁵

ments/10180/657547/81409b94-4222-45d7-ba3b-7deb5863ab57/EBA-Op-2014-08%20Opinion%20on%20Virtual%20Currencies.pdf?retry=1] (“EBA Opinion”), Accessed 28 February 2023: “This part of the definition refers to the fact that the value is essentially represented in digital form. This does not exclude the possibility that it may also be physically represented, such as through paper printouts or an engraved metal object. The term ‘digital representation of value’ is close to the monetary concept of a ‘unit of account’ but includes the option to consider VCs as private money or a commodity. It also avoids making reference to a standard numerical unit of account for the measurement of value and costs of goods, services, assets and liabilities, which might (according to some views), imply that it needs to be stable over time.”

¹² Houben, Snyers, *op. cit.*, note 7, p. 32.

¹³ Bank for International Settlements, Committee on Payments and Market Infrastructures, *Digital Currencies*, 2015, p. 5, [https://www.bis.org/cpmi/publ/d137.htm], Accessed 28 February 2023; Kleiner, C., *Cryptocurrencies as Transnational Currencies?*, in: Benicke C; Huber S. (eds.), National, International, Transnational: Harmonischer Dreiklang im Recht. Festschrift für Herbert Kronke zum 70. Geburtstag, Bielefeld, 2020, pp. 979 ff.

¹⁴ World Bank Group (Harish Natarajan, Solvej Krause, and Harish Gradstein), *Distributed Ledger Technology (DLT) and blockchain (FinTech Note No. 1)*, World Bank, 2017, IV, [http://documents.worldbank.org/curated/en/177911513714062215/pdf/122140-WP-PUBLIC-Distributed-Ledger-Technology-and-Blockchain-Fintech-Notes.pdf], Accessed 28 February 2023; U.S. President Executive Order on Ensuring Responsible Development of Digital Assets of 9 March 2022, Sec. 9(c), [https://www.whitehouse.gov/briefing-room/presidential-actions/2022/03/09/executive-order-on-ensuring-responsible-development-of-digital-assets/], Accessed 28 February 2023.

¹⁵ On 7 September 2021, El Salvador became the first country to adopt Bitcoin as a legal tender. *Cf.* Asamblea Legislativa, El Salvador, the first country in the world to recognize Bitcoin as legal tender, Asamblea Legislativa, 2021, [https://www.asamblea.gob.sv/node/11282], Accessed 28 February 2023. While the law maintains the U.S. dollar as the national unit of account, it mandates the acceptance of Bitcoin by agents unless technical impediments exist. A new digital means of payments, *i.e.*, the e-wallet Chivo operating in both U.S. dollars and bitcoin, has been introduced and heavily supported by the government to promote financial inclusion (each qualifying citizen who downloaded the application received an endowment of USD 30). This led to protests and resulted in skepticism from economists and others. As a result, El Salvador President Nayib Bukele tweeted in August that businesses did not have to accept bitcoin. The law also guarantees the automatic conversion from bitcoin to U.S. dollars through a trust fund funded with USD 150 million from the budget, and in practice the conversion is done in Chivo. Later on, in International Monetary Fund, *Staff Concluding Statement of the 2021 Article IV Mission*, 2021, [https://www.imf.org/en/News/Articles/2021/11/22/mcs-el-salvador-staff-concluding-statement-of-the-2021-article-iv-mission], Accessed 28 February 2023, the IMF concluded that “[g]iven Bitcoin’s high price volatility, its use as a legal tender entails significant risks to consumer protection, financial integrity, and financial stability. Its use also gives rise to fiscal contingent liabilities. Because of those risks, Bitcoin should not be used as a legal tender. Staff recommends narrowing the scope of the Bitcoin law and urges strengthening the regulation and supervision of the new payment ecosystem. Like for other e-wallets, Chivo should be required to fully safeguard customers’ funds, both in U.S. dollars and Bitcoin, by segregating and ring-fencing reserve assets. Stronger regulation and oversight of the new payment ecosystem should be immediately implemented for consumer protection, anti-money laundering and counter financing of terrorism (AML/CFT), and risk management.

neither are they issued by a central bank or public authority,¹⁶ nor necessarily attached to a fiat currency,¹⁷ but they may well be converted into fiat currencies and vice versa,¹⁸ their economic value being determined by supply and demand.¹⁹ Accordingly, despite their volatility,²⁰ cryptocurrencies are “designed to work as a medium of exchange”²¹ and, actually, as acknowledged by certain pieces of legislation, are “accepted by natural or legal persons as a means of exchange and... can be transferred, stored and traded electronically.”²² Moreover, in fact, cryptocurrencies may represent an investment vehicle, though a rather risky one, whereby their status as a store of value is largely dependent on their success as medium of exchange, hence, the rise of stablecoins, which are established with the purpose of eliminating the volatility of traditional cryptocurrencies by consistently holding a stable value. In most cases, one unit of a stablecoin is “pegged” at the value of the US dollar or the Japanese yen (fiat-backed).

The aforementioned characteristics of cryptocurrencies and, in particular, their intrinsic cross-border reach prompt the question of their Private International Law regime and, namely, (i) the need to identify, among the existing PIL rules, those which are applicable to property rights over cryptocurrencies and to investigate

Banking regulation should incorporate prudential safeguards such as conservative capital and liquidity requirements related to Bitcoin exposure. Measures to limit fiscal contingent liabilities, such as winding down the trust fund or withdrawing public subsidies to Chivo, should also be promptly considered.”

¹⁶ European Securities and Markets Authority (ESMA), European Banking Authority (EBA), and European Insurance and Occupational Pensions Authority (EIOPA), *ESMA, EBA and EIOPA warn consumers on the risks of Virtual Currencies*, 2018, p. 1, [https://www.esma.europa.eu/sites/default/files/library/esma50-164-1284_joint_esas_warning_on_virtual_currencies1.pdf], Accessed 28 February 2023.

¹⁷ EBA Opinion, *op. cit.*, note 11), 7. According to the European Central Bank, *Virtual Currency Schemes*, 2012, p. 14, [<https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf>], Accessed 28 February 2023, cryptocurrencies fall under the notion of “virtual currency schemes with bidirectional flow,” in that users can buy and sell virtual money according to the exchange rates with their currency so that the virtual currency is “similar to any other convertible currency with regard to the interoperability with the real world;” *cf.* Houben, Snyers, *op. cit.*, note 7, pp. 21-22; Bocchini, R., *Lo sviluppo della moneta virtuale: primi tentativi di inquadramento e disciplina tra prospettive economiche e giuridiche*, *Il diritto dell’informazione e dell’informatica*, Vol. 33, No. 1, 2017, p. 39.

¹⁸ Houben, Snyers, *op. cit.*, note 7, p. 23.

¹⁹ Bank for International Settlements, *op. cit.*, note 13, p. 4; Financial Markets Law Committee, *Issues of Legal Uncertainty Arising in the Context of Virtual Currencies*, 2016, p. 4, [http://fmlc.org/wp-content/uploads/2018/03/virtual_currencies_paper_-_edited_january_2017.pdf], Accessed 28 February 2023.

²⁰ See, *e.g.*, European Central Bank, *op. cit.*, note 7, p. 16.

²¹ U.S. President Executive Order, *op. cit.*, note 14; *Wright, op. cit.*, note 3.

²² Directive (EU) 2015/849, n 10, Art. 3 n 18; European Parliament resolution of on virtual currencies, [2016] OJ/C 76; decreto legislativo No. 90 of 25 May 2017, Art. 1 para. 2 *litt* qq, *Gazz. Uff.*, No. 140 of 19 June 2017 - Suppl. Ord. No. 28.

whether those rules are suitable for framing them, either in terms of legal characterisation or of connecting factors and other techniques to establish the applicable law. If and to the extent that the answer to the first question is negative, this paper will then explore (ii) if cryptocurrencies deserve, also in light of their growing economic relevance, or require, because of their potential systemic relevance, differentiated PIL rules, not only in comparison to traditional assets, but also in relation to other crypto-assets, depending upon their intrinsic technical features and/or their use case, and (iii) whether territorial connecting factors are still relevant for or can apply at all to that context or, instead, whether different (combinations) of PIL techniques could be more fit for purpose.

Notwithstanding the aforementioned technical difficulties and irrespective of both the expectations of the participants to a blockchain system and certain scholarly assertions,²³ blockchain transactions cannot, actually, eschew the law, nor should parties to those transactions have an interest in keeping completely away from the law: at least, this is the case insofar as they wish to be able to rely on the enforcement mechanisms that only state authority has the power to operate, should any player involved in said transactions behave unfairly or be unable to perform its functions in the relevant transaction scheme.²⁴ Therefore, the present paper aims to provide some (tentative) answers to the three questions set out above, starting from the basic issue of characterisation.

2. CHARACTERISATION OF CRYPTOCURRENCIES

From a legal perspective, the classification of cryptocurrencies is (very) far from being definite, let alone uniform, under domestic laws and, as it is often the case, it may well vary, depending upon the origin (national or supranational), the scope, and the objectives of the relevant piece of legislation.

2.1. “Cryptocurrencies” under National Substantive Laws

English case-law and scholars have progressively converged on the idea of a cryptocurrency as a “particularly odd type of incorporeal”²⁵ or “intangible personal property,” insofar as, unlike *choses* in action, they do not themselves constitute a

²³ Wright A.; De Filippi, P., *Decentralized Blockchain Technology and the Rise of Lex Cryptographia*, SSRN, 2015, p. 48 [<https://papers.ssrn.com/abstract=2580664>], Accessed 28 February 2023.

²⁴ See EBA Opinion, *op. cit.*, note 14, p. 23 ff for an assessment of risks that can arise from virtual currencies

²⁵ Carr, D., *Cryptocurrencies as Property in Civilian and Mixed Legal Systems*, in: Fox D.; Green, S. (eds.), *Cryptocurrencies in Public and Private Law*, Oxford, 2019, p. 180 f para. 7.07.

right which has a concomitant obligation in another.²⁶ Namely, cryptocurrencies are deemed to possess the characteristics of property, as summarised in *National Bank v Ainsworth*,²⁷ which entails that they are “definable, identifiable by third parties, capable in [their] nature of assumption by third parties and have some degree of permanence and stability” according to the assessment conducted by the UK Jurisdiction Taskforce²⁸ endorsed by subsequent jurisprudence.²⁹ Following a call for evidence, on 24 November 2021 the Law Commission published an

²⁶ Fox, D., *Cryptocurrencies in the Common Law of Property*, in: Fox D.; Green, S. (eds.), *Cryptocurrencies in Public and Private Law*, Oxford, 2019, pp. 150 ff.

²⁷ *National Provincial Bank v Ainsworth* [1965] UKHL 1, 19.

