

Digital Money

Rohan Grey¹

Abstract

Money, information technologies, and global governance regimes are inherently interconnected. Throughout history, many pivotal information technologies began as monetary innovations before being adapted for other uses. In the modern era, the mass adoption of digitally networked communications systems, most notably the internet, has transformed social interaction and economic production, and in the process generated new forms of radical legal instability. Today, debates over the digitization of money serve as a microcosm of and vanguard for a paradigmatic shift in global governance in the wake of the maturation of information capitalism, highlighting key areas of legal tension and revealing a general agenda of legislative and regulatory priorities. Political decisions regarding the design and regulation of public and private digital money, as well as the balance between digital and analog modes of monetary activity, will reverberate for generations to come, and set the terms for broader debates about the future of the global economy.

Introduction

The historical evolution of international law is driven by advances in money and information technology. These twin systems together function as a common linguistic and physical infrastructural layer for the entire planet, transcending national boundaries and cultural divisions. At the same time, financial and informational considerations dictate the budgetary and administrative practices of international legal institutions and practitioners, as well as the domestic legal systems upon which they rely. More broadly, the capacities and constraints of “Big Finance” and “Big Tech” shape the contours of legal and policy debates in fields ranging from war and global health, to ecological sustainability and intellectual property. While these debates and the underlying material forces that condition them have always been in flux, there is good reason to believe we are approaching – or indeed, in the middle of – an epochal inflection point on the scale of the transition from oral to literate society, or the invention of the printing press.

The digitization of society, a process which first began centuries ago, has accelerated rapidly in recent decades as a result of the maturation of electronic communication technologies, most notably the internet, as well as the expansion of the logic of capitalist accumulation into every facet and sphere of daily life. For arguably the first time in history, the “virtual” has become the explicit locus of our social

¹ Rohan Grey is an Assistant Professor of Law at Willamette University, the President of the Modern Money Network, and the Research Director of the Digital Fiat Currency Institute.

imaginary and shared political experience, rather than a superimposition on top of it.² This new mode of collective ordering, like those that came before it, is precipitating the emergence of a new global legal regime, fashioned out of a combination of old and new jurisprudential tools and principles. While this regime will necessarily address and incorporate a wide range of issues and considerations – many of which are discussed elsewhere in this book – one area of particular importance to international lawyers is the design and regulation of digital money.

Money lies at the core of all financial systems, and innovations in monetary media and their accompanying institutional structures have played a defining role in many periods of major social transformation.³ At the same time, key innovations in information technology, including the invention of writing itself, first began as monetary innovations, before later taking on wider social and cultural significance. Today, digital money functions as a microcosm of and vanguard for a paradigmatic shift in global governance in the wake of the maturation of information capitalism, highlighting key areas of legal tension and revealing a general agenda of legislative and regulatory priorities. Political battles over the appropriate balance between social welfare and profit-seeking, privacy and surveillance, and local and global sovereignty in the context of digital money represent the tip of the spear of a broader geopolitical realignment, whose societal consequences will be far-reaching and comprehensive.

The remainder of this chapter proceeds as follows: Part I revisits early legal debates over the social significance of the internet, particularly in relation to older digitally networked technologies that shaped the modern international financial system. Part II explores the historical and legal foundations of money, and the ways in which monetary systems and informational processes have evolved in the wake of the transition from industrial capitalism to information capitalism. Part III evaluates contemporary debates over the design and regulation of digital money, and considers their legal and political implications for the future of the global economy.

I. The Financial Foundations of the Network Society

Electronics has been a handmaiden to commerce ever since the telegraph... Given this long history, new problems in cyberlaw may be very old issues in banking law.

- Joseph Sommer⁴

Digital historians trace the origins of the modern internet to networked computer systems developed by the U.S. military in the 1960s.⁵ It was not until the 1990s, however, that personal and commercial use began to take off. This development, in turn, inspired techno-utopians and hackers, who until then had been relegated to the fringes of popular culture, to confidently declare the dawning of a new era of mankind, encapsulated most vividly in John Perry Barlow's infamous "Declaration of the Independence of Cyberspace" in 1996:

2 See, e.g., Melinda Sebastian & Wesley Shumar, *The Digital Age and the Social Imaginary*, in Remembering and Forgetting in the Digital Age 188 (Florent Thouvenin et al eds., 2018); Christopher Kelty, Geeks, Social Imaginaries and Recursive Publics, 20(2) *Cultural Anthropology* 185.

