

## Index

- ABN Amro, 29  
 abortion, 11  
 ACLU. *See* American Civil Liberties Union  
 Advanced Voting Solutions, 87  
*Adventures of Tron*, 10  
 Agora, 88  
 AlphaBay, 119  
 altcoins, 77–78  
     Dash, 77  
     Dogecoin, 77  
     Litecoin, 77  
     Tether, 77  
 Amazon, 76  
 America Online, 16  
 American Civil Liberties Union, 110  
 American Express, 27  
 Andreesen, Marc, 73, 208  
 Andresen, Gavin, 42, 43, 115  
 anonymity, 26  
 Anti-Drug Abuse Act, 109  
 anti-money-laundering rules, 73  
 Antminer, 130, 131  
 AOL. *See* America Online  
 application-specific integrated circuits, 56, 76,  
     123, 134  
 Arctic Circle, 122, 123, 124  
 Aristotle, 35, 196  
 Arizona, 183  
 ASICs. *See* application-specific integrated  
     circuits  
 Assange, Julian, 23  
     *Cypherpunks: Freedom and the Future of the*  
     *Internet*, 23  
 assassination markets, 23–25, 209  
*Astroblast*, 10  
*Atlas Shrugged*, 18  
 AXA, French insurer, 83  
 Axelrod, David, 111  
 Aztecs, 27  
 Baldet, Amber, 203  
 Bancor, 99  
 Bangladesh, 186  
 bank bailout of 2008, *See* Troubled Asset Relief  
     Program  
 Bank for International Settlements, 132  
 Bank Secrecy Act, 160  
 banks, 9, 73, 83, 99, 164, 227, 242  
 Barclays, 83  
 Barlow, John Perry, 17  
 Becker, Gary, 102  
 Bell, Jim, 23–25  
 Benichou, Laurent, 83  
 Bickel, Alexander, 142  
 Bill of Rights, 16  
 Binance, 175  
 binge drinking, 108  
 BIS. *See* Bank for International Settlements  
 Bit Gold, 29, 207  
 BitBay, 175  
 Bitcoin cryptocurrency, 78  
 bitcoin  
     "1 RETURN" bug, 115  
     0.8 fork, 41  
     addresses, 44, 47  
     anonymity of, 104–6  
     arms race in mining, 10, 74, 75, 76, 129, 132,  
         139, 205, 206  
     Bitcoin Core, 45  
     bitcoin forum, 69, 70  
     bitcoin pizza, 69, 74, 205, 208  
     bitcointalk.org, 68

- block rewards, 128
- block size, 58
- boom in, 208
- carbon footprint, 127
- coinbase transaction, 57
- collapse of Mt. Gox, 1–4
- commodity, 161
- community, 42, 112
- conflicting transactions, 58
- consensus, 60
- creation, 9–11
- crime, 97–100
- crime rate, 98
- culture, 112
- digital signatures, 51
- double-spend attack, 53, 58
- energy use, 126–27
- exchanges, 70
- genesis block, 41, 54
- hash functions, 48–51
- hash power, 56
- improvement proposals, 45
- issuance limit, 57
- ledger, 53
- lost bitcoin, 99
- mechanics of, 44–59
- mining, 56, 57
- mixers, 105
- nodes, 52
- private keys, 48
- proof of work, 55–57
- SHA-256, 49
- software, 45
- status as a security, 155–60
- thefts, 99
- traceability, 131
- transaction volume, 57, 132
- tumblers, 105
- validation, 52
- volatility, 74
- wallets, 97
- white paper, 9, 67, 104
- Bitcoin Core, 45
- BitFury, 76
- BitGrail, 99
- BitInstant, 73, 119
- BitLicense, 180, 181
- BitMain, 76, 130, 131, 133, 134, 135, 235
- black dot bug, 114
- Blaze, Matt, 114
- block size, 58
- Block.one, 79
- blockchain
  - block size, 58
  - contents of blocks, 54
  - elections, 85–90
  - energy consumption, 209
  - energy use, 126–27
  - forks, 42
  - formation of blocks, 54
  - longest valid chain protocol, 58
  - mechanics of, 44–59
  - orphaned blocks, 59
  - permissioned blockchains, 84, 85
  - shipping, 84–85
  - winning blocks, 57
- Blockchain Island, 173, 175
- Blockchain Operated New Debt Instrument, 84
- B-Money, 29, 207
- Boden Business Agency, 122, 123
- Boden, Sweden, 122–26
- Bornstein, Gary, 198–99, 200
- Brennan Center for Justice, 87
- Brexit, 178
- Bridges, Shaun, 95–97
- Brito, Jerry, 180, 191–94
- broken windows theory, 116–18
- BTC-e, 93–97, 107, 120, 164
- Buchanan, Pat, 86
- Buffett, Warren, 98
- bug bounties, 113
- Bush, George W., 86
- Buterin, Vitalik, 62, 63, 65, 81–83, 140, 141, 174, 223, 227,
- butterfly ballot, 86
- cacao, 27
- California Institute of Technology, 10
- Canaan Creative, 123
- Card, Orson Scott, 18
- Cardona, Christian, 174, 175
- Casares, Wences, 73, 208
- Cavendish, William, 12
- Center for Democracy and Technology, 89
- Centra cryptocurrency, 78
- CFPB. *See* Consumer Financial Protection Bureau
- CFTC. *See* Commodity Futures Trading Commission
- chads, 86
- Chaum, David, 10, 27–30, 34, 207