²⁸ Financial Markets Law Committee, note 19, pp. 5, 23; UK Jurisdiction Taskforce, *Legal statement on crypto-assets and smart contracts*, Tech Nation, 2019, pp. 49-57, [<https://technation.io/about-us/lawtech-panel>], Accessed 28 February 2023. The UK Jurisdiction Taskforce is one of the six taskforces of the LawTech Delivery Panel within The Law Society of England and Wales. According to the website of The Law Society, [<https://www.lawsociety.org.uk/campaigns/lawtech/guides/lawtech-delivery-panel>], the LawTech Delivery Panel is “a team of industry experts and leading figures from government and the judiciary, has been formed to help the UK legal sector grow and fulfil its potential. By identifying both barriers to and catalysts for growth, the panel will provide direction to the legal sector and help foster an environment in which new technology can thrive.” The position taken by the UK Jurisdiction Taskforce had been anticipated, albeit concisely, in a couple of judgments: *Vorotyntseva v MONEY-4 Ltd (t/a nebeus.com) & Ors* [2018] EWHC 2596 (Ch), 13; *Liam David Robertson v Persons Unknown* (unreported), quoted in *AA v Persons Unknown & Ors, Re Bitcoin* [2019] EWHC 3556 (Comm), 13.

²⁹ *Ion Science & Duncan Johns v Persons Unknown* (unreported) (21 December 2020), 13, as summarized by Sleeve, L., *Cryptocurrency Fraud - The High Court Considers The Position Of 'Crypto-assets'*, Mondaq Business Briefing, 2021, [<https://link.gale.com/apps/doc/A663644295/ITOF?u=milano&sid=bookmark-ITOF&xid=03ffe69d>], Accessed 28 February 2023. The case is said to have arisen from proceedings brought by Ion Science Limited (ISL) and its sole director Duncan Johns, who claimed to be victims of a cryptocurrency initial coin offering, or ICO, fraud. Mr. Johns claimed he was persuaded by an individual, Ms. Black, said to be connected to a Swiss entity called Neo Capital, to transfer funds which were converted into Bitcoin by Ms. Black, granting Ms. Black remote access to his computer to manage this. Mr. Johns also made further transfers to an escrow account, claiming Ms. Black informed him these payments were needed to release commission payments from one of the investments, the Oileum ICO. Allegedly, the applicants subsequently discovered that Neo Capital was not a real company and that the Swiss regulator had issued a warning that it may be providing unauthorised services. Neither Mr. Johns nor ISL received any profits supposedly made in relation to the Oileum ICO or received back any of the funds invested. The court heard evidence from an expert in cryptocurrency fraud who concluded that (i) a substantial part of the bitcoins transferred or their traceable proceeds were held by the Binance and Kraken cryptocurrency exchanges; and (ii) both exchanges held information about the customers to whom those accounts belong. Alleging the sums invested had been misappropriated, the applicants applied for a proprietary injunction, a worldwide freezing order, and an ancillary disclosure order against persons unknown, the individuals or companies describing themselves as being or connected to Neo Capital. In addition, the applicants sought a disclosure order against Binance Holdings Limited, a Cayman company believed to be the parent of the group of companies that operates the Binance Cryptocurrency Exchange and Payments Ventures, a US entity believed to be the parent of the group of companies that operates the Kraken Cryptocurrency Exchange. The applicants further asked for permission to serve the proceedings out of the jurisdiction and by alternative means. Drawing (also) on analysis of the position in the UK Jurisdiction Taskforce, note 28, the court found there was at least a serious issue to be tried that Bitcoin was property under the common law

“Interim Update” concerning the “Digital Asset Project,”³⁰ whereby, while “acknowledging that ‘digital asset is an extremely broad term that requires further subdivision,’” it “recognise[d] that certain digital assets could fall within a new ‘third category’ of personal property.”³¹ Subsequently, on 28 July 2022, the Law Commission, in its “Digital assets: Consultation paper”,³² has conceptualized the proposed new category named “data objects”, based on the following criteria: (i) the thing in question must be composed of data represented in an electronic medium, including in the form of computer code, electronic, digital or analogue signals;³³ (ii) it must exist independently of persons and exist independently of the legal system;³⁴ (iii) it must be rivalrous;³⁵ whilst divestibility – that is an inherent characteristic of a rivalrous tangible object –, is rather presented as a likely consequence of the fact that a particular object meet the second and the third criterion, given the possibility to create an independently existing, rivalrous digital asset that cannot be transferred as a matter of design (other than by destroying it).³⁶ Finally, although the Law Commission, in its “Digital assets: Final report”,³⁷ following negative feedbacks received on the aforesaid three criteria, concluded that it is “not necessary or appropriate” for legislation to define the boundaries of such a third category,³⁸ it has acknowledged digital assets “as things to which personal property rights can relate”.³⁹

The classification as property has also been upheld by Singapore⁴⁰ and Russia,⁴¹ as well as certain Italian judgments.⁴²

definition. See also *AA*, *op. cit.*, note 28, 59; *Fetch.AI Ltd & Anor v Persons Unknown Category A & Ors* [2021] EWHC 2254 (Comm), 9.

³⁰ Law Commission, *Digital Assets Interim Update*, 2021, 1.14-1.17 [<https://www.lawcom.gov.uk/project/digital-assets/>], Accessed 28 February 2023.

³¹ The view is confirmed in *Osbourne v Persons Unknown Category A & Ors* [2023] EWHC 39 (KB) (13 January 2023), 18.

³² Law Commission, “*Digital assets: Consultation paper*”, No 256 of 28 June 2022, [<https://www.lawcom.gov.uk/document/digital-assets-consultation-paper/>], Accessed 28 February 2023.

³³ *Ibid.*, para. 5.14 ff.

³⁴ *Ibid.*, para. 5.22 ff.

³⁵ *Ibid.*, para. 5.48 ff.

³⁶ *Ibid.*, para. 5.85 ff.

³⁷ Law Commission, “*Digital assets: Final report*”, No 412 of 23 June 2023, [<https://www.lawcom.gov.uk/document/digital-assets-final-report-2/>], Accessed 20 July 2023.

³⁸ *Ibid.*, para. 3.8.

³⁹ *Ibid.*, para. 3.9 ff.

⁴⁰ *B2C2 Ltd v Quoine Pte Ltd* [2019] SGHC(I) 03, 142, quoting *National Provincial Bank, op. cit.*, note 27.

⁴¹ Haentjens, M.; De Graaf, T.; Kokorin, I., *The Failed Hopes of Disintermediation: Crypto-Custodian Insolvency, Legal Risks and How to Avoid Them*, Singapore Journal of Legal Studies, No. 2, 2020, p. 551.

⁴² Tribunale di Firenze, 19 December 2018, No. 6, I Contratti, 2019, pp. 661-669, note Fauceglia, D., *Il deposito e la restituzione delle criptovalute*, I Contratti, No. 6, 2019, pp. 669-680; Tribunale di Firenze

On the other hand, in the statement above, the UK Jurisdiction Taskforce has included crypto-assets in general among “conventional financial assets.”⁴³ Along the same lines, the German Federal Financial Supervisory Authority (“BaFin”) issued a communication, according to which “[i]n accordance with BaFin’s legally binding decision on units of account within the meaning of section 1(11) sentence 1 of the *KWG* [Banking Act – *Kreditwesengesetz*], bitcoins are financial instruments” and, namely, “units of account... comparable to foreign exchange with the difference that they do not refer to a legal tender.”⁴⁴ Following a successful challenge in court, the German legislator has introduced a new provision into the *KWG* defining crypto assets (*Kryptowerte*) as financial instruments.⁴⁵ However, pursuant to § 2 para. 3 of the *EWpG* [Electronic Securities Act – *Gesetz über elektronische Wertpapiere*] of 3 June 2021, an electronic security is deemed to be a moveable (“*Sache*”) within the meaning of Section 90 of the German Civil Code.⁴⁶

Turning to the other side of the Atlantic Ocean, in July 2018 the Uniform Law Commission adopted the “Uniform Supplemental Commercial Law for the Uniform Regulation of Virtual-Currency Businesses Act” (“USCL for URVCBA”) and recommended its enactment in all the United States.⁴⁷ According to Section

(Sez. fall.), 21 January 2019, No. 18, *Giurisprudenza italiana*, 2020, pp. 2657-2659; note Fauceglia, D., *Scambio e deposito di criptovalute: la responsabilità del gestore della piattaforma*, *Giurisprudenza italiana*, No. 18, 2020, pp. 2659-2666.

⁴³ UK Jurisdiction Taskforce, *op. cit.*, note 28, p. 52.

⁴⁴ German Federal Financial Supervisory Authority (“BaFin”), *Virtual Currency (VC)*, 2017, [https://www.bafin.de/EN/Aufsicht/FinTech/VirtualCurrency/virtual_currency_node_en.html], Accessed 28 February 2023. Along the same line of reasoning see Cassazione Penale (Sez. II), 17 September 2020, No. 26807, *Giurisprudenza italiana*, 2021, pp. 2224-2225, note Vadala, R. M., *La dimensione finanziaria delle valute virtuali. Profili assiologici di tutela penale*, *Giurisprudenza italiana*, 2021, pp. 2225-2231.

⁴⁵ See section 1(11) no. 10 of the *KWG*. In section 1(11) sentence 4 of the *KWG*, crypto assets are defined as a digital representation of value which has neither been issued nor guaranteed by a central bank or public body; it does not have the legal status of currency or money but, on the basis of an agreement or actual practice, is accepted by natural or legal persons as a means of exchange or payment or serves investment purposes; it can be transferred, stored, and traded by electronic means. See German Federal Financial Supervisory Authority (“BaFin”), *Guidance notice – guidelines concerning the statutory definition of crypto custody business (section 1 (1a) sentence 2 no. 6 of the German Banking Act (Kreditwesengesetz – KWG)*, BaFin, 2020, [https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Merkblatt/mb_200302_kryptoverwahrgeschaef_en.html?nn=9451720#O4], Accessed 28 February 2023.

⁴⁶ Gesetz über elektronische Wertpapiere (eWpG) vom 3. Juni 2021 (*BGBI. I S. 1423*), § 2 para. 3: “Ein elektronisches Wertpapier gilt als Sache im Sinne des § 90 des Bürgerlichen Gesetzbuchs”.

⁴⁷ The Final Text can be retrieved at the Uniform Law Commission website, namely [https://www.uniformlaws.org/viewdocument/final-act-154?CommunityKey=e104aaa8-c10f-45a7-a34a-0423c2106778&tab=librarydocuments], Accessed 28 February 2023. See Zachary Hubbell, *The Uniform Regulation of Virtual-Currency Business Act: Advancing State Regulatory Interests in a Truly Cashless Economy*, *Jurimetrics*, Vol. 59, 2019, p. 313.