3 See, e.g., William N. Goetzmann, *Money Changes Everything: How Finance Made Civilization Possible* (2017).

4 Joseph Sommer, Against Cyberlaw, 15 *Berkeley Tech. L.J.* 1145, 1201 (2000).

5 See, e.g., Yasha Levine, *Surveillance Valley: The Secret Military History of the Internet* (2018).

Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.⁶

Around the same time, a spirited debate broke out among legal theorists over whether “cyberlaw” constituted a new, distinct legal subfield, worthy of its own independent study, or merely the latest iteration in a longstanding dialectical relationship between law and technological innovation.⁷ The most prominent advocate of the “skeptical” view was U.S. Court of Appeals Judge Frank Easterbrook, who in 1996 accused cyberlaw-enthusiasts of “multidisciplinary dilettantism” and the “cross-sterilization of ideas.”⁸ According to Easterbrook, cyberlaw was no more a distinct field than the “Law of the Horse” had been in the nineteenth century, and any attempt to understand it solely on its own terms was “doomed to be shallow and to miss unifying principles.”⁹ Instead, Easterbrook argued, “[o]nly by putting the law of the horse in the context of broader rules about commercial endeavors could one really understand the *law* about horses.”¹⁰

In 1999, legal historian Eben Moglen introduced the term “network society” to distinguish the technological aspects of the internet from the societal transformation he believed would inevitably accompany their widespread adoption.¹¹ According to Moglen:

We often discuss “the Internet” as though it were either a thing or a place, but we do better at grasping the legal and political issues the net presents if we think of “the Internet” as the name of a social condition: the fact that everyone living in the networked portions of the world can now communicate with anyone else directly, without intermediaries, reaching very large numbers of people at almost no cost. A society in which everyone is connected to everyone else behaves differently from any society that has ever existed before; past “principles” of social and economic law, things that seemed always true everywhere, aren’t anymore.¹²

In practice, Moglen’s vision of universally disintermediated social interconnection has since – at least thus far – been belied by the persistent centralizing influence of telecommunications operators, internet service providers, and more recently, online platforms such as Google, Amazon, and Facebook. On the other hand, his insistence that the historical significance of the internet be understood primarily in sociological rather than technological terms serves to both reframe and clarify the stakes of the underlying legal debate.

In 2000, Federal Reserve attorney Joseph Sommer offered an alternative cyber-skeptic take, arguing that many of the legal issues raised by internet were prefigured by the laws governing earlier digital

6 John Perry Barlow, *A Declaration of the Independence of Cyberspace*, Electronic Frontier Foundation (Feb. 8, 1996), <https://www.eff.org/cyberspace-independence>.

7 For an overview, see Paul Schiff Berman, *Introduction*, in *Law and Society Approaches to Cyberspace*, xi, xiii (Paul Schiff Berman, ed., 2007).

8 Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. Chi. L. Forum 207, 207 (1996). See also Lawrence Lessig, *The Law of the Horse: What Cyberlaw Might Teach*, 113 *Harv. L. Rev.* 501.

9 Easterbrook, *supra*.

10 Easterbrook, *supra* at 208.

11 Eben Moglen, *Anarchism Triumphant: Free Software and the Death of Copyright*, 4(8) *First Monday* (1999), <https://journals.uic.edu/ojs/index.php/fm/article/view/684/594>.

12 Eben Moglen, *Free Software Matters: When Code Isn’t Law*, *Linux User* (April 23, 2000), <http://moglen.law.columbia.edu/publications/lu-01.html>. See also Eben Moglen & Pamela S. Karlan, *The Soul of a New Political Machine, The Online, The Color Line, and Electronic Democracy*, 34 *Loy. L.A. L. Rev.* 1089, 1105 (2001).

financial networks, which in turn were derived from much older jurisprudential principles.¹³ According to Sommer, “The law of electronic commerce has...been around since at least the 1860s and has been the topic of legal analysis since at least the 1920s.”¹⁴ Additionally, questions of political sovereignty, such as “how does the law of a state deal with communities not defined by that state?” and “How do such communities govern themselves?” were “old [problems] with many manifestations.”¹⁵ In particular, Sommer noted that banking was a “quintessentially networked activity,” and the “international banking community...is a good example of a...‘virtual community’...[and] shows us that the problem of autonomous or transnational communities is an old one, often resolved satisfactorily.”¹⁶

Notwithstanding the clear difference in tone and emphasis, there is less daylight between Moglen and Sommer than initially appears. In particular, Sommer agrees that new information technologies often “wreak major social change,” and acknowledges that “[i]f [movable type and the television] were not socially transformative, nothing is.”¹⁷ In his view, however, social transformation often results in novel deployment of existing law, rather than the development of new law *per se*. For example, the basic informational flow of digitally networked systems is governed by the laws of records and messages, which have “been around since the telegraph...[T]he Internet is merely bringing them to our attention.”¹⁸ Moreover, to the extent technology spurs legal innovation, there tends to be a significant lag, “in part because [new technologies] are unlikely to generate new [social] practices immediately.”¹⁹ For example, Sommer notes that “the first ‘cyber-statute’ may have been Article 4A of the Uniform Commercial Code, promulgated in 1989, codifying the practice of bank wire transfers...[Yet] [w]ire transfers have existed since at least the days of the transatlantic cable, so Article 4A codified well over a century of practice.”²⁰

