Blockchain- and Cryptocurrency-Related Legal Issues: A Research Roadmap
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Professor Walter A. Effross
American University Washington College of Law

The legal issues spawned by these technologies are not confined to the traditional subject(s) of any single course, but instead pervade, permeate, and percolate through the entire law school curriculum.

Relevant law review articles are listed alphabetically by author’s name; associated primary sources are listed chronologically.

Civil Procedure/Conflicts of Law

Which jurisdiction’s laws apply to a transaction involving blockchain technology? Which courts have personal jurisdiction over blockchain-related disputes?


Contracts

What are the contractual rights associated with ownership of cryptocurrency? What terms must parties agree to to participate in cryptocurrency and/or blockchain transactions? How are the terms of participation in private/permissioned blockchains (for instance, among consortia of financial institutions) different from those of public blockchains? How can “smart contracts” (computer programs designed to execute transactions automatically and autonomously) be designed and implemented using blockchain, and how does the current law of contracts govern the interpretation and enforceability of these arrangements? (In June 2017, Nevada amended its version of the Uniform Electronic Transactions Act to recognize blockchain as a method of forming enforceable contracts.) How does/will the law of smart contracts reflect concerns about the regulation of artificial intelligence (AI) generally?

- Reggie O'Shields, Smart Contracts: Legal Agreements for the Blockchain, 21 N.C. Banking Inst. 177 (2017)
- Jeremy Sklaroff, Comment, Smart Contracts and the Cost of Inflexibility, 166 U. Pa. L. Rev. 263 (2017)

- Uniform Law Commission [also known as the National Conference of Commissioners on Uniform State Laws], Uniform Electronic Transactions Act (1999) (adopted by the great majority of states; upholds the enforceability of contracts formed using digital records and digital signatures)

- States that have specified that signatures obtained through blockchain constitute electronic signatures, and that records maintained by blockchain qualify as enforceable electronic records, include Arizona, (A.R.S. 47-7061, amended March 2017); Nevada (N.R.S. 719, amended June 2017); and Tennessee (T.C.A. 47-10-201, -202, amended March 2018).

- Uniform Law Commission, Uniform Regulation of Virtual-Currency Businesses Act (October 9, 2017) [draft legislation; not yet adopted by any state]: “The underlying assumption motivating this act is that regulations that are predictable and tailored to virtual-currency businesses will provide assurance to persons using virtual-currency products and services and to providers that they will in fairness be regulated like other providers of financial services and products.”

- Conference of State Bank Supervisors, State Regulatory Requirements for Virtual Currency Activities- Model Regulatory Framework (September 15, 2015). Recommends that “states review their laws, regulations, and interpretations to ensure at a minimum the following activities are covered if performed using virtual currency:
  - Transmission
  - Exchanging:
    - Sovereign currency for virtual currency or virtual currency for sovereign currency
    - Virtual currency for virtual currency
  - Services that facilitate the third-party exchange, storage, and/or transmission of virtual currency (e.g. wallets, vaults, kiosks, merchant-acquirers, and payment processors).


  Cryptocurrencies are strikingly innovative but also pose challenges associated with speculative dynamics, investor and consumer protections, and money-laundering risks. Although central bank digital currencies may be able to overcome some of the particular vulnerabilities that cryptocurrencies face, they too have significant challenges related to cybersecurity, money laundering, and the retail financial system. Even so, digital tokens for wholesale payments and some aspects of distributed ledger technology—the key technologies underlying cryptocurrencies—may hold promise for strengthening traditional financial instruments and markets.
 Intellectual Property

To what degree are the various “flavors” of blockchain software/applications eligible for copyright, patent, and/or trade secret protection? How can owners of any of these intellectual property rights license that technology? To what degree is the relevant code “open source”?

How can blockchain be applied to the licensing of other intellectual property, and to address the problem of “orphan works” (those still within the copyright period but whose authors cannot be located)?


 Regulatory and Administrative Law

Which state, federal, and international agencies or authorities can, and should, regulate blockchain applications—especially cryptocurrencies? What should those regulations cover, and how can they be harmonized? What is the role of industry self-regulation?

To what degree can blockchain be used as a tool of—or be subject to the operations of—“RegTech,” the application of technology to monitor, report on, and enforce parties’ compliance with regulatory requirements?