4, by virtue of agreement between parties to virtual currency transactions, the virtual currency may be “treated as a financial asset credited or held for credit to the securities account of the user,” thereby collocating said transactions into the realm of Article 8 of the Uniform Commercial Code (UCC). As it has been rightly pointed out, however, the notion of securities entitlement embodied in Article 8 UCC – whereby holders of securities are granted with a claim for securities against the relevant intermediary – seems “incongruous” with the pattern of traceability that is commonly reconnected with crypto assets because of the DLTs supporting the creation and “transfer” of said assets. Therefore, Section 502(a) URVCBA requires that “A licensee or registrant that has control of virtual currency for one or more persons (...) maintain in its control an amount of each type of virtual currency sufficient to satisfy the aggregate entitlements of the persons to the type of virtual currency.”⁴⁸ Anyway, according to Section 7 USCL for URVCBA “Treatment of virtual currency as a financial asset credited to a securities account under this [act] and Article 8 does not determine the characterization or treatment of the virtual currency under any other statute or rule.”

In fact, on 10 June 2021, the Securities and Exchange Commission (SEC)’s Office of Investor Education and Advocacy (OIEA) and the Commodity Futures Trading Commission (CFTC)’s Office of Customer Education and Outreach (OCEO) published an “Investor Bulletin,” whereby, while urging “investors considering a fund with exposure to the Bitcoin futures market to weigh carefully the potential risks and benefits of the investment,” in light of “the volatility of Bitcoin and the Bitcoin futures market, as well as the lack of regulation and potential for fraud or manipulation in the underlying Bitcoin market,” expressed the view that “in the United States, Bitcoin is a commodity, and commodity futures trading is required

⁴⁸ However, whilst Rhode Island enacted the above mentioned provisions of the USCL for URVCBA – namely under R.I. Gen. Laws § 6-56-1-6-56-11 (Current through Chapter 429 (all legislation) of the 2021 Session, including all corrections and changes made by the Director of Law Revision), [<https://advance-lexis-com.pros2.lib.unimi.it/api/document?collection=statutes-legislation&id=urn:contentItem:62DF-62M1-DYB7-W0YY-00000-00&context=1516831>], Accessed 28 February 2023; Wyoming has followed a different approach, whereby a digital asset, even if treated as a financial asset for the purpose of art 8 UCC, shall remain intangible personal property. Moreover, according to said provision, “[v]irtual currency is intangible personal property and shall be considered money;” see § 34-29-102. Classification of digital assets as property; applicability to Uniform Commercial Code; application of other law., Wyo. Stat. § 34-29-102 (Current through 2021 General Session and Special Session of the Wyoming Legislature. Subject to revisions by LSO), [<https://advance-lexis-com.pros2.lib.unimi.it/api/document?collection=statutes-legislation&id=urn:contentItem:62DC-SNC3-CH1B-T54F-00000-00&context=1516831>], Accessed 28 February 2023. See Lehmann, *op. cit.*, note 10, p. 164 f.; Crockett, M., *Wyoming’s DIY Project Gets Western with the UCC*, Wyoming Law Review, Vol. 20, No. 1, 2020, p. 105; Hughes, S. J., *Property, Agency, and the Blockchain: New Technology and Longstanding Legal Paradigms*, Wayne Law Review, Vol. 65, 2019, p. 57. Wyo. Stat. § 34-29-102.

to take place on futures exchanges regulated and supervised by the CFTC.”⁴⁹ Although the “Investor Bulletin” only represents the views of the staff of the SEC’s Office of Investor Education and Advocacy and CFTC’s Office of Customer Education and Outreach and it is not a rule, regulation, or statement of the SEC or the CFTC, on 28 September 2021 the latter authority issued an order, filing and settling of charges against Payward Ventures, Inc. d/b/a Kraken, one of the cryptocurrency industry’s largest market participants, for offering margined retail commodity transactions in cryptocurrency — including Bitcoin — and failing to register as a futures commission merchant (FCM).⁵⁰ Moreover, according to the definition adopted in the U.S. President Executive Order on Ensuring Responsible Development of Digital Assets of 9 March 2022, Sec. 9(c) “cryptocurrencies” refers to “a digital asset (...) for which *generation or ownership* records are supported through a distributed ledger technology”.⁵¹ Finally, on 21 February 2023 the Uniform Law Commission and the American Law Institute made available the Uniform Commercial Code Amendments (2022), which provide a new UCC Article 12 that governs the transfer of property rights in certain intangible digital assets (“controllable electronic records”) that have been or may be created and may involve the use of new technologies, including (non-fiat) virtual currency.⁵²

A different approach has been followed under the Swiss Act to Adapt Federal Law to Developments in Distributed Ledger Technology (“DLT Act”), some parts of which entered into force on 1 February 2021.⁵³ That piece of legislation, actually,

⁴⁹ The joint statement is contained in US Securities and Exchange Commission, *Funds Trading in Bitcoin Futures – Investor Bulletin*, 2021, [<https://www.investor.gov/introduction-investing/general-resources/news-alerts/alerts-bulletins/investor-bulletins/funds>], Accessed 28 February 2023.

⁵⁰ The CFTC alleged that each of the defendants was acting as an unregistered FCM. Under Section 1a(28)(a) of the Commodity Exchange Act, 7 U.S.C. § 1(a)(28)(A), an FCM is any “individual, association, partnership, or trust that is engaged in soliciting or accepting orders for the purchase or sale of a commodity for future delivery; a security futures product; a swap... any commodity option authorized under section 6c of this title; or any leverage transaction authorized under section 23 of this title.” To be considered an FCM, that entity must also “accept money, securities, or property (or extends credit in lieu thereof) to margin, guarantee, or secure any trades or contracts that result or may result therefrom.” See 7 U.S.C. § 1(a)(28)(A)(II). 7 U.S.C. § 6d(1) requires FCMs to be registered with the CFTC. See Evans, J. B.; Scheibe, A. C., *A Flurry of CFTC Actions Shock the Cryptocurrency Industry*, McDermott, 2021, [<https://www.mwe.com/it/insights/a-flurry-of-cftc-actions-shock-the-cryptocurrency-industry/>], Accessed 28 February 2023.

⁵¹ U.S. President Executive Order, *op. cit.*, note 14, emphasis added.

⁵² Uniform Commercial Code Amendments, 2022, [<https://www.uniformlaws.org/committees/community-home?communitykey=1457c422-ddb7-40b0-8c76-39a1991651ac#:~:text=The%202022%20amendments%20to%20the,intelligence%2C%20and%20other%20technological%20developments>], Accessed 28 February 2023.

⁵³ Bundesgesetz zur Anpassung des Bundesrechts an Entwicklungen der Technik verteilter elektronischer Register vom 25. September 2020, RO 2021 33. The Act to Adapt Federal Law to Developments in Distributed Ledger Technology (DLT Act) has been complemented with an Order (Verordnung zur

acknowledges the distinction between tokens in the form of cryptocurrencies, that are classified as intangible assets under civil law, for which that law does not provide any specific requirements nor obstacles to their transfer, and a new category of ledger-based securities (*Registerwertrecht*) that is introduced in the Code of Obligations (*Obligationenrecht*, OR, Art. 622 para 1; Art. 973d).⁵⁴ The wording of the provision is technology-neutral and does not mention the term DLT, but describes its characteristics instead. A ledger-based security is defined as a right that, according to an agreement of the parties, is registered in a ledger-based security register and can be asserted and transferred only via this register (Art. 973d para 1 OR). The ledger-based security register must fulfil the following requirements: it gives creditors, but not the debtor, power of disposal over their assets by means of a technical process. Its integrity is protected through appropriate technical and organizational measures to prevent unauthorized modifications, such as joint management by several participants that are independent of each other. The content of the rights, the functioning of the register, and the register agreement are recorded in the register or in the accompanying data. Creditors may access information and register entries that concern them, and may test the integrity of the register entry that concerns them without the help of third parties (Art 973d para 2 OR). Debtors of ledger-based securities are obligated and allowed to render performance only to a creditor whose name is registered in the ledger-based security register (Art. 973e para 1 OR). A *bona fide* purchaser may rely on the content of the register (protection of good faith) (Art 973e para 3 OR). The transfer of the ledger-based security is subject to the terms of the registry agreement (Art. 973f para 1 OR). According to Article 973c ff OR, ledger-based securities are, thus, equated, in many respects, to negotiable instruments and the Federal Act on Private International Law (PILA) of 18 December 1987 has been amended accordingly (see especially Article 145a PILA).⁵⁵ Moreover, the DLT Act has been complemented with an Order to introduce further amendments into Swiss financial markets law.⁵⁶

2.2. Towards a Common Understanding of Cryptocurrencies

The aforesaid attempts to frame cryptocurrencies into substantive law clearly show, firstly, that they are not treated as the cryptographic strings of characters that they in

Anpassung des Bundesrechts an Entwicklungen der Technik verteilter elektronischer Register vom 18. Juni 2021, RO 2021 400) to introduce further amendments into Swiss financial markets law.

⁵⁴ Bundesgesetz betreffend die Ergänzung des Schweizerischen Zivilgesetzbuches (Fünfter Teil: Obligationenrecht) vom 30. März 1911, SR 220 (Swiss Civil Code of Obligations).

⁵⁵ Bundesgesetz über das Internationale Privatrecht (IPRG) vom 18. Dezember 1987, SR 291.

⁵⁶ Ordinanza del Consiglio federale sull'adeguamento del diritto federale agli sviluppi della tecnologia di registro distribuito del 18 giugno 2021, RO 2021 400.

fact are, *i.e.* data or information, but rather for the notional status that they have,⁵⁷ which is based on an implicit agreement or, rather, expectations, between participants to the systems where cryptocurrencies are created and transferred, that those strings actually represent a value, resulting from supply and demand balancing, and that “the consensus rules which underpin the system will be applied and will not be altered fundamentally such as to deprive each participant of the association to particular units within the system and the power to deal with those units.”⁵⁸ Second, the classification of cryptocurrencies varies depending on the diverse use cases, *i.e.* store of value, tools for investment or means of payment. Third, the notional value of cryptocurrencies, their status as creatures of the law (albeit the law here is, at least at the outset, a code), and the fact that, because of the notional embodiment of the value in cryptographic strings, they represent a safe vehicle to transfer value from one person to another,⁵⁹ on one hand, might place cryptocurrencies in the realm of negotiable instruments (or even of money) and, on the other hand, those very same features, are a driver for their use as investment vehicles.

2.2.1. Cryptocurrencies as “Purely de facto Assets”

However, along the many discussions concerning the intrinsic nature of cryptocurrencies, there is a common understanding that cryptocurrencies, and especially those modelled on bitcoins, neither represent nor give a claim against an issuer,⁶⁰ hence the classification as “purely *de facto* assets” acknowledged, for instance, in the Swiss Federal Council message accompanying the proposal for the DLT Act.⁶¹ This seems to be the key distinctive feature of “pure” cryptocurrencies from other crypto-assets, including stablecoins,⁶² which may also be used and accepted as payment instruments.