By comparison, Moglen views the internet as the perfection of a networked communication system whose origins lie millennia ago with the introduction of the postal service by the Roman Emperor Augustus.²¹ To that end, he readily acknowledges that the radical implications of transitioning to a “network society” may not be fully realized for at least one or two more generations, and will be at least partly contingent on political and technological decisions that have yet to be made.²² Furthermore, Moglen recognizes the underlying technical similarities between the internet and earlier forms of digital technology. In his view, however, the ability to capture and share an extremely diverse range of symbolic information via identical bitstreams across a globally integrated network represents a qualitative leap in communicative capacity, which in turn generates novel forms of radical legal instability.²³

Both Moglen and Sommer, therefore, situate the emergence of the internet within a larger narrative of evolving communications technologies, in which media initially designed for narrow purposes take on new functions and social significance as they mature. In addition, both recognize that the internet’s

13 Sommer, *supra*. See also James Rogers, The New Old Law of Electronic Money, 58 *S.M.U. L. Rev.* 1253 (2005);

14 Sommer, *supra* at 1188.

15 *Id.* at 1190.

16 *Id.* at 1192-93.

17 *Id.* at 1148-49.

18 *Id.* at 1229.

19 *Id.* at 1148.

20 *Id.*

21 Eben Moglen, *Snowden and the Future, Part I: Westward the Course of Empire*, Lecture at Columbia Law School (Oct. 9, 2013), <http://www.snowdenandthefuture.info/PartI.html>.

22 Eben Moglen, *Why Freedom of Thought Requires Free Media and Why Free Media Requires Free Software*, Address at Re:Publica, Berlin (May 2, 2012), <https://www.softwarefreedom.org/events/2012/Moglen-rePublica-Berlin/transcript.html>.

23 Moglen, *supra* note 11.

disruptive potential lies primarily in its capacity to transform broader social dynamics, rather than the narrow legal principles that govern the underlying technology. Notably, both authors first articulated their views over twenty years ago, and while they remain highly relevant, there have been significant technological advances in the intervening years, particularly in the realm of digital finance. Given these developments (discussed further in Part III), it is entirely possible that Sommer's claim that "new problems in cyberlaw may be very old problems in banking law," and Moglen's claim that in the network society, "past 'principles' of...economic law...that seemed always true everywhere, aren't anymore," may ultimately both prove correct.

II. Monetary Information and Monetized Information

Cash, Rules, Everything, Around, Me
C.R.E.A.M.
Get the money
Dollar, dollar bill y'all

- Wu-Tang Clan²⁴

Money is commonly understood to have emerged as a technologically superior alternative to barter, solving the problem of the "double coincidence of wants" by functioning as an "ur-commodity" that individuals could use to buy and sell other goods and services.²⁵ This narrative, while superficially plausible, lacks any basis in the historical or anthropological record. In fact, money first emerged as a form of standardized record-keeping to facilitate the governance of social units too large to manage solely via face-to-face relationships.²⁶ Political leaders and their bureaucratic agents imposed non-reciprocal obligations, including taxes, fees, fines, and tithes, and determined what tokens or commodities were acceptable in payment.²⁷ These legally recognized 'tax-credits' then circulated as money among private actors, who used them to establish subsidiary systems of credit and mutual exchange.²⁸ Over time, public and private actors developed increasingly sophisticated administrative institutions and accounting methods to keep track of complex webs of financial obligations and flows of real resources.

According to archaeologist Denise Schmandt-Besserat, the origins of modern writing itself can be traced back to early monetary practices.²⁹ Public authorities first issued (and subsequently collected) tax receipts in the form of three-dimensional clay tokens, which were later sealed in tubes with markings on the outside to denominate the tokens included therein for safekeeping. Eventually, these tubes were replaced with flat, two-dimensional tablets, and the markings expanded from basic numerical quantities to include other kinds of legally relevant information. Finally, these grammatical

24 Wu-Tang Clan, *C.R.E.A.M., on Enter the Wu-Tang (36 Chambers)* (Loud Records 1993).

25 L. Randall Wray, *Alternative Approaches to Money*, 11(1) *Theor. Inq. Law* 29, 30 (2010).

26 See, e.g., David Graeber, *Debt: The First 5,000 Years* (2011); Michael Hudson, *The Role of Accounting in Civilization's Economic Takeoff*, in *Creating Economic Order: Record-Keeping, Standardization, and the Development of Accounting in the Ancient Near-East*, 1 (Michael Hudson & Cornelia Wunsch, eds., 2004).

27 See, e.g., Christine Desan, *Money as a Legal Institution*, in *Money in the Western Legal Tradition: Middle Ages to Bretton Woods*, 18 (David Fox & Wolfgang Ernst, eds., 2015); Wray, *supra* at 39; Pavlina Tcherneva, *Chartalism and the Tax-Driven Approach to Money*, in *A Handbook of Alternative Monetary Economics*, 69 (Philip Arestis & Malcolm Sawyre, eds., 2007).

28 Desan, *supra* at 25. See also Robert Hockett & Saule Omarova, *The Finance Franchise*, 102 *Cornell L. Rev.* 1143 (2017); Stephanie Bell, *The Role of the State and the Hierarchy of Money*, 25(2) *Cambridge J. of Econ.* 149 (2001).