In June 2015, the New York State Department of Financial Services promulgated a “BitLicense” regulation for certain “Virtual Currency” transactions “involving New York or a New York Resident.” N.Y. Comp. Codes R. & Regs. Tit. 23, §§200. States including Alabama, Connecticut, Maryland, North Carolina, Oregon, Pennsylvania, Vermont, and Washington have clarified that their money transmitter regulations apply to transmitters of cryptocurrency; Illinois, Kansas, New Hampshire, Tennessee, and Wyoming have excluded cryptocurrency transmitters from the definition, and regulation, of money transmitters.

- National Conference of Commissioners on Uniform State Laws [also known at the Uniform Law Commission]. Uniform Regulation of Virtual-Currency Businesses Act (2017) [draft legislation for adoption by states]

- Congressional Research Service (Edward V. Murphy, M. Maureen Murphy & Michael V. Seitzinger), Bitcoin: Questions, Answers, and Analysis of Legal Issues (October 13, 2015) (Earlier versions of this report are also available.)

- Congressional Research Service (Chris Jaikaran), Blockchain: Background and Policy Issues (February 28, 2018)
Criminal Law, and National Security

How can law enforcement authorities apprehend money-launderers, blackmailers (including the disseminators of “ransomware”), tax evaders, and others whose crimes are enabled, and identities shielded, by the use of cryptocurrency?

How can nations prevent cryptocurrency from being used to finance, launder money for, or transfer value anonymously for, terrorist organizations?

How can cryptocurrency coins be stolen? What, if any, recourse is available to victims of such thefts?

What special state rules apply to virtual currency business entities with regard to their responsibilities to prevent, detect, and respond to fraud and market manipulation?

- Department of the Treasury, Financial Crimes Enforcement Network (FinCEN), FIN-2013-G007, Application of FinCEN’s Regulations to Persons Administering, Exchanging, or Using Virtual Currencies (2013)

- Financial Action Task Force (FATF) Report, Virtual Currencies: Key Definitions and Potential AML/CFT Risks (June 2014)- a brief discussion, by an “independent inter-governmental body that develops and promotes policies to protect the global financial system against money-laundering, terrorist financing and the financing of proliferation of weapons of mass destruction,” of definitions, legitimate uses, and potential risks of cryptocurrencies, with particular regard to anti-money-laundering (AML) and counter-terrorist-financing (CFT) efforts. Reviews law enforcement actions against Liberty Reserve (2013), Silk Road (2013), and Western Express International (2006-2013).

- FinCEN, FIN-2014-R001, Application of FinCEN’s Regulations to Virtual Currency Mining Operations (2014)

- New York State Department of Financial Services, Guidance on Prevention of Market Manipulation and Other Wrongful Activity (February 7, 2018)

- Letter from Drew Maloney, Assistant Secretary for Legislative Affairs, Department of the Treasury, to Senator Ron Wyden, Ranking Member, U.S Senate Committee on Finance concerning “some of the work FinCEN has done [with regard to virtual currencies] to advance its crucial mission of administering the Bank Secrecy Act (BSA) and protecting the U.S. financial system from . . . potential illicit financing risks”) (February 13, 2018)
Privacy, and Data Security

What laws apply to the protection of personal information recorded in a blockchain record? How can such information be protected technologically?

How are blockchain developers and users affected by the European Union’s General Data Protection Regulation (GDPR), which went into effect on May 25, 2018?

How can blockchain be used to enhance cybersecurity generally (for instance, by enabling better methods of verifying users’ identities)?


Healthcare

How does the Health Insurance Portability and Accountability Act of 1996 (HIPAA) apply to personal health information stored in a blockchain system?


Secured Transactions

How can security interests in cryptocurrency be granted, attached, and perfected under Article 9 of the Uniform Commercial Code? Should Article 9 be updated/revised to clarify these issues?

Can someone who owns cryptocurrency through a third party qualified as a “securities intermediary” treat that cryptocurrency as a “financial asset” to enable a form of perfection of a security interest in it under Article 8’s “super-negotiation” rules?

How can blockchain be used to record security interests?

Securities

Do cryptocurrency “coins,” “security tokens,” and “utility tokens” made available in “initial coin offerings” (ICOs) qualify as securities governed by the SEC’s rules and regulations?

Do regulations governing crowdfunding apply to ICOs?

Do virtual currencies qualify as “commodities” under the Commodity Exchange Act, and are transactions in them thereby subject to the jurisdiction of the Commodity Futures Trading Commission (CFTC)?

How does Article 8 of the Uniform Commercial Code apply to the issuance of uncertificated securities through blockchain?