⁵⁷ Fox, *op. cit.*, note 26, para. 6.18.

⁵⁸ Dickinson, A., *Cryptocurrencies and the Conflict of Laws*, in: Fox D.; Green, S. (eds.), *Cryptocurrencies in Public and Private Law*, Oxford, 2019, para. 5.107.

⁵⁹ Fox, *op. cit.*, note 26, para. 6.18.

⁶⁰ EBA Opinion, *op. cit.*, note 11, para. 30; Financial Conduct Authority (FCA), *Guidance on Crypto-assets (Consultation Paper CP19/3)*, 2019, paras. 3.35, 3.60, [<https://www.fca.org.uk/publication/consultation/cp19-03.pdf>], Accessed 28 February 2023; Swiss Federal Council, *Legal framework for distributed ledger technology and blockchain in Switzerland. An overview with a focus on the financial sector*, Report, 2018, p. 46, para. 5.1.2.1, [<https://www.news.admin.ch/news/message/attachments/55153.pdf>], Accessed 28 February 2023; Barsan, I. M., *Legal Challenges of Initial Coin Offerings (ICO)*, *Revue Trimestrielle de Droit Financier (RTDF)*, No. 3, 2017, p. 58; Fox, *op. cit.*, note 26, para. 6.30; Carr, *op. cit.*, note 25, p. 180 f, para. 7.07.

⁶¹ See Messaggio concernente la legge federale sull’adeguamento del diritto federale agli sviluppi della tecnologia di registro distribuito del 27 novembre 2019, FF 2020 223, 232.

⁶² ECB Crypto-Assets Task Force, *Stablecoins: Implications for monetary policy, financial stability, market infrastructure and payments, and banking supervision in the euro area*, Occasional Paper Series No. 247,

Notably, the Proposal for an EU Regulation on Markets in Crypto-assets,⁶³ as resulting from the latest steps of the legislative procedure, seemed to acknowledge that distinction, insofar as it provided for a differentiated treatment between e-money token, the users of which should have been granted with a claim on the issuer of such tokens, *i.e.* the right to redeem their tokens at any moment and at par value against the currency referencing those tokens, and “other crypto-asset referencing one official currency of a country” that “do not provide a claim at par with the currency they are referencing or limit the redemption period.”⁶⁴ Namely, the Proposal provided for different regimes, respectively, for “asset referenced tokens” (Title III of the Proposal),⁶⁵ “electronic money tokens” (Title IV) and “crypto-assets, other than asset referenced tokens or electronic money tokens” (Title II), including, but not limited, to utility tokens.⁶⁶ Moreover, for the purpose of the Proposal, the definition of “crypto asset” referred to “a digital representation of a value or a right which may be transferred and stored electronically, using distributed ledger technology or similar technology,”⁶⁷ whereby “[r]epresentation of value includes external, non-intrinsic value attributed to a crypto-asset by parties concerned or market participants, meaning the value can be subjective and can be attributed only by the interest of someone purchasing the crypto-asset.”⁶⁸

2020, p. 8, [<https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op247-fe3df92991.en.pdf>], Accessed 28 February 2023.

⁶³ Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937 [2020] COM/2020/593 final, Art. 44 (hereinafter “MiCA Proposal”).

⁶⁴ See the final compromise text of the *Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937* accompanying as an Annex the Council of the European Union, Letter to the Chair of the European Parliament Committee on Economic and Monetary Affairs, doc. 13198/22 of 5 October 2022, Recital 10 (hereinafter, ‘Council final compromise text’), and European Parliament Economic and Social Committee, *Report on the proposal for a regulation of the European Parliament and of the Council on markets in crypto-assets and amending Directive (EU) 2019/1937* (A9-0052/2022 pf 17 March 2022), Recital 10 (hereinafter, ‘ESC Report’). Accordingly, the EBA had previously pointed out that “the difference between electronic money and a virtual currency is that the latter is not necessarily attached to a FC [*i.e.*, a fiat currency], *i.e.* it does not have a fixed value in a FC and, furthermore, is not necessarily fixed to be redeemed at par value by an issuer.” EBA Opinion, *op. cit.*, note 11, para. 31. The view is upheld also by the Financial Conduct Authority, note 57, p. 31 para. 3.61.

⁶⁵ According to Zetzsche, D. A. *et al*, *The Markets in Crypto-Assets Regulation (MiCA) and the EU Digital Finance Strategy*, EBI Working Paper Series No. 2020/77, SSRN, 2020, p. 12 [<http://dx.doi.org/10.2139/ssrn.3725395>], Accessed 28 February 2023, the proposed global stablecoin Libra would fall under this category. See *infra* (note 73).

⁶⁶ Council final compromise text, *op. cit.*, note 64, Recital 9, and ESC Report, *op. cit.*, note 61, Recital 9.

⁶⁷ Council final compromise text, *op. cit.*, note 64, Art. 3 para. 1(2) (emphasis added). The Economic and Social Committee of the European Parliament has specified the notion of “digital representation” by adding the requirement that it “is in the form of a coin or a token or any other digital medium”: see ESC Report, *op. cit.*, note 61, Art. 3 para. 1(2).

⁶⁸ Council final compromise text, *op. cit.*, note 64, Recital 2.

Therefore, despite the claim that “any definition of ‘e-money tokens’ should be as wide as possible to capture all the types of crypto-assets referencing one single official currency of a country” and that “strict conditions on the issuance of e-money tokens should be laid down, including the obligation for such e-money tokens to be issued either by a credit institution as defined in Regulation (EU) No 575/2013 of the European Parliament and of the Council, or by an electronic money institution authorised under Directive 2009/110/EC,”⁶⁹ “pure” cryptocurrencies seemed to fall under the residual category of “other crypto assets.”⁷⁰ The same Proposal envisaged a more general distinction between crypto assets that may qualify as “financial instruments as defined in Article 4(1), point (15), of Directive 2014/65/EU” (*i.e.*, MiFID II Directive)⁷¹ (or as deposits, funds, securitisation positions, insurance or pension products according to the respective relevant EU provisions,⁷² which, incidentally, should be neutral as regards the use of technology),⁷³ and those which are not covered by those regimes and are, accordingly, included in the scope of the Proposal, with the additional aforesaid sub-distinction. With regard to pure payment-type crypto assets, however, the European Securities and Markets Authority (ESMA), in its “Advice” concerning “Initial Coin Offerings and Crypto-Assets” of 9 January 2019 held as “unlikely” that they qualify as financial instruments.⁷⁴

The general notion of “crypto-asset”, as well as the aforementioned tripartition, have been upheld in the final text of the MiCA Regulation.⁷⁵ It might worth noticing, however and with specific regard to bitcoins (and the alike), that, despite the general statement that the new Regulation “covers the rights and obligations of issuers of crypto-assets, offerors, persons seeking admission to trading of crypto-

⁶⁹ *Ibid.*, Recital 10.

⁷⁰ Also, Zetzsche *et al*, *op. cit.*, note 62, p. 25, seem to concur with this view.

⁷¹ See Council final compromise text, *op. cit.*, note 64, Art. 2 para. 3 *litt.* a and Recital 3. The Economic and Social Committee, “because of the specific features linked to their innovative and technological aspects”, has recalled the need “to identify clearly the requirements for classifying a crypto-asset as a financial instrument”, recommending that, for that purpose, the European Securities and Markets Authority (ESMA) is tasked by the Commission with publishing “guidelines in order to reduce legal uncertainty and guarantee a level playing field for market operators”: ESC Report, note 61, Recital 2a.

⁷² Council final compromise text, note 64, Art. 2 para. 3 *litt.* c-k and Recital 3.

⁷³ *Ibid.*, Recital 6.

⁷⁴ European Securities and Markets Authority (ESMA), *Advice: Initial Coin Offerings and Crypto-Assets*, 2019, p. 19 par. 80, [https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf], Accessed 28 February 2023. *Contra* Cassazione Penale (Sez. II), 30 November 2021, No. 44337 (unpublished)

⁷⁵ Regulation (EU) 2023/1114 of the European Parliament and of the Council on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937, [2023] OJ L 150: see Titles II, III, IV and Art. 3 para. 1 n 5.

assets and crypto-asset service providers”, the EU legislator, on one hand, has taken the stance that crypto-assets with “no identifiable issuer... should not fall within the scope of Title II, III or IV” of the Regulation, and, on the other hand, that, in any case, crypto-asset service providers providing services in respect of (also) such crypto-assets should be covered by the Regulation, unless... said services are provided in a fully decentralised manner without any intermediary (recital 22).

Nevertheless, the aforesaid, intricated, exceptions and counter-exceptions, mainly aimed at including or excluding certain cryptoassets and management systems from the regulatory perimeter of the MiCA Regulation, are not per se binding, when it comes to defining the scope of the current or future conflict-of-laws regime for cryptocurrencies, and namely for property aspects of the same. Quite the contrary, said exceptions seem to be adding arguments to the autonomous characterization of pure cryptocurrencies as a distinct category from other cryptoassets (and more in general digital assets) that actually embody claims, as well as to their separate private international law treatment.

Although the opposite view, that cryptocurrencies may well embody claims, has also been sometimes maintained both with regard to bitcoins⁷⁶ and to Libra Coins,⁷⁷ recently re-nominated Diem Coins,⁷⁸ what is more relevant here is that, if a general conflict-of-laws regime for crypto assets is to be conceived, any legislative policy option (and, namely, any connecting factor) based on the idea that a claim is embedded in those assets should be tested in respect of its application to “pure” cryptocurrencies.

Along the same line, the Consultation and call for evidence on “Future financial services regulatory regime for cryptoassets” launched by UK HM Treasury in February 2023, despite replacing the term “cryptocurrencies” with the more neutral “exchange tokens”, identifies as a distinctive feature of said tokens, as opposed to “security” or “utility” tokens, the fact that they “do not provide the types of rights or access” provided by the latter tokens.⁷⁹

⁷⁶ Cf. Low, K. F. K., *Bitcoins as Property: Welcome Clarity?*, Law Quarterly Review, Vol. 136, No. 3, 2020, p. 345, criticizing the court’s findings in *AA, op. cit.*, note 28, that bitcoins are an intangible property but not a chose in action.

⁷⁷ d’Ornano, A., *Sur le projet Libra*, Revue critique de droit international privé, 2020, pp. 179 ff. The description of the original features of the Libra system and coins may be found in the historical White Paper at [https://sls.gmu.edu/pfirt/wp-content/uploads/sites/54/2020/02/LibraWhitePaper_en_US-Rev0723.pdf], Accessed 28 February 2023.

⁷⁸ See the website of the Diem Association, *Welcome to the Diem project*, [<https://www.diem.com/en-us/>], Accessed, 28 February 2023.