29 Denise Schmandt-Besserat, *The Evolution of Writing* (2014), https://sites.utexas.edu/dsb/files/2014/01/evolution_writing.pdf.

and scribal technologies were adapted for non-administrative purposes, such as writing poetry and fiction.

While accounts of money often focus on the evolution of record-keeping practices and financial instruments (i.e. “money-things”),³⁰ the underlying unit in which such money-things are denominated is arguably more fundamental.³¹ As anthropologist David Graeber notes, “the big question in the origins of money is how a sense of obligation – an ‘I owe you one’ – turns into something that can be precisely quantified.”³² According to Graeber, the transformation of previously qualitative, socially mediated relationships into “exact equivalents” occurs when there is a “potential for violence:”

If you give someone a pig and they give you a few chickens back you might think they’re a cheapskate, and mock them, but you’re unlikely to come up with a mathematical formula for exactly how cheap you think they are. If someone pokes out your eye in a fight, or kills your brother, that’s when you start saying, “traditional compensation is exactly twenty-seven heifers of the finest quality and if they’re not of the finest quality, this means war!”³³

Throughout history, money has functioned as a common unit of account for a wide range of legislative and judicial value calculations, from the common law of obligations and criminal law through to regulatory cost-benefit analysis and human rights.³⁴ Contrary to orthodox economic theory, however, money is not merely a neutral veil for underlying real economic activity. Rather, monetary values are determined in large part by the legal structure of the monetary system itself,³⁵ as well as the processes by which monetary values are aggregated across different contexts to establish a general system of prices.³⁶ Consequently, as German monetary theorist Georg Friedrich Knapp argued, “[m]oney is a creature of law. A theory of money must therefore deal with legal history.”³⁷

According to legal historian Christine Desan, the transition from feudalism to industrial capitalism was precipitated by the emergence of a new mode of monetary production, in which the power to create public money – previously the exclusive prerogative of the sovereign – was for the first time shared with a class of profit-seeking investors and banking intermediaries.³⁸ By aligning the self-interest of private capital with the physical and legal systems by which money itself was created, Britain

30 See, e.g., Benjamin Geva, ‘Bank Money’: The Rise, Fall, and Metamorphosis of the ‘Transferable Deposit’, in *Money in the Western Legal Tradition: Middle Ages to Bretton Woods*, 359 (David Fox & Wolfgang Ernst, eds., 2015).

31 See, e.g., Alla Semanova, Would You Barter With God? Why Holy Debts and Not Profane Markets Created Money, 70(2) *Am. J. of Econ. & Socio.* 376 (2011).

32 Philip Pilkington, What is Debt? An Interview With Economic Anthropology David Graeber, *Naked Capitalism* (Aug. 26, 2011), <https://www.nakedcapitalism.com/2011/08/what-is-debt-%E2%80%93-an-interview-with-economic-anthropologist-david-graeber.html>.

33 *Id.*

34 See, e.g., Desan, *supra* note 27; Lua Yuille & Rohan Grey, Money and Property, *Law and Political Economy* (May 16, 2019), <https://lpeblog.org/2019/05/16/money-and-property>; Raúl Carrillo, Keeping It Real: Law, Coercion, and the Frontiers of Public Finance, *New Economic Perspectives* (June 25, 2014), <https://neweconomicperspectives.org/2014/06/keeping-real-law-coercion-frontiers-public-finance.html>.

35 See, e.g., Yair Listokin, *Law and Macroeconomics: Legal Remedies to Recessions* (2019); Simon Deakin et al, Legal Institutionalism: Capitalism and the Constitutive Role of Law, 45(1) *J. of Comp. Econ.* 188 (2015); Katharina Pistor, A Legal Theory of Finance, 41(2) *J. of Comp. Econ.* 315 (2013); Roy Kreitner, The Jurisprudence of Global Money, 11 *Theor. Inq. Law* 177 (2010).

36 See, e.g., Blair Fix, The Aggregation Problem: Implications for Ecological and Biophysical Economics, 4(1) *Biophysical Econ. and Resource Quality* 1 (2019); David Grewal, The Laws of Capitalism, 128 *Harv. L. Rev.* 626 (2014).

37 George Friedrich Knapp, *The State Theory of Money* (1924). See also Roy Kreitner, Legal History of Money, 8 *Ann. Rev. of L. & Soc. Sci.* 415 (2012).

unleashed a wave of financial innovation that permanently transformed the productive dynamics of the entire global economy. Presently, a similar transition is underway, however in this case the interests of private capital are aligned with the physical and legal systems that create, store, and process *monetizable information*, rather than money *per se*. As Julie Cohen argues:

In referring to the shift from industrialism to informationalism...[I] mean to indicate two kinds of fundamental transformations. First is a movement away from an economy oriented principally toward manufacturing and related activities toward one oriented principally around the production, accumulation, and processing of information...Second is a transformation in the conduct of even traditional industrial activity...information technology assumes an increasingly prominent role in the control of industrial production and in the management of all kinds of enterprises.³⁹