- cheating, in universities, 103
- Chelan County, Washington, 132
- China, 186, 209, 210
- Christ Church, 13
- Clayton, Jay, 159
- Clinton, Bill, 178, 211
- cocaine, sentencing disparity, 109–10
- Coin Center, 180, 191
- Coinbase exchange, 106, 161, 164
- coinbase transaction, 57
- Coincheck, 99
- CoinMarketCap, 78
- Coinrail, 99
- cold storage, 3
- Columbia Law School, 169
- Commodity Exchange Act, 161
- Commodity Futures Trading Commission, 161, 179
- commonality, horizontal and vertical, 157
- Commonwealth Bank of Australia, 84
- community policing, 118
- Condorcet, Nicolas de, 197
- Constitution of the United States, 16, 142, 152
- Consumer Financial Protection Bureau, 183
- Corda, 194
- Cornell University, 62, 113
- cowrie shells, 27
- crack, sentencing disparity, 109–10
- credit cards, 27
- Credit Suisse, 28, 83
- Crypto Anarchist Manifesto*, 18, 24
- Crypto Anarchy game, 18
- Crypto Mom. *See* Peirce, Hester
- Cryptonomicon*, 10
- cyberlibertarians, 17
- Cyphernomicon*, 25
- cyberpunks, 39, 195, 206
  - A Cypherpunk's Manifesto*, 20–23, 195
  - assassination markets, 23–25
  - Freedom and the Future of the Internet*, 23
  - generally, 17–27
  - mailing list, 19
  - manifesto, *Wired* magazine cover, 20
- DAO, 61–66, 110
- Dark Cavern*, 10
- dark web, 208
- DARPA. *See* Defense Advanced Research Projects Agency
- Dash cryptocurrency, 77
- De Filippi, Primavera, 168
- deadcoins.com, 79
- Declaration of the Independence of Cyberspace*, 17
- Defcon conference, 87
- Defense Advanced Research Projects Agency, 16
- Delaware, 180
- Democratic Party, 201
- Deutsche Bank, 28
- Diamond Reserve Club, 144–49
- DigiCash, 28
- Digiconimist, 126
- digital signatures, 51, 130
- Dimon, Jamie, 72, 98
- Discourses*, of Machiavelli, 35, 36
- Dispute Settlement Body, 186
- Dogecoin cryptocurrency, 77
- dollar as currency, 32
- Donald, James, 68
- double-spend attack, 53, 58
- Dread Pirate Roberts, 71, 72, 95–97, 209
- drug sentencing, 109
- drugs/drug trafficking. *See* Silk Road
- Durden, Tyler, 191
- ECash, 27–30, 207
- ECDSA. *See* Elliptic Curve Digital Signature Algorithm
- elections, 85–90
- Electronic Frontier Foundation, 18, 20
- electronic funds transfer, 27
- electronic voting machines, 86
- Elements of Law*, 12
- Eleuthria, 44
- Elliptic, 97
- Elliptic Curve Digital Signature Algorithm, 51
- Ellsworth, Oliver, 142
- Ender's Game*, 18
- English Civil War, 12, 13
- Enlai, Zhou, 177
- Enterprise Ethereum Alliance, 83
- EOS token, 79
- Equal Protection Clause, 86
- ETF. *See* exchange traded funds
- Ethereum, 65, 110, 140, 141, 157, 174, 208
  - banks' interest in, 82
  - creation of, 81–83
  - hacking of DAO, 61–66
  - launch of, 82
  - white paper, 81
- Ethereum Classic, 66