⁷⁹ HM Treasury, *Consultation and call for evidence on “Future financial services regulatory regime for cryptoassets”*, 2023, p. 16, [<https://assets.publishing.service.gov.uk/government/uploads/system/uploads/>

However, although the aforesaid distinction might be of relevance to identify the most suitable connecting factors, it is hardly deniable that, once it is acknowledged that cryptocurrencies may be regarded as store of value – purely notional or linked to the value of a fiat currency –, and are susceptible to be transferred and traded,⁸⁰ on one hand, it may well be that exclusive rights are asserted over them and that a law regards those claims as worthy of protection against conflicting or competing interests of other parties. On the other hand, it is also hardly deniable that the transfers of cryptocurrencies which take place through the blockchain represent the implementation of a transaction of whichever nature.

Overall, the definition of cryptocurrencies as purely *de facto* assets – that do not incorporate, nor represent, claims, but because of their (notional) value may be the object of transactions – seems sufficient to call for a specific conflict-of-laws analysis.

2.2.2. The Knowledge of the Private Key as (the only) Basis for Control over Cryptocurrencies

In at least apparent contrast to the above, with a view to reconciling the autonomy and immutability of blockchain transfers with the requirement of private justice, a very thorough theory has been recently developed according to which, since the power of the holder of bitcoins resides in his/her knowledge of the private key (that allows him to initiate the transfer to the address, *i.e.*, the public key, of the recipient),⁸¹ one should accept the record on the blockchain as a fact that reveals

attachment_data/file/1133404/TR_Privacy_edits_Future_financial_services_regulatory_regime_for_cryptoassets_vP.pdf], Accessed 28 February 2023.

⁸⁰ Solinas, M., *Investors' Rights in (Crypto) Custodial Holdings: Ruscoe v Cryptopia Ltd (in Liquidation)*, *Modern Law Review*, Vol. 84 No.1, 2021, p. 160.

⁸¹ In the Bitcoin system, users are represented by addresses, which can be regarded as being like a bank account number. An example of a Bitcoin address is a string of letters and numbers (*e.g.*, 3PtFPuX-ZxS1CBHdG2E5EeU6FcFqGGmzepF). In this way, Bitcoin accounts are pseudonymous. Addresses are created using public key cryptography. The owner of the address is the holder of the private key that corresponds to the public key that has been used to create the address. Therefore, the private key is the proof that a specific address belongs to this user. As a result, private keys must be protected, as their loss means loss of proof that this address belongs to the user and, as a direct consequence, the inability to use the bitcoins in the corresponding accounts. As Bitcoin is not controlled by an entity, it is impossible to claim missing private keys. Addresses are used to hold bitcoins; a user is usually the holder of many addresses. There is no limit on how many addresses a user can have; rather, it is advised to use a new address when receiving bitcoins rather than reusing addresses. This makes the tracking of addresses and linking them to the owners more difficult. To perform a transaction – for example, Alice wants to send 20 bitcoins (BTC) to Bob – Alice will have to prove that she is the owner of an account or a number of accounts that hold at least 20 BTCs. She does this by digitally signing the transaction with the private keys of these accounts. Once signed, rather than being sent directly to Bob, the transaction is broadcast on the whole Bitcoin network. Alice's transaction is pending until a special entity

the current holder of the bitcoin and creates a legal presumption of him being the legitimate holder of that crypto asset (unless it can be proven that the crypto asset has been obtained illegally).⁸² Therefore, the law should regard that transfer as immutable and “substitute a conceptualization of the transfer in terms of property law by an analysis that is based on remedies under the law of obligations.”⁸³ Accordingly, in case of mistakes or *exceptio inadimplendi*, the transferor should rely on the “reverse transfer,” *i.e.* on the possibility for the law to impose an obligation on the recipient of the crypto asset to return it, whilst, exceptionally, in cases of hacking, blackmail or fraud the transaction could be invalidated.⁸⁴ It might be, further, worth considering that, according to that theory, the factual position – *i.e.* the knowledge or, otherwise said, the possession – of the private key is seen as legally protected by way of the applicable tort, contract or security law.⁸⁵

Although the aforesaid approach looks very promising, given the intrinsically cross-border nature of DLT, enacting the premise of such an approach – namely, the aforesaid legal presumption – would entail the general acceptance, either through the adoption of a single international instrument providing for uniform substantive rules or via parallel pieces of national legislation, of the aforementioned legal presumption. For the moment, however, the first stance taken by national lawmakers and case-law seems rather inclined to frame bitcoins into more traditional patterns of property law.

Be that as it may, the aforesaid theory has (also) the merit of drawing attention to the *de facto* situation connected with the knowledge of the private key. In the same vein, the UNIDROIT Working Group on Digital Assets and Private Law, while elaborating a set of Principles to support States in adopting substantive and conflict-of-laws rules on digital assets, under Principle 6, has identified that situation with the term “control” and clarified that “a person has ‘control’ of a digital

in Bitcoin, known as a “miner,” verifies it. The miners collect pending transactions, then confirm their correctness before verifying them. To summarize, Alice wants to send 20 BTC to Bob. The closest sum of her addresses to the targeted amount is 21.1 BTC. The transaction is broadcast on the Bitcoin network and once verified, Bob receives the 20 BTC, the miner receives 0.1 BTC as a transaction fee, and 1 BTC is returned to Alice as change. Once the transactions have been verified, they are stored in a tamper-resistant and shared data structure comprising of a list of blocks which are chained together, known as a blockchain. New transactions are inserted into a block at the end of the chain and linked to the previous block of transactions, as each block references the previous block’s hash.

⁸² Lehmann, M., *Who Owns Bitcoin? Private Law Facing the Blockchain*, Minnesota Journal of Law, Science & Technology, Vol. 21, No. 1, 2019, pp. 119-120.

⁸³ *Ibid.*, p. 123. The approach as above is acknowledged in *Tulip Trading Ltd v Bitcoin Association For BSV & Ors* [2022] EWHC 667 (Ch) (3 February 2023), esp. paras. 83-84.

⁸⁴ *Ibid.*, paras. 128-30.

⁸⁵ *Ibid.*, par. 128.

asset if: (a) ...the digital asset or the relevant protocol or system confers on that person: (i) the exclusive ability to prevent others from obtaining substantially all of the benefit from the digital asset; (ii) the ability to obtain substantially all the benefit from the digital asset; and (iii) the exclusive ability to transfer the abilities in sub-paragraphs (a)(i), (a)(ii) and (a)(iii) to another person (a ‘change of control’). (b) the digital asset, or the relevant protocols or system, allows the person to identify itself as having” those abilities.⁸⁶ What is more relevant here is, first, that, according to the Commentary to those Principles, the “‘control’ assumes a role that is a functional equivalent to that of ‘possession’ of movables,” insofar as in the markets for digital assets, those who acquire control over the assets “expect and believe” that they have obtained, through control, the relevant exclusive abilities,⁸⁷ and, second, that, for the purpose of the identification requirement set forth under (b), “an identifying number, a cryptographic key, an office, or an account number” may be, “by a reasonable means”, of relevance, “even if the means of identification does not indicate the name or identity of the person to be identified.”⁸⁸ Moreover, the relevance of the “exclusive ability” requirements for the purpose of said Principles as “an inherent aspect of proprietary rights” acknowledges the tendency to frame the relationship between users and digital assets in terms of property rights.⁸⁹

Therefore, the following section will investigate the PIL regime of proprietary aspects of cryptocurrencies.

3. THE PIL REGIME OF CRYPTOCURRENCIES AS “PROPERTY”

Looking at the role played by cryptocurrencies as a store of value, according to the traditional pattern in property matters, it is for the law governing property rights, as determined through the relevant conflict-of-laws provision – in principle the *lex situs* –, to establish whether a specific “thing” can be the subject matter of property rights, the classification of that thing as immovable or movable (or else), as well

⁸⁶ UNIDROIT, *Principles on Digital Assets and Private Law*, as approved by the Governing Council at its 102th session, Rome, 10-12 May 2023, C.D. (102), 2023, pp. 38-41, [<https://www.unidroit.org/wp-content/uploads/2023/04/C.D.-102-6-Principles-on-Digital-Assets-and-Private-Law.pdf>], Accessed 19 July 2023.

⁸⁷ *Ibid.*, 38 para. 6.1-6.3.

⁸⁸ *Ibid.*, 42 Principle 7(2).

⁸⁹ *Ibid.*, 38 para. 6.1. On the other hand, the recently adopted *ELI Principles on the use of Digital Assets as a Security*, [<https://www.europeanlawinstitute.eu/projects-publications/completed-projects/use-of-digital-assets-as-security/>], Accessed 28 February 2023, seems to envisage a mixed approach as regards the definition of “control”, referring either to “the legal power or factual capability of any natural or legal person to deal in and/or extinguish such assets, as the case may be”.

as the types and contents of those rights, *i.e.* the prerogatives of the person who “holds” the thing. When it comes to intangible assets, and especially, digital assets, however, the effectiveness of such a paradigm is largely put to the test, first and foremost, due to the difficulty, or rather impossibility, to identify a physical location for them, though not only because of that objective issue. Conversely, with regard to intangible assets incorporating claims, the further specificities, both in terms of notion of property rights and of applicable connecting factors, lie in the fact that the asset *is* the relationship with the debtor, which has its own governing law.

Once it is generally accepted that the factual relationship between a cryptocurrency and its holder entails that the latter has the exclusive ability to dispose of the former and to exclude others from the benefits thereof and that accordingly such relationship may be construed as property, the applicable law will determine the conditions upon which a person has a proprietary right in a cryptocurrency and that right may be validly transferred,⁹⁰ including the rules for the original acquisition of title (*e.g.* the possibility to invoke the defences of good faith purchase for value)⁹¹ and the derivative transfer of title (generally, either through party’s consent or delivery of the asset), as well as any requirements regarding time of perfection, publicity,⁹² need for specification,⁹³ and the realisation of the right over the asset,⁹⁴ both having regard to the rights as between the transferor and the transferee *inter se*, and to the legal consequences of the transfer *vis-à-vis* third parties,⁹⁵ including the transferor’s creditors.⁹⁶ As unlikely as it might seem because of the validation mechanisms embedded in the blockchain systems, which are precisely aimed at preventing any double transfer of the same token, the same law will govern the priority of the rights among competing transferees of the same token. Moreover,

⁹⁰ Lehmann, *op. cit.*, note 10, p. 150.

⁹¹ Fox, *op. cit.*, note 26, para. 6.57 ff.

⁹² Carr, *op. cit.*, note 25, paras. 7.18-7.20.

⁹³ *Ibid.*, paras. 7.16-7.17.