How does the Investment Company Act of 1940 apply to cryptocurrency funds?

How can blockchain be used to identify the holders of particular shares, and to enable them to exercise their ownership and voting rights more efficiently?

How can blockchain be used to make the derivatives market more efficient?

- George Geis, Traceable Shares and Corporate Law [forthcoming- Northwestern University Law Review]


- Commodity Futures Trading Commission (CFTC), In re Coinflip, Inc., d/b/a/ Derivabit, CFTC Docket No. 15-29 (September 17, 2015)
- CFTC, In re BFXNA Inc, d/b/a/ Bifinex, CFTC Docket No. 16-19 (June 2, 2016)
CFTC, Advisory with Respect to Virtual Currency Derivative Product Listings, Staff Advisory No. 18-14 (May 21, 2018)

SEC, Chairman John Clayton, Statement on Cryptocurrencies and Initial Coin Offerings (December 11, 2017) (warning investors of risks associated with initial coin offerings; and reminding market professionals and their advisors that “Merely calling a token a “utility” token or structuring it to provide some utility does not prevent the token from being a security. Tokens and offerings that incorporate features and marketing efforts that emphasize the potential for profits based on the entrepreneurial or managerial efforts of others continue to contain the hallmarks of a security under U.S. law. **On this and other points where the application of expertise and judgment is expected, I believe that gatekeepers and others, including securities lawyers, accountants and consultants, need to focus on their responsibilities.”** Additionally, “simply calling something a “currency” or a currency-based product does not mean that it is not a security.”

SEC, Staff Letter: Engaging on Fund Innovation and Cryptocurrency-related Holdings (January 18, 2018)


SEC, HoweyCoins.com [click on “Token Sales,” then on “Buy Coins Now!”]

SEC, Digital Asset Transactions: When Howey Met Gary (Plastic), Remarks by William Hinman, Director, Division of Corporate Finance, at the Yahoo Finance All Markets Summit: Crypto (San Francisco, June 14, 2018) (suggesting that offers and sales of Bitcoin and Ether are not securities transactions)


SAFT, Simple Agreement for Future Tokens [form]

The Brooklyn Project

In July 2017, the Delaware Legislature amended Section 224 of the state’s General Corporation Law to clarify that “Any records administered by or on behalf of the corporation in the regular course of its business, including its stock ledger, books of account, and minute books, may be kept on, or by means of, or be in the form of, any information storage device, method, or 1 or more electronic networks or databases (including 1 or more distributed electronic networks or databases), provided that the records so kept can be converted into clearly legible paper form within a reasonable time. . . .”

In March 2018, the Wyoming Legislature amended various sections of the state’s statutes’ Title 17 to “authoriz[e] corporations to use electronic networks or databases for the creation or maintenance of corporate records; authoriz[e] the use of a data address to identify a corporation's shareholder; authoriz[e] corporations to accept shareholder votes if signed by a network signature that corresponds to a data address; and specify[ ] requirements for use of electronic networks or databases, . . .”

The definitions of the newly-added terms, “data address” and “network signature,” which refer to “distributed or other” electronic networks or databases, clearly authorize corporations and their shareholders to use blockchain and public key encryption for these purposes. Indeed,
in this context, a shareholder’s “identity” is now defined as the shareholder’s name “or the data address for which the shareholder has knowledge or possession of the private key uniquely associated with the data address.”

**Tax**

How does the Internal Revenue Service treat payments in cryptocurrency, as opposed to in cash or other traditional forms of payment? How is this issue complicated by the volatile valuations of cryptocurrency “coins”?

- IRS Notice 2014-21 (April 14, 2014) (clarifying “how existing general tax principles apply to transactions using virtual currency”)

**Business Associations, and Corporate Governance**

What law governs “decentralized autonomous organizations” (DAOs), entities whose operations (including the execution of “smart contracts”) are governed by computer programs? What is the liability of these entities, and/or of the programmers of their code? What new forms of business associations, if any, should be developed to address the governance issues of DAOs? What is the responsibility of directors of traditional corporations to educate themselves about, and react to the emergence of, blockchain and cryptocurrency? How much would an understanding of such practices aid candidates for directorships?

How can blockchain be used to securely make information available to members of a board of directors, and to enhance the shareholder voting process? (In August 2017, Delaware amended its General Corporation Law to allow corporations to maintain shareholder lists and other records through blockchain.)