As with the earliest forms of written record-keeping, the aim of these new technologies and systems of information production is to improve the ability of governing entities to monitor and condition social behavior in large social units. In contrast to earlier economic regimes, however, the dominant governing entities in question are not sovereign states, motivated by concerns of political legitimacy, but rather transnational corporations motivated by the pursuit of profit. Thus, as Shoshana Zuboff argues:

‘Big data’ is above all the foundational component in a deeply intentional and highly consequential new logic of accumulation...This new form of information capitalism aims to predict and modify human behavior as a means to produce revenue and market control...While ‘big data’ may be set to other uses, those do not erase its origins in an extractive project founded on formal indifference to the populations that comprise both its data sources and ultimate targets.⁴⁰

More broadly, monetary systems not only translate existing social and economic information into monetizable information, but also generate new forms of information from within. Indeed, as both Karl Marx and John Maynard Keynes observed, modern capitalist economies are driven by a self-referential cycle of monetary accumulation, rather than external considerations of social well-being or material prosperity.⁴¹ Furthermore, as sociologist Viviana Zelizer has documented, although “modern money seems starkly homogeneous...[in reality] [w]e assign different meanings and separate uses for particular kinds of monies...Not all dollars are equal.”⁴² Recording and processing new forms of internally generated monetary information necessitates the creation of new administrative and governance technologies, which in turn become sites for the production of yet more monetary information.⁴³ In this sense, money functions simultaneously as a specific type of information, a mode

38 Christine Desan, *Making Money: Coin, Currency, and the Coming of Capitalism* (2014). See also Andrew David Edwards, The American Revolution and Christine Desan’s New History of Money, 42(1) *L. & Soc. Inq.* 252.

39 Julie Cohen, The Regulatory State in the Information Age, 17 *Theor. Inq. Law* 369, 371 (2016).

40 Shoshana Zuboff, Big Other: Surveillance Capitalism and the Prospects of an Information Civilization, 30 *J. of Inf. Tech.* 75, 75-76 (2015).

41 John Maynard Keynes, Drafts of the General Theory, in *Collected Writings Vol. XXIX*, 81 (1979); Karl Marx, *Capital, Vol. I*, Chapter 4 (1867 [1977], trans. Ben Fowkes).

42 Viviana Zelizer, The Social Meaning of Money: “Special Monies,” 95(2) *Am. J. of Socio.* 342, 342-343. See also Viviana Zelizer, *The Social Meaning of Money* (2017).

43 See, e.g., Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (2019); Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information* (2016); Martha Poon, Corporate Capitalism and the Growing Power of Big Data, 41(6) *Sci. Tech. & Human Values* 1088.

of ordering other types of information, a means of producing new information, and a self-contained information ecosystem.⁴⁴

III. Digital Money: From Frontier to Enclosure

[When] the empire of the Romans filled the world...the world became a safe and dreary prison for [its] enemies...On every side [they were] encompassed with a vast extent of sea and land, which [they] could never hope to traverse without being discovered, seized, and restored to [their] irritated master..."Wherever you are," said Cicero to the exiled Marcellus, "remember that you are equally within the power of the conqueror."

- Edward Gibbon⁴⁵

Digital money has been a central concern of internet theorists for decades. As Sommer noted in 1998, “[m]ost of what occurs in the Internet is commercial. Most commercial transactions require payment in money...Therefore, the commercial part of the internet – most of the Internet – is regulable through the money.”⁴⁶ For early internet freedom activists, this concern manifested in a commitment to developing technologies that allowed for anonymous, decentralized, and non-censorable digital transactions in a manner similar to physical currency.⁴⁷ For example, in 1993, Eric Hughes penned “A Cypherpunk’s Manifesto,” which declared that:

Privacy is necessary for an open society in the electronic age...[and] requires anonymous transaction systems...We cannot expect...large, faceless organizations to grant us privacy out of their beneficence...We must defend our own privacy if we expect to have any...We the Cypherpunks are dedicated to building anonymous systems...We are defending our privacy with...electronic money.⁴⁸

For most cypherpunks, an instinctual (left- or right-leaning) skepticism of the state led them to downplay the importance of public monetary reform, in favor of cryptographic technologies that they believed would facilitate competing – and superior – forms of privately issued money. Ironically, however, the most successful of these early efforts, such as David Chaum’s DigiCash, were ultimately licensed or acquired by commercial banks and credit card companies, whose payments systems were in turn built upon a foundation of public money.⁴⁹

In the mid- to late-2000s, the previously nascent digital consumer finance industry began to expand exponentially, driven by new developments in hardware and software infrastructure, as well as widespread skepticism towards traditional banking institutions in the aftermath of the global financial

44 See Annalise Riles, *Collateral Knowledge: Legal Reasoning in the Global Financial Markets* (2011).

45 Edward Gibbon, *The Decline and Fall of the Roman Empire*, Vol. I, 95 (1776).

46 Sommer, *supra* at 1190-91.

47 See, e.g., David Chaum, *Blind Signatures for Untraceable Payments*, in *Advances in Cryptology Proceedings of Crypto 82*, 199 (David Chaum, Ronald Rivest, & Alan Sherman eds., 1982).