⁹⁴ Financial Markets Law Committee, *Distributed Ledger Technology and Governing Law: Issues of Legal Uncertainty*, 2018, p. 11 para. 4.7, [http://fmlc.org/wp-content/uploads/2018/05/dlt_paper.pdf], Accessed 28 February 2023.

⁹⁵ Although UNIDROIT Principles, *op. cit.*, note 80, p. 23, include “the legal consequences of third-party effectiveness of a transfer of a digital asset” and “the requirements for, and legal consequences of, third-party effectiveness of a security right in a digital asset” among matters governed by “other law” (*cf* Principle 3(3)), it seems that the conflict of laws provisions set forth in Principle 5 cover “proprietary issues”, without exceptions (*cf* para. 5.2, p. 33).

⁹⁶ Council of the European Union, Proposal for a Regulation of the European Parliament and of the Council on the law applicable to the third-party effects of assignments of claims - General approach (9050/21), 28 May 2021, art 5 *litt. c.*

the same law will establish the forms of security that may be validly granted over the cryptocurrency.⁹⁷

It is now time to explore some policy options for a conflict-of-laws regime for said property aspects of cryptocurrencies.

First and foremost, among the solutions that have been so far envisaged by scholars and think-tanks for crypto assets, the approach which favours the application of the law under which the right/claim represented by the crypto asset, as admitted by its own promoters,⁹⁸ cannot apply to intrinsic tokens, such as “pure” cryptocurrencies. In fact, as anticipated, cryptocurrencies do not represent nor incorporate rights.⁹⁹ The same goes for any approach centered around the issuer of the crypto assets, since cryptocurrencies do not embed a claim against an issuer, whereas the original coder does not undertake any obligation towards the subsequent transferees of the assets.¹⁰⁰

The absence of any underlying claim, coupled with the inherent nature of “pure” cryptocurrencies as items representing value, albeit a notional and volatile one, would, thus, locate their conflict-of laws regime into the realm of the *lex rei sitae* principle. This is premised (also) on the need for “an objective and easily ascertainable connecting factor to which third parties might reasonably look to ascertain questions of title,” which represents the first component of the rationale underlying the application of that principle in property matters¹⁰¹ and is even more

⁹⁷ UK Jurisdiction Taskforce, *op. cit.*, note 28, p. 25; ISDA, McCann FitzGerald; r3, *Private International Law Aspects of Smart Derivatives Contracts Utilizing Distributed Ledger Technology: Irish Law*, 2020, p. 29, [<https://www.isda.org/a/ACrTE/Private-International-Law-Aspects-of-Smart-Contracts-Utilizing-Distributed-Ledger-Technology-Irish-Law.pdf>], Accessed 28 February 2023.

⁹⁸ Takahashi, K., *Blockchain-based Negotiable Instruments (with Particular Reference to Bills of Lading and Investment Securities)*, SSRN, 2021, para. 5.6.3, [<https://ssrn.com/abstract=3937664>], Accessed 28 February 2023.

⁹⁹ Financial Markets Law Committee, *op. cit.*, note 90, 20 para. 6.27; Ng, M., *Choice of law for property issues regarding Bitcoin under English law*, *Journal of Private International Law*, Vol. 15, No. 1, 2019, p. 315.

¹⁰⁰ European Parliament resolution of 8 October 2020, *op. cit.*, note 4, Recital AN; Annunziata, F., *Speak, If You Can: What Are You? An Alternative Approach to the Qualification of Tokens and Initial Coin Offering*, *European Company and Financial Law Review*, Vol. 17, No. 2, 2020, pp. 150-153; ISDA, Jones Day; and r3, *Private International Law Aspects of Smart Derivatives Contracts Utilizing Distributed Ledger Technology: French Law*, 2020, p. 19, [<https://www.isda.org/a/ZCrTE/Private-International-Law-Aspects-of-Smart-Derivatives-Contracts-Utilizing-DLT-French-Law.pdf>], Accessed 28 February 2023.

¹⁰¹ Collins, Lord of Mapesbury; Harris, J. (eds.), *Dicey, Morris & Collins on the Conflict of Laws*, 16th edn, London, 2022, para. 22-025.

relevant for assets that could be used by companies to obtain liquidity and have access to credit through collateralisation.¹⁰²

However, the aforementioned technical features of cryptocurrencies, which originate in and are transferred through a ledger system that is dematerialised and distributed, make the application of the *situs* principle, at least in its traditional form, impossible in practice and unsuitable for the second limb of its rationale, which lies in the fact that “the country of the *situs* has control over the property and a judgment in conflict with the *lex situs* will often be ineffective,”¹⁰³ since the actual possibility for an authority to have any form of control over crypto assets, including to enforce any regulation, should rely on different grounds. Nevertheless, both limbs of that rationale should be included in the parameters against which to test the soundness of any conflict-of-laws regime for cryptocurrencies too, besides those related to the foreseeable use-cases of those assets.

In that regard, the need to find appropriate PIL solutions is reinforced by the pattern of disintermediation that is (or should be) intrinsic to DLT ecosystems by virtue of the traceability and collective validation of transactions taking place in and through those ecosystems. Disintermediation should *per se* rule out the possibility to envisage conflict-of-laws rules modelled on the ones related to book-entry securities that are based on the location of the relevant intermediary. Nevertheless, the current practice reveals that the prevailing framework for cryptocurrencies has become an indirect holding pattern, characterized by a combination of two-tier networks based on a distributed and decentralized scheme where the nodes are often represented by exchanges, *i.e.* crypto asset service providers in the language of the proposed EU Regulation on Markets in Crypto-assets,¹⁰⁴ that are connected to the adjacent nodes within the blockchain (*i.e.* a distributed network) and where additional nodes are also formed among investors in cryptocurrencies at the level of the relevant exchanges (*i.e.* a decentralized network).¹⁰⁵ Such practice may neither affect the technical features of the cryptocurrencies’ holding and transfer schemes, as far as the exchanges/intermediaries’ holding pattern applies the same schemes, nor, accordingly, the need to have legislative solutions well aligned with technology, but may have relevance when testing any legislative option against the substantive interests and aptitudes of the end-users, In fact, it might turn out that more often than expected, DLT end-users are professional operators.

¹⁰² Proposal for a Regulation of the European Parliament and of the Council on the law applicable to the third-party effects of assignments of claims, [2018] COM(2018) 96 final, p. 2.

¹⁰³ Collins; Harris, *op. cit.*, note 97, para. 22-025

¹⁰⁴ Council final compromise text, *op. cit.*, note 64, Art. 3 para. 1 n 9.

¹⁰⁵ Solinas, *op. cit.*, note 76, p. 156.

Furthermore, a basic theoretical question (with relevant practical consequences) should be considered. Conceptualizing the relationship between persons and cryptocurrencies in terms of property rights entails a generalized acceptance of the preliminary proposition(s) that (i) a notional value is worthy of being regarded as the subject matter of property rights, and (ii) the transfer of that value, *i.e.* the cryptocurrencies, according to the technical requirements of DLTs, implies a transfer of property right(s) over that value or, in other words, that a transfer of cryptocurrencies through the system is a legally sound way to dispose of said assets. However, this second proposition does not necessarily mean that a “transfer” within the system from which cryptocurrencies derive their existence is the only way to “dispose of” property rights over the same, unless a law establishes that it is so in terms of conditions for the validity of the transfer and opposability of the same against third parties. The last question is particularly relevant when it comes to investigating desirable conflict-of-laws approaches (and, particularly, about connecting factors) and the (possible) need to take into account both on-chain and off-chain acts of disposition for that purpose. In that regard, the business practice may, of course, offer some very much useful data to construct some answers, but the final say rests with the relevant applicable law, ...which leads to a kind of circular argument.

However, as advanced above,¹⁰⁶ an alternative theory has suggested that the proposition under (i) is replaced by a “protection by private law” that goes “beyond traditional conceptions of property in physical objects” and is “independent of any showing of legal title,” whereby “the mere factual situation that the private key was created for some person should suffice as a basis for claim of return”¹⁰⁷ and for the recognition of “some form of legal status” that is “also necessary for the creation of a security right over the crypto asset” in question. The same doctrine has further argued that it could be left “to the applicable tort, contract, or security law” to “call” that status as “property” or “possession” or “by another term,”¹⁰⁸ as well as to protect it through the relevant remedy.¹⁰⁹

In-between stands, so to say, a third approach, which does not give up on characterizing cryptocurrencies – or, rather, the “factual” benefit accruing to a person as a participant to a cryptocurrency system (the value of which relies upon “a legitimate expectation, founded on the technological features of the system, that

¹⁰⁶ *Supra* para. 2.2.2.

¹⁰⁷ Lehmann, *op. cit.*, note 78, p. 128.

¹⁰⁸ *Ibid.*, pp. 127-128.

¹⁰⁹ For a similar critique of the adoption of the “Physical Model” to frame the relationship between persons and intangible assets in the wake of the advent of the electronic era see Benjamin, J., *Interests in Securities: A Proprietary Law Analysis of the International Securities Markets*, Oxford, 2000, pp. 303 ff.

the consensus rules which underpin the system will be applied and will not be altered fundamentally such as to deprive each participant of the association to particular units within the system”) – as “a form of intangible property within the conflict-of-laws.”¹¹⁰ Yet, a distinction is made between “internal effects” of transactions within a cryptocurrencies system, which should be resolved by reference to the system’s consensus rules and any law applicable by virtue of the relevant conflict-of-laws rules concerning contractual obligations,¹¹¹ on one hand, and the “external effects,” to which separate choice of law rules apply, on the other. At the same time, however, this doctrine admits that the proprietary character of a cryptocurrency “depends” on relationships within the system,¹¹² illustrating that proposition through the case of parties wishing to create a security interest over units of a cryptocurrency. To this end, said parties may, or may not, enter into an arrangement which involves a transaction within the blockchain initiated by the grantor for the benefit of the grantee. In the second scenario the creation of the security may entail, for instance, that the grantor gives the grantee control over or access to a cryptocurrency wallet. In the first scenario, instead, the initiation of a transaction within the DLT system would engage “the separate relationships of the grantor, grantee, and many others as participants in the system.”¹¹³ By way of further example, it is mentioned that, if, for some technical reasons, the transaction within the system is ineffective, the grantee may need to rely on a proprietary entitlement existing outside the system. Also, if the transaction within the system is successfully validated but the system lacks the technical possibility to re-vest the cryptocurrency in the grantor upon redemption, the grantor may benefit from the protection afforded by the “external” proprietary entitlement. By the way, the aforesaid examples seem to provide support to the conceptualisation of cryptocurrencies holding pattern in terms of property rights, while, at the same time, demonstrating the relevance of and the need for “external” legal remedies to enforce those rights.