- European Union, 185  
 exchange traded funds, 187  
 exchanges, 70  
   anonymity in, 106  
   hacking of, 99, 111  
 executive compensation, 178  
 Eyal, Ittay, 113
- Facebook, 123, 187, 199  
 Fair Sentencing Act, 110  
 Fancy Bear hacking group, 97  
 Fannie Mae, 67  
*Federalist Papers*, 141, 142, 212  
 Fenton, Bruce, 65  
*Fight Club*, 191  
 Financial Conduct Authority, 183  
 Financial Crimes Enforcement  
   Network, 160  
 financial crisis, 67  
 Finley, Moses, 66  
 Finney, Hal, 10, 11, 25, 29, 67, 74  
 Fizzy, 83  
 Florida, 86  
 Force, Carl Mark, 95–97  
 forks, 42, 64–66  
 France, Anatole, 162  
 Freddie Mac, 67
- Galbraith, John Kenneth, 27  
 Gates, Bill, 29, 98  
 Gawker, 71  
 genesis block, 41, 54  
 Genesis Mining, 123, 125  
 genetically modified organisms, 185  
 Georgetown University, 114  
 gerrymandering, 85, 201  
 Gilmore, John, 17–20, 206  
 Glaucon, 39, 101, 114  
 Glorious Revolution, 13  
 GMOs. *See* genetically modified organisms  
 Gnutella, 10  
 Goldman Sachs, 72, 76, 162  
 Goldsmith, Jack, 169, 170  
 Gore, Al, 86  
 Gorsuch, Neil, 153  
 gossip protocols, 52, 53  
 graphics processing units, 75, 139  
 Green, Curtis, 96  
 group polarization. *See* polarization  
 GRU intelligence agency, 97  
 gun control, 11
- Gün Sirer, Emin, 62  
 Gyges, ring of, 101, 114
- Hall, Joseph, 89  
 Hamilton, Alexander, 141  
 Hanyecz, Laszlo, 69, 74, 75, 208  
 Hart, H.L.A., 151, 152  
 Harvard Law School, 169  
 Harvard University, 116, 184  
 hash functions, 48–51, 54  
   hiding, 49  
   collision resistance, 49  
   SHA- 256, 49, 55  
 hash power, 76, 113, 129, 130, 134, 234  
 hashcash, 29, 207  
 Hashflare, 126  
 Hayek, Friedrich, 197  
 Heap, Imogen, 169  
 Hebrew University of Jerusalem, 198  
 Hilton, Paris, 78  
 Hinman, William, 158  
*History of the Peloponnesian War*, 12  
 Hive Blockchain, 123, 124, 125  
 Hobbes, Thomas, 11–13, 14, 16, 39, 206  
   background, 12  
   *Leviathan*, 12–13  
 Hong Kong Stock Exchange, 134  
 Howey Company, 155  
 Howey test, 148, 149, 155  
 Hughes, Eric  
   *A Cypherpunk's Manifesto*, 20–23  
   generally, 17–23, 206  
 Hydro-Quebec, 135  
 hyperinflation, 32–33
- IBM, 80, 84, 208  
 IBM ThinkCentre, 74  
 Iceland, 76, 209  
 ICOs. *See* initial coin offerings  
 IMF. *See* International Monetary Fund  
 immutability, 64  
 ING bank, 29  
 Ingram, Amy, 192–93  
 initial coin offerings, 78–79, 147, 208  
 Initiative for Cryptocurrencies and Contracts, 113  
 Intel, 17  
 Internal Revenue Service, 106, 160, 161, 162  
 International Monetary Fund, 176  
 Internet Explorer, 17  
 internet service providers, 16  
 investment contracts, 155