48 Eric Hughes, *A Cypherpunk’s Manifesto* (March 9, 1993), <https://www.activism.net/cypherpunk/manifesto.html>.

49 DigiCash, *DigiCash’s Ecash to be Issued by Deutsche Bank* (May 7, 1996), https://www.chaum.com/ecash/articles/1996/05-07-96%20-%20DigiCash_s%20Ecash%E2%84%A2%20to%20be%20Issued%20by%20Deutsche%20Bank.pdf.

crisis.⁵⁰ In particular, the rapid proliferation of mobile phones capable of processing transactions and storing value locally allowed consumers to eschew traditional point-of-sale payments devices in favor of “digital wallets” that they could carry in their pockets, wherever they went. This, in turn, provided a new entry point into the financial services sector for telecommunications and technology companies, particularly in communities with limited access to more traditional banking services.⁵¹

Around the same time, advances in cryptographic and consensus-driven data management software, combined with the growth of social media-driven ‘meme’ culture, set the stage for the emergence of Bitcoin and similar ‘cryptocurrency’ and ‘blockchain’ initiatives. Many of the early and most vocal proponents of these initiatives presented them as natural successors to the earlier cypherpunks dream of a truly decentralized, privacy-respecting internet.⁵² In doing so, however, they often disavowed the inherently social nature of money itself, encapsulated most succinctly in the claim by early Facebook investors, the Winklevoss twins, that by investing in Bitcoin, they had “elected to put [their] money and faith in a mathematical framework that is free of politics and human error.”⁵³

In reality, however, this “second wave” of digital currency pioneers, like their predecessors in the 1990s, were from the outset deeply entangled in existing legal and regulatory structures.⁵⁴ Moreover, they proved highly vulnerable to capture or absorption by established financial and technological interests. Indeed, many of the promising early ‘cryptocurrency’ projects have since either devolved into yet another layer of the formal banking system, or been superseded by ‘stablecoin’ projects that combine private payments technology with a stable underlying value based upon existing public money. Or, in some cases, both.

In 2019, Facebook announced plans to launch its own global digital currency, called ‘Libra,’ that it claimed would be provided as a ‘public good,’ despite being governed by a Facebook-led conglomerate that included commercial banks, tech giants, and credit card companies.⁵⁵ In the wake of considerable public backlash and regulatory skepticism, Libra has since pivoted towards a ‘stablecoin’ approach that fuses a new transnational payments ecosystem on top of existing domestic public monetary infrastructure.⁵⁶ Ostensibly, Libra’s goal is to facilitate global peer-to-peer and consumer-to-business

50 See, e.g., Douglas Arner, Janos Nathan Barberis, & Ross Buckley, *The Evolution of Fintech: A New Post-Crisis Paradigm?*, 47 *Geo. J. Int’l L.* 1271 (2015-2016).

51 See, e.g., Rohan Grey, *Mobile Money in Developing Countries: Macroeconomic Implications and Potential*, *Global Institute for Sustainable Prosperity Working Paper No. 116* (June 2017), <http://www.global-isp.org/wp-content/uploads/WP-116.pdf>.

52 See, e.g., Sarah Jeong, *The Bitcoin Protocol as Law and the Politics of a Stateless Currency* (May 8, 2013), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2294124.

53 Nathaniel Popper & Peter Lattman, *Never Mind Facebook; Winklevoss Twins Rule in Digital Money*, *New York Times* (April 11, 2013), <https://dealbook.nytimes.com/2013/04/11/as-big-investors-emerge-bitcoin-gets-ready-for-its-close-up>. See also Yanis Varoufakis, *Bitcoin and the Dangerous Fantasy of Apolitical Money* (April 22, 2013), <https://www.yanisvaroufakis.eu/2013/04/22/bitcoin-and-the-dangerous-fantasy-of-apolitical-money>.

54 See, e.g., The Law Library of Congress, *Regulation of Cryptocurrency Around the World* (June 2018), <https://www.loc.gov/law/help/cryptocurrency/cryptocurrency-world-survey.pdf>; Richard Levin, Aaron Obiren, & Stephanie Osterman, *Dread Pirate Roberts, Byzantine Generals, and Federal Regulation of Bitcoin*, 27(4) *J. of Tax. & Reg. of Fin. Inst.* 5; Securities and Exchange Commission, *Release No. 81207 – Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO* (July 25, 2017), <https://www.sec.gov/litigation/investreport/34-81207.pdf>; Yuki Furukawa, *Former Mt. Gox CEO Mark Karpeles Gets Suspended Jail Term*, *Bloomberg* (March 15, 2019), <https://www.bloomberg.com/news/articles/2019-03-15/former-bitcoin-baron-mark-karpeles-gets-suspended-jail-term>.

55 Libra, *White Paper* (June 2019, rev. April 2020), <https://libra.org/en-US/white-paper>. See also Josh Constine, *Facebook Announces Libra Cryptocurrency: All You Need to Know*, *TechCrunch* (June 18, 2019), <https://techcrunch.com/2019/06/18/facebook-libra>.