What are the implications of blockchain and cryptocurrency for corporate compliance departments? For “social enterprises”—such as benefit corporations—that are intended not only to make some profit but also to serve social purposes?

SEC, Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO, Exchange Act Release No. 81207 (July 25, 2017) (concluding that the tokens offered constituted securities, and advising “those who would use a Decentralized Autonomous Organization (“DAO Entity”), or other distributed ledger or blockchain-enabled means for capital raising, [how] to take appropriate steps to ensure compliance with the U.S. federal securities laws.”)

Corporate and Personal Bankruptcy

Do cryptocurrencies qualify as “commodities,” or instead as “currencies,” under the Bankruptcy Code? Can the fluctuations in the value of cryptocurrencies ground fraudulent transfer actions to recover pre-bankruptcy payments made by the debtor, and/or motions by secured creditors for adequate protection of their interests in the debtor’s property?


Antitrust

Do private/”permissioned” blockchains raise concerns that the participating parties are violating antitrust law by excluding their competitors?


Evidence

How can blockchain-based records be introduced and authenticated as evidence?

- In June 2016, Vermont amended its statutes to govern the admissibility of information registered on a blockchain (12 V.S.A. §1913).
Property/Real Estate Law

How can blockchain be used to record the conveyance of, and mortgages on, real property?


Negotiable Instruments

How can blockchain be used to generate, indorse, accept, and/or record the transfer of negotiable instruments?

Legal Ethics

Can a lawyer ethically accept cryptocurrency payments from her client, or from another party on the client’s behalf?

Can a lawyer hold cryptocurrency in escrow for clients?

- Excerpts from Nebraska Bar Ethics Advisory Opinion 17-03 (September 2017):

To mitigate or eliminate the risk of volatility, it is possible to value or convert bitcoins and other digital currencies into U.S. dollars immediately upon receipt. The conversion rate would be market based such as from an exchange or based upon the New York Stock Exchange Price Index, for example. In this way, the bitcoins would serve to credit the client's account and there would be no risk to the client of value fluctuation. As part of this process, a law office would need to disclose to the client that the firm would not be retaining the bitcoins but converting them to cash upon receipt. Through this method, the client is informed that an increase in the value of their bitcoins will not additionally fund their outstanding account. In addition, clients need not be concerned if the value of the bitcoins they sent for payment suddenly dropped.

Providing the client the notifications described in this opinion can best be accomplished by including the appropriate notifications in the fee agreement between lawyers and client. Under this framework, the client is properly informed, the use of bitcoins as payment would not result in unconscionable fees to the attorney and the receipt of bitcoins as payment to the attorney would conform to the Nebraska Code of Professional Conduct.

It is permissible to hold bitcoins and other digital currencies in escrow or trust for clients or third parties pursuant to Neb. Ct. R. of Prof. Cond. §3-501.15(a). This Rule allows attorneys to store property as well as currency on behalf of a client. The property must be held separate from the lawyer’s property, be properly safeguarded and records must be kept by the lawyer of account funds or other property for five (5) years after termination of representation. Bitcoins are treated as property for federal tax purposes.
Due to the volatility in the value of bitcoins and other digital currencies, the client and parties should be advised that the property held in trust or escrow will be held and not converted into U.S. dollars or other currency. Records of that notice and the records of the separate wallet used to store the bitcoins would be maintained by the lawyer. The shared nature of the blockchain allows anyone, including the client or regulators, to verify the amount of bitcoins and any transactions regarding the separate wallet maintained by the attorney.

Due to security concerns, an attorney opting to receive client payments in Bitcoin or storing them on behalf of clients, whether in trust or in escrow, must take reasonable security precautions. There is no bank or FDIC insurance to reimburse a Bitcoin holder if a hacker steals them. Once lost, bitcoins could be gone forever. Reasonable methods could include encryption of the private key required to send the bitcoins. Another method may include utilization of more than one private key (known as a “multisignature account” or “multi-sig”) for access to the bitcoins. Other reasonable measures may include maintenance of the wallet in a computer or other storage device that is disconnected from the Internet (also known as “cold storage”), a method that would also allow for off-line storage of one or more private keys.

However, unless converted to U.S. dollars, bitcoins cannot be deposited in a client trust account created pursuant to Neb. Ct. R. §§ 3-901 to 3-907 (Trust Fund Requirements for Lawyers). Thus, if a lawyer receives bitcoins intended to reflect a retainer to be drawn upon when fees are earned in the future, the lawyer must immediately convert the bitcoins into U.S. dollars. . . .