4. AVAILABLE OPTIONS FOR A CONFLICT-OF-LAWS REGIME

In going over the various possible approaches to determine the law applicable to “pure” cryptocurrencies, first, certain objective connecting factors that are pegged

¹¹⁰ Dickinson, *op. cit.*, note 55, p. 127 para. 5.97; Steinrötter, B., *International Jurisdiction and Applicable Law*, in: Maume, P.; Maute, L.; Fromberger, M. (eds.), *The Law of Crypto Assets. A Handbook*, München, Oxford and Baden-Baden, 2022, pp. 75 f.

¹¹¹ *Ibid.*, pp. 106 ff.

¹¹² *Ibid.*, p. 127 para. 5.95.

¹¹³ *Ibid.*, p. 127 para. 5.94.

to the ecosystem in which cryptocurrencies originate and are transferred will be considered, then, some propositions centered around the transferor and/or the transferee will be addressed, and, finally, schemes based on party autonomy will be explored.

4.1. The “PROPA” and “PREMA” criteria

A first batch of proposals looks to the place of the relevant operating authority or administrator (“PROPA”),¹¹⁴ either in form of objective connecting factor¹¹⁵ or by empowering that authority to establish the applicable law. The significance of that connection would be, of course, particularly relevant in case of an operator which is registered and supervised under some national law.¹¹⁶ Both versions, indeed, reflect the wish for a single law to govern all aspects of transactions within the system.¹¹⁷ Such an approach presupposes that the relevant DLT system is permissioned and not decentralised,¹¹⁸ with a single entity performing core functions, such as management activities, and acting as a point of contact and a gatekeeper on behalf of the regulators. Moreover, the enactment of a rule grounded on PROPA would, in any case, require a clarification of the actual role of the “relevant administrator,” by specifying the activities which represent the essence of that role and a threshold of “relevance,” especially in cases where the entity in question only performs limited functions, such as providing technical access to the system, or where there are two (or more) entities performing similar functions located in different states.¹¹⁹ However, PROPA seems unable to work for permissionless/public systems like Bitcoin.

The same rationale would underlie an approach based on the location of the original coder of the DLT system or the private master key for the same (usually the

¹¹⁴ In the opinion of the UK Jurisdiction Taskforce, *op. cit.*, note 28, p. 99, in determining whether English and Welsh law governs the proprietary aspects of dealings in crypto assets, one of the factors that might be “particularly relevant” is whether there is any centralized control in England and Wales.

¹¹⁵ Gesetz über elektronische Wertpapiere (eWpG), *op. cit.*, note 43, § 32 “1. Unless § 17a of the Custody Account Act applies, rights in an electronic security and dispositions of an electronic security shall be governed by the law of the state under whose supervision the register-keeping entity in whose electronic securities register the security is registered is located. 2. If the entity keeping the register is not under supervision, the registered office of the entity keeping the register shall be decisive. If the registered office of the entity keeping the register cannot be determined, the registered office of the issuer of the electronic security shall be decisive” (unofficial translation).

¹¹⁶ Lehmann, *op. cit.*, note 10, p. 169.

¹¹⁷ Ooi, M., *Choice of Law in the Shifting Sands of Securities Trading*, in: Dickinson A.; Peel, E. (eds.), *A Conflict of Laws Companion. Essays in Honour of Adrian Briggs*, Oxford, 2021, p. 213.

¹¹⁸ de Vauplane, H., *Blockchain And Conflict of Laws*, *Revue Trimestrielle de Droit Financier*, 2017, p. 52.

¹¹⁹ Financial Markets Law Committee, *op. cit.*, note 91, p. 18 paras. 6.16-6.17.

primary residence of the keyholder; hence the acronym “PREMA”), that is the key by which the relevant operator or administrator is enabled to control all transfer of assets within the system, in that such master key is used to encrypt and store all other keys in the system. In either cases, besides the costs to market participants of ascertaining the location of these entities, one may question why the original coder should affect the ongoing life of the system (and all the transactions therein executed), especially where (s)he is not also the system administrator.

4.2. The Transferor’s or the Transferee’s Location

A second group of theories looks to the location of the parties to the transactions, either in the form of their habitual residence (or centre of main interest or domicile) or of their private encryption key (or of the wallet where private keys are stored).¹²⁰

The solutions based on the transferor mirror the approach undertaken in the latest available text of the Proposal for Regulation on the law applicable to third party effects of assignment of claims (*per se* not applicable to the third party effects of the transfer of crypto assets)¹²¹ as a general rule.¹²² In both frameworks, the main advantage of said criterion has been identified in the convenience it brings to the transfer of claims/assets in bulk, in that all the claims/assets held by the transferor-assignor-borrower become subject to the same law with regard to third party effect

¹²⁰ This approach is supported by de Vauplane, *op. cit.*, note 114, p. 50 and Green, S.; Snagg, F., *Intermediated Securities and Distributed Ledger Technology*, in: Gullifer, L.; Payne, J. (eds.), *Intermediation and Beyond*, Oxford, 2019, p. 357, based on the analogy with traditional bearer securities. The UK Jurisdiction Taskforce, *op. cit.*, note 28, p. 99, qualifies as “particularly relevant” also “whether a particular crypto asset is controlled by particular participant in England and Wales because, for example, a private key is stored here”.

¹²¹ Council of the European Union, *op. cit.*, note 92, Art. 1 para. 1ab. Conversely, pursuant to Art. 4 para. 2 of the same Proposal, “[t]he law applicable to the assigned claim shall govern the third-party effects of the assignment of: ... (ba) claims arising out of crypto-assets that do not qualify as financial instruments or electronic money.” See also Recital 16bis and Recital 27bis. According to Recital 16bis, last sentence, “[i]n order to avoid characterisation problems as to whether a certain crypto-asset qualifies as a financial instrument or another type of crypto-asset, claims arising from all crypto-assets should be covered by th[e] Regulation, with the exception of claims arising out of crypto-assets that qualify as transferable securities, money-market instruments or units in a collective investment undertaking.” That provision will, of course, apply to all crypto assets capable of giving rise to “claims” according to the definition provided in Art. 2 *litt. d*, *i.e.*, “the right to claim a debt of whatever nature, whether monetary or non- monetary, and whether arising out of a contractual or a non-contractual obligation.” It is worth noting that Art. 2 *litt. hc* and Recital 16bis of the Proposal expressly refer to the definition of “crypto-asset” “as defined” in the relevant provision of the MiCa Proposal, *op. cit.*, note 60.

¹²² Council of the European Union, *op. cit.*, note 92, Art. 4 para. 1.

of the transfer-assignment.¹²³ Moreover, that criterion offers the additional advantage that it does not put the transferee-financier in a more favourable position than other possible competing claimants seeking to challenge the transfer.

On the other hand, the solutions based on the location of the transferee (or of her private key) mirror the PRIMA principle embodied in the FCD¹²⁴ and, with certain differences, in the Hague Securities Convention,¹²⁵ where the relevant factor is also in the control of the transferee, *i.e.* the financier, who, therefore, is allowed to ascertain the applicable law much more easily and before anyone else.¹²⁶ Moreover, the main advantage of the transferee/current holder rule has been identified in that it applies the law of the state which can effectively enforce any judgment.¹²⁷

More in general, as advocated in the last edition of *Dicey, Morris*,¹²⁸ the location of the owner is reasonably objectively identifiable. In addition, even though direct control over a cryptocurrency might be beyond any individual state, the owner of the cryptocurrency has control over the property, generally through their control over the private encryption key which is required to transfer the property, and the state of location of the owner thereby has the strongest indirect control over the property. Along the same line, the “owner” should generally be understood to refer to the party in possession of the private encryption key giving access to the cryptocurrency at the time of the relevant transaction.¹²⁹ If an encryption key is duplicated, the “owner” should generally be understood as the party who in fact exercises control over the cryptocurrency, for example, through effecting a sale to a third party. In case of hacking, the owner’s residence or place of business¹³⁰ at the time of the hack or misappropriation would be of relevance,¹³¹ whilst the location of its servers are regarded as “an adventitious circumstance”.¹³²

¹²³ Ooi, *op. cit.*, note 113, p. 216.

¹²⁴ Directive 2002/47/EC of the European Parliament and of the Council on financial collateral arrangements [2002] OJ L168/43, Art. 9.

¹²⁵ Hague Conference on Private International Law, Convention of 5 July 2006 on the Law Applicable to Certain Rights in Respect of Securities held with an Intermediary, Art. 4.

¹²⁶ The same line of reasoning is supported by J. Pelling in *Osbourne v Persons Unknown & Anor* [2022] EWHC 1021 (Comm) (10 March 2022) in cases relating to crypto currency fraud “crypto assets, are to be treated as located at the place where the owner of them is domiciled”.

¹²⁷ Ng, *op. cit.*, note 95, p. 335.

¹²⁸ Collins, Harris, *op. cit.*, note 97, para. 23-050.

¹²⁹ *Tulip Trading Ltd v Bitcoin Association For BSV & Ors* [2022] EWHC 667 (Ch) (25 March 2022), 148.

¹³⁰ *Ibid.*, 149.

¹³¹ *D’Aloia v Person Unknown & Ors* [2022] EWHC 1723 (Ch) (24 June 2022), 10.

¹³² *LMN v Bitflyer Holdings Inc & Ors* [2022] EWHC 2954 (Comm) (29 November 2022), 20.

However, against approaches based on the transferor's or transferee's location the following critiques have been raised: the blockchain becomes subject to as many laws as the number of states where the users or their private keys are located, the identity of users is often unknown (or difficult to trace) and, accordingly, it is difficult to identify the place of the private key.¹³³ Moreover, the private key is a code that may or may not be associated with any particular tangible device which generates it or stores it.¹³⁴ An additional significant disadvantage of the criteria based on the transferor's location would be that they would often provide unclear answer to questions of entitlement in cases of joint transferors or a change in the transferor's habitual residence or domicile.¹³⁵

The same objections have been raised against another doctrine, likewise centered on the transferor's location. In fact, building upon the analogy between the factual benefit accruing to a person as participant in the blockchain and the goodwill of a business, which in English conflict-of-laws is equally qualified as a species of intangible property, it is argued that "proprietary effects outside the cryptocurrency system of a transaction relating to cryptocurrency shall in general be governed by the law of the country where the participant resides or carries on business at the relevant time."¹³⁶ In case that the relevant user resides or carries on business in more than one state at that time, the relevant place would be the place of residence or business of the user "with which the participation [in the cryptocurrency] that is the object of the transaction is most closely connected."¹³⁷ The emphasis on the effects of transactions outside the cryptocurrencies system, on one hand, allows that doctrine to highlight the predictability and ease of application in comparison with other possible choice of law approaches, as well as the close alignment with

¹³³ Audit, M., *Le droit international privé confronté à la blockchain*, *Revue critique de droit international privé*, 2020, para. I.B; Ooi, *op. cit.*, note 113, p. 215.

¹³⁴ Ooi, *op. cit.*, note 113, p. 215.