56 Libra, *supra*.

payments through existing web-based platforms. In practice, however, it provides yet another opportunity for Facebook (and its corporate partners) to generate and collect data on a 2+ billion consumer base, and to further perfect their already considerably detailed social graphs of the entire human race.⁵⁷

Notwithstanding its amorphous business model,⁵⁸ the sheer scale and scope of Libra's ambition – i.e. to become the “internet of money”⁵⁹ – has ignited a sense of urgency among policymakers as to the need for digital public monetary reform. In 2019, for example, Benoit Couere, head of the Bank of International Settlements' ‘Innovation Hub’ and former governor of the European Central Bank, described Libra as a “wake-up call,” and argued that “whatever fate awaits private digital money, they will likely change the international monetary and financial system in one way or another, either directly or by driving global central banks to innovate.”⁶⁰ That same year, during a Congressional hearing with Libra founder, David Marcus, U.S. Representative Ayanna Pressley (D.-Mass.) noted that “the reason that [Facebook] even has this opportunity to pursue [a digital currency] is because the Federal Reserve has failed...to offer Americans an equitable, reliable, efficient, safe and secure system to access and move their monies.”⁶¹

Presently, over eighty percent of central banks around the world are evaluating or experimenting with their own central bank digital currency (“CBDC”) systems.⁶² Many countries, from China to the Bahamas, are already at the stage of mass rollout, even as many of the underlying practical and legal issues remain unresolved.⁶³ Many of these issues, including the appropriate balance between social welfare and profit-seeking, privacy and surveillance, and local and global sovereignty, have echoes in earlier debates over the internet, and before that, the international payments system. While it is tempting to reduce such debates to a dichotomous struggle over the merits of public versus private ordering, in reality they cut deeper, implicating the very nature of governance itself. Consequently, as Moglen has argued, even “when the private parties have reduced their grip we will still have a great deal to accomplish by way of making political freedom.”⁶⁴

57 See, e.g. John Harris, If Facebook or Google Create Their Own Currency, They Can Control Our Lives, *The Guardian* (June 24, 2019), <https://www.theguardian.com/commentisfree/2019/jun/24/facebook-google-currency-libra-financial-transactions>.

58 See, e.g., Dirk Zetsche, Ross Buckley, & Douglas Arner, Regulating Libra: The Transformative Potential of Facebook's Cryptocurrency and Possible Regulatory Responses, *European Banking Institute Working Paper Series 2019/44* (July 2019), https://papers.ssrn.com/sol3/Papers.cfm?abstract_id=3414401; Raúl Carrillo, Don't Buy What Zuckerberg's Selling on Libra, *American Banker* (Oct. 22, 2019), <https://www.americanbanker.com/opinion/dont-buy-what-zuckerbergs-selling-on-libra>; Raúl Carrillo Following Mark Zuckerberg's Hearing, Facebook's Libra Project Hangs in the Balance, *The American Prospect* (Nov. 5, 2019), <https://prospect.org/power/mark-zuckerberg-congressional-hearing-facebook-libra-project>.

59 Libra, *supra*.

60 Benoît Cœuré, *Digital Challenges to the International Monetary and Financial System*, Panel Remarks at the Banque Centrale du Luxembourg-Toulouse School of Economics Conference on “The Future of the International Monetary System” (Sept. 17, 2019), <https://www.ecb.europa.eu/press/key/date/2019/html/ecb.sp190917~9b63e0ea23.en.html>.

61 C-SPAN, *Facebook Digital Currency* (July 17, 2019), <https://www.c-span.org/video/?462708-4/facebook-digital-currency>. See also Rohan Grey, Facebook Wants Its Own Currency. That Should Scare Us All, *The Nation* (July 22, 2019), <https://www.thenation.com/article/archive/facebook-libra-currency-digital>.

62 Codruta Boar, Henry Holden, & Amber Wadsworth, Impending Arrival – A Sequel to the Survey on Central Bank Digital Currency, Bank of International Settlements Papers No. 107, 3 (Jan. 2020), <https://www.bis.org/publ/bppdf/bispap107.pdf>.

63 Jonathan Cheng, China Rolls Out Pilot Test of Digital Currency, *Wall Street Journal* (April 20, 2020), <https://www.wsj.com/articles/china-rolls-out-pilot-test-of-digital-currency-11587385339>; Farah Johnson, Complete Bahamian Digital Dollar Roll-Out By Year End, *The Tribune* (Feb. 13, 2020), <http://www.tribune242.com/news/2020/feb/13/complete-bahamian-digital-dollar-roll-out-by-year>.

In 1999, legal theorist Yochai Benkler noted that society was “in the midst of an enclosure movement in our information environment...that [would] subject more of the ways in which each of us uses information to someone else’s exclusive control.”⁶⁵ At the time, his focus – like that of many internet theorists – was on the increasingly proprietarian flavor of copyright law as applied to digital networks, and the implications it posed for the future of freedom of speech. While such issues are undoubtedly important, arguably even more fundamental to expressive freedom is the ability to engage in economic activity via money itself. As attorney and journalist Sarah Jeong noted in 2014:

Money is speech...as immensely unpopular as [Citizens United v. Federal Election Commission] is, the court had a point—money is essential to political participation, and restrictions on the use of money in political activities can silence the cause of both the plutocrat and the dissident. But if money is speech, and free speech can require a certain degree of privacy, even anonymity, particularly so when the speaker supports an unpopular political cause—then why don’t we have a right to anonymous payments?⁶⁶

Today, the clearest manifestation of this political struggle is the so-called “War on Cash;” a concerted international campaign by governments and businesses to drive consumers away from physical currency and towards forms of digital money that can be more easily monitored, data-mined, and censored.⁶⁷ This “war” is justified on the basis of reducing crime and promoting “efficiency,” “inclusion,” and, in the aftermath of COVID-19, “public health.”⁶⁸ In practice, however, it is waged through both soft propaganda and the violent suppression of non-digital payments practices, embodied most starkly in Indian Prime Minister Narendra Modi’s 2016 shock-move to demonetize a significant fraction of all high-denomination currency notes in private circulation.⁶⁹ While there have been some scattered attempts to resist the tide, such as the recent enactment of a law in the city of Philadelphia prohibiting “cashless” businesses,⁷⁰ they have thus far met with only limited success.

If central bank digital currency is the contemporary financial vanguard of the network society’s drive to establish a “pervasive global nervous system across [the] planet,”⁷¹ then the War on Cash is its rearguard. What the invention of the telegraph in the nineteenth century began, the eradication of physical currency in the twenty first century will complete. As Brett Scott observed in 2016, “the Death of Cash means the Rise of Something Else. [The war against the ‘War on Cash’ is thus a] battle to maintain alternatives to the growing digital panopticon that is emerging all around us.”⁷² In this sense,

64 Eben Moglen, *Free Software and Free Media*, Speech at the Internet Society of New York (May 3, 2006), https://en.wikisource.org/wiki/Free_Software_and_Free_Media.

65 Yochai Benkler, *Free as the Air to Common Use: First Amendment Constraints on Enclosure of the Public Domain*, 74(2) *N.Y.U. L. Rev.* 354, 354-55 (1999).

66 Sarah Jeong, *Is Bitcoin Free Speech?*, *Slate* (Feb. 7, 2014), <https://slate.com/technology/2014/02/bitcoin-as-free-speech-regulating-cryptocurrency-has-ramifications-for-democracy.html>.

67 *See, e.g.*, Brett Scott, *The War on Cash*, *The Long+Short* (Aug. 19, 2016), <https://thelongandshort.org/society/war-on-cash>; Daniela Gabor & Sally Brooks, *The Digital Revolution in Financial Inclusion: International Development in the Fintech Era*, 22(4) *New Pol. Econ.* 1356.

68 *See, e.g.*, Stephen O’Neal, *Coronavirus Crisis Accelerates CBDC Race, Cash No Longer Untouchable*, *CoinTelegraph* (April 10, 2020), <https://cointelegraph.com/news/coronavirus-crisis-accelerates-cbdc-race-cash-no-longer-untouchable>.

69 *See, e.g.*, Indrajit Basu, *Life After Demonetization: How India’s Poor are Paying the Price*, *Al Jazeera* (June 14, 2019), <https://www.aljazeera.com/ajimpact/life-demonetisation-india-poor-paying-price-190614135641262.html>.

70 *See, e.g.*, Karen Zraick, *Philadelphia Bans ‘Cashless’ Stores Amid Growing Backlash*, *New York Times* (March 7, 2019), <https://www.nytimes.com/2019/03/07/business/cashless-stores-philadelphia.html>.

71 Leonard Kleinrock, *The Invisible Internet*, *Internet Society* (Oct. 29, 2019), <https://www.internetsociety.org/blog/2019/10/the-invisible-internet>.

72 Scott, *supra*. *See also* John Haskell & Nathan Tankus, *Virtual Currency (in the Shadows of the Money Market)*, *Just Money* (April 9, 2010), <https://justmoney.org/j-haskell-n-tankus-virtual-currency-in-the-shadows-of-the-money->

perhaps the greatest threat to human freedom in the twenty-first century lies not in the legal enclosure of the digital, but rather the digital enclosure of the analog, and with it, the homogenization and standardization of previously diverse modes of social and economic interaction.

Conclusion

Money, information technologies, and global governance regimes are inherently interconnected. Monetary systems are – at least in part – information systems, capable of both producing new social dynamics, and refracting existing social dynamics through the logic of monetary accumulation. In turn, monetary and informational practices shape, and are shaped by, prevailing institutional and legal governance structures. Over the past nearly two centuries, the increasing digitization of society has transformed both money and information technologies in a way that has profound implications for law, and international law in particular. Political decisions made today regarding the design and regulation of public and private digital money, as well as the balance between digital and analog modes of monetary activity, will reverberate for generations to come, and set the terms for broader debates about the future of the global economy.