¹³⁵ Financial Markets Law Committee, *op. cit.*, note 90, p. 20 para. 6.22.

¹³⁶ This approach has been applied in *Ion Science & Duncan Johns*, *op. cit.*, note 29, 13, whereby, as reported by Sleeve, *op. cit.*, note 29, English law was found to apply, as England was the place where the damage occurred. This was on the basis that Mr. Johns' bank account was an English account, or that the funds were taken from the applicants' control in England, because either Mr. Johns' computer was in England, or because the relevant bitcoin was located in England prior to the transfer. As to the latter point, this was said to be because the *lex situs* of a crypto asset is the place where the person or company who owns it is domiciled, although Mr. Justice Butcher acknowledged there is no decided case on this point and relied on textbook authorities (which, incidentally, has been identified with Andrew Dickinson in the following online posting: Moir A. *et al*, *High Court considers where cryptocurrencies are located and compels disclosure of information by cryptocurrency exchanges outside the UK*, Herbert Smith Freehills, 2021, [<https://hsfnotes.com/litigation/2021/02/24/high-court-considers-where-cryptocurrencies-are-located-and-compels-disclosure-of-information-by-cryptocurrency-exchanges-outside-the-uk/>], Accessed 28 February 2023.

¹³⁷ Dickinson, *op. cit.*, note 55, p. 132 para. 5.109.

the rules that apply to cross-border insolvency.¹³⁸ On the other hand, the distinction between the external effects, governed by the law of the state of the transferor's residence or business, and the internal effects, tentatively attributed by this doctrine to the law governing the (contractual) relationship between participants in the system, would allow the assertion of proprietary rights based on the law applicable to "external effects" against another user who, after being granted "externally" with security interests in a cryptocurrency, uses the information provided to him by the owner of the cryptocurrency (and grantor of the security interest) to initiate an irreversible transaction within the system in favour of a third party. One may reply that distinguishing between external and internal proprietary effects for the purpose of identifying the applicable law creates exposure to misalignments, for instance, in the substantive requirements for the opposability of property rights, thereby paving the way for inextricable conflicts of competing assertions of proprietary rights on the part of different persons. While advocating for uniform substantive rules, especially on this aspect, one should not overrate the actual impact of such misalignments, keeping in mind that the existence of different proprietary rights, each governed by a different law, is a very common pattern in the framework of proprietary rights over intermediated securities.¹³⁹ Yet, an additional warning is to be given about the need to have in place some kind of settlement regime, capable of (i) combining coherently both the external and the internal proprietary effects of transactions over cryptocurrencies, and (ii) counterbalancing the lack of deterministic operational finality of said transactions¹⁴⁰ with legal mechanisms to define the moment(s) of settlement finality.¹⁴¹

¹³⁸ *Ibid.*, pp. 132-133 para. 5.110.

¹³⁹ See Dixon, V., *The Legal Nature of Intermediated Securities: An Insurmountable obstacle to Legal Certainty?*, in: Gullifer, L; Payne, J. (eds.), *Intermediation and Beyond*, Oxford, 2019, pp. 70 ff, for a detailed analysis of that pattern in cross-border settings.

¹⁴⁰ The finality of payments and settlements on the Bitcoin blockchain is viewed as probabilistic due to the likelihood that the most recent transactions embedded in the blockchain may be undone or bitcoins may be double spent due to a formation of a fork: see Bank for International Settlements, *Annual Economic Report*, 2018, pp. 101-104, [<https://www.bis.org/publ/arpdf/ar2018e.htm>], Accessed 28 February 2023. However, the same applies to the operational settlement with cash and any other means of electronic payments, as there is always a theoretical possibility of taking the cash back by using brute force or reversing the transaction due to a technical failure in the payment system, including that of a central bank.

¹⁴¹ The need for (and the difficulties linked to) the establishment of a regime capable of providing legal finality in Proof-of-Work blockchains are pointed out by Nabilou, H., *Probabilistic Settlement Finality in Proof-of-Work Blockchains: Legal Considerations*, SSRN, 2022, [<http://dx.doi.org/10.2139/ssrn.4022676>], Accessed 28 February 2023. On this topic see also Committee on Payments and Market Infrastructures, *Distributed ledger technology in payment, clearing and settlement: An analytical framework*, BIS, 2017, [<https://www.bis.org/cpmi/publ/d157.pdf>], Accessed 28 February 2023; Advisory Groups on Market Infrastructures for Securities and Collateral and for Payments, *The use of DLT in post-trade processes*, ECB, 2021, [https://www.ecb.europa.eu/pub/pdf/other/ecb.20210412_useofdl-t]

4.3. The Elective *Situs/Lex creationis* Approach...

The intrinsic connection between “pure” cryptocurrencies and the system in which they originate and through which they are transferred is, instead, at the core of the approach which looks to the law governing the system, alternatively, as the “*situs*” of the assets or the *lex creationis*, *i.e.* the law of the system by which cryptocurrencies are created.¹⁴² In either case, the law applicable to the system is identified with the law agreed to by participants to the system (the originator and the nodes) either explicitly or implicitly by dealing with crypto assets within the system.¹⁴³ The same rationale underlies the reference made in the new UCC art 12 to “the controllable electronic record itself, records attached thereto or associated therewith”, as an alternative to “the system in which the controllable electronic record is recorded”, that “determines the controllable electronic record’s jurisdiction and, thereby, the governing law”.¹⁴⁴ Even more explicitly, Principle 5 of the Draft UNIDROIT Principles on Digital Assets and Private Law provides that “proprietary issues in respect of a digital assets are governed by... the domestic law of the state... expressly specified in the digital asset as the law applicable to such issues” or, lacking such indication, “in the system or platform on which the digital asset is recorded”.¹⁴⁵

The advantages of the approach centered around the system, sometimes referred to as the “elective situs” following the model of the “contractual PRIMA” which labels the Hague Securities Convention, is said to lie in the fact that the effects of all the transactions within the system are governed by the same law and that participants in the system cannot complain about the application of that law since it is the law to which they have submitted, which, moreover, has the most significant connection with the crypto assets, and especially native tokens. Moreover, the law governing the system is said to be easily ascertainable both by parties to each transaction, as well as by third parties, themselves likely to be participant in the same system. The main obstacles to the elective *situs/lex creationis* approach lie, on one hand, in the possible reluctance to see the effects of a choice-of-law agreement extended to third parties who do not participate in the relevant system, and, on the other hand, in possible concerns regarding the risk of circumvention of regulatory requirements or related to the choice of a law which might be subject to undue external or private influence. The former concerns could, however, be, at

posttradeprocesses-958e3af1c8.en.pdf?2779d0668b55434a0e67174b3f1183a4], Accessed 28 February 2023.

¹⁴² Ooi, *op. cit.*, note 113, pp. 220-221.

¹⁴³ *Ibid.*, p. 219.

¹⁴⁴ Uniform Commercial Code Amendments (2022), *op. cit.*, note 49, Section 12-107.

¹⁴⁵ Draft UNIDROIT Principles on Digital Assets and Private Law, *op. cit.*, note 82.

least partially, mitigated through the requirement of an express designation of the applicable law, thereby drawing everyone's attention on that designation and fostering its visibility, whilst the latter concerns could be addressed by combining the elective *situs* rule with a requirement that the selected law has an objective connection with the system, which could, moreover, be specified through a list of factual elements which should be considered for that purpose. Alternatively, the effectiveness of the choice-of-law agreement could be made conditional upon the approval of the relevant regulatory authority (which would entail, however, the need for the relevant legislative forum to be entitled to adopt both conflict-of-laws and regulatory rules within the same national or international framework). It might be worth noticing, however, that the MiCA Regulation provides that the crypto-asset white paper which, according to Article 4 para 1 litt. b, shall accompany a request for admission of a crypto asset to trading on a trading platform for crypto assets, shall contain, on one hand "the applicable law and the competent court of the offer *and of the crypto-asset*" (Annex I, Part C, n 14; emphasis added), and on the other, "...the following clear and prominent statement on the first page: 'This crypto-asset white paper has not been reviewed or approved by any competent authority in any Member State of the European Union...'" (art 5 para 3).

4.4 ...with Some *Addenda*

However, what the elective *situs* approach fails to provide is a solution for systems or assets which lack any agreement as to the applicable law, and this might often be the case for permissionless systems. A comprehensive conflict-of-laws regime for proprietary effects of transactions over cryptocurrencies, based on the elective *situs* and some requirements in terms of objective connection of the selected law, therefore requires a fall-back rule,¹⁴⁶ which should provide different sub-rules for permissioned and permissionless systems. As for the former, the PROPA approach might be a workable solution which, like the main rule, would lead to a single law applicable to the effects of all transactions within the system. For the latter systems, the reasons for having a single law applicable to all transactions seem much weaker and, in any case, it would be very complicated to achieve this goal in light of the aforesaid difficulty to identify a meaningful objective connecting factor for permissionless systems. For those systems, the transferor's habitual residence or registered seat might represent a practical solution, at least for the effects of transaction in cryptocurrencies outside the system, whereby in most cases it should be

¹⁴⁶ In the opinion of Guillame, F., *Blockchain: le pont du droit international privé entre l'espace numérique et l'espace physique*, in: Pretelli, I. (ed.), *Conflict of Law in the Maze of Digital Platforms*, Cham, 2018, p. 180, in the absence of a valid choice of law agreement, the *lex fori* would be applicable, since any territorial connecting factor would be devoid of any relevance in DLT's settings.

possible to ascertain the identity and the location of the relevant parties. For the proprietary effects of transactions relating to cryptocurrencies within the system, the principle embodied in recital 38 of the Rome I Regulation – according to which the law that applies to the contract between the assignor and assignee under that Regulation “also applies to the property aspects of an assignment, as between assignor and assignee, in legal orders where such aspects are treated separately from the aspects under the law of obligations” might serve as a basis for discussion, at least in case the recently advanced proposition to create a legal identifier of securities for PIL purpose, which would make visible the applicable law as determined under the relevant conflict-of-law rules, will be adopted and extended to crypto assets.¹⁴⁷ However, the most recent attempts to draft a fall-back rule, lacking an elective situs, seem to converge on the *lex fori*. This is the case of both UCC Section 12-107(d) and UNIDROIT draft Principle 5.

All in all, the elective *situs* approach resonates both with the overall concept of DLTs, as a “space” where party autonomy, as embedded into the digital processes (*i.e.*, the code), creates the assets and handle them, and with the notional value of cryptocurrencies. Yet, the spontaneous process of aggregation underlying the establishment of DLT systems – at least the permissionless ones – calls for fall-back rules, based on objective connecting factors, that pursue predictability of the applicable law. Identifying the relevant party for whom, primarily, predictability should be achieved is only one of the manifold challenges ahead for lawmakers.

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