256

## Index

- iPhone, 114
- Ireland, 56, 209
- IRS. *See* Internal Revenue Service
- IT University of Copenhagen, 87
- J.P. Morgan, 72, 83, 194, 203
- Jay, John, 142
- Jentzsch, Christoph, 61–66
- jury theorem (of Condorcet), 197
- Kafka, Franz, 154
- Kahan, Dan, 102, 108, 109
- Karpeles, Mark, 2–4, 70
- Kaspersky Lab, 111
- Katyal, Neal, 120
- KBME Bank, 105
- Kelling, George, 116–18
- King Charles II, 13
- Kissinger, Henry, 153
- KnCMiner, 123, 131
- know-your-customer rules, 73
- Kyrgyzstan, 187
- Learning Machine, 176
- ledger, 11, 27, 41, 53, 54, 60, 65, 84, 133, 187, 194, 207, 240, 244
- Leeta Gold Corp., 124
- Lehman Brothers, 67
- Lessig, Lawrence, 166, 167
- Leviathan*, 12–13, 206
- Lime scooters, 178
- Lindh, Nils, 122, 123,
- Lipset, Seymour, 37
- Litecoin cryptocurrency, 77
- Locke, John, 11, 13–16, 39, 206
  - background, 13
  - Two Treatises on Government* 12, 13–14
- Long Parliament of, 1940, 12
- Lulea, Sweden, 123
- LydianCoin cryptocurrency, 78
- Machiavelli, Niccolò, 35, 36
- Madison, James, 141, 212
- Maersk, 84–85, 208
- Magdalen Hall, 12
- Malmesbury, 12
- Malta, 173–77, 180, 210
- Malta Digital Innovation Authority, 175
- Mark Twain Bank, 28, 29
- mark, former German currency, 32
- Mason, George, 142
- Massachusetts Institute of Technology, 174
- Mastercard, 27
- Mattel, 10
- May, Timothy
  - assassination markets, 24
  - Crypto Anarchist Manifesto*, 18
  - Cyphermomicon*, 25
  - digital money, 26
  - generally, 17–20, 206
- Mayweather, Floyd, 78
- McCaleb, Jed, 2
- Medici Bank, 27
- Meese, Edwin, 211
- Mercatus Center, 192
- Microsoft, 17, 29
- Mill, John Stuart, 197
- Miller, Gregory, 86
- Miller, Matt, 105
- mining, 56, 57
  - application-specific integrated circuit chips, 56
  - arms race, 74, 75
  - energy use, 56, 122
  - farms, 76, 125
  - pools, 77
- MIT. *See* Massachusetts Institute of Technology
- Monero, 77, 107, 163
- Monetary Authority (of Hong Kong), 183
- monetary theory, 30–34
- Mongolia, 76, 127
- Morocco, 140
- Mt. Gox, 1–4, 70, 71, 94, 99, 112, 119, 164, 205, 208, 209
- Mueller, Robert, 97
- Mugabe, Robert, 33
- Murphy, Laura, 110
- Muscat, Joseph, 173
- MySpace, 179
- Nakamoto, Satoshi, 1, 9, 10, 11, 34, 40, 54, 67, 68, 72, 74, 75, 81, 104, 115, 128, 139, 205–6, 207, 213
- Napster, 205
- National Development and Reform Commission (of China), 186
- National Health Service, 99
- National Institute of Standards and Technology, 50
- National Security Agency, 23, 50
- Netherlands, 13, 56

- Netscape, 17, 29  
 New York, 180  
 NHS. *See* National Health Service  
 Nietzsche, Friedrich, 18  
 Nissan, 99  
 Niven, Larry, 10  
 Node Pole, 122–26  
 nonce, 128  
 North Carolina, 202  
 North Korea, 99, 107, 163, 178  
 “no vehicles in the park” hypothetical, 150–52  
 NSA. *See* National Security Agency  
  
 occupy Wall Street protests, 195  
 Ohio, 180  
 OKex, 175  
 OSET Institute, 86  
 Oxford University, 12, 13  
  
 Palm Beach County, 86  
 Palmer, Jackson, 78  
 Papa John’s, 69, 208  
 parliamentarians, 12  
 parties. *See* political parties  
 Patagonia, 73  
 pay for performance, 178  
 PayPal, 27  
 PCWorld, 72  
 Peirce, Hester, 187–88, 189  
 penumbra, the problem of, 151  
 Pew Research Center, 203  
 Pinckney, Charles, 141  
 Pitt, Brad, 191  
 Pixies, 191  
 Plato, 6, 35, 38, 101, 215, 219, 220, 231  
 polarization, 199  
 Politecnico University, 173  
 political parties, 201  
*Politics*, of Aristotle, 35  
 precautionary principle, 185–86  
 Pretty Good Privacy email system, 10, 26  
 Princeton University, 137  
 prison experiment. *See* Stanford prison experiment  
 prisoner’s dilemma, 136, 137  
 proof of stake, 140, 141  
 proof of work, 55–57, 128, 131, 140, 202  
 public key cryptography, 51  
  
 quorum, 83, 194  
  
 Rand, Ayn, 18  
 ransomware, 111  
 REcoin, 144–49  
 Reddit, 63, 145  
 Reform Party, 86  
 regulatory sandboxes. *See* sandboxes, regulatory  
 Renault, 99  
*Republic*, of Plato, 35, 38, 101  
 Republican Party, 201  
 ring of Gyges. *See* Gyges, ring of  
*Ringworld*, 10  
 Rockdale, Texas, 133  
 Rocky Reach Dam, 132  
 Rogoff, Kenneth, 184  
 Roussy, Olivier, 124  
 Royalists, 12  
 Ruby Ridge siege, 24  
 Rutgers University, 116  
 Rye House Plot, 13  
  
 sandboxes, regulatory, 182–84  
 Sarbanes-Oxley Act of 2002, 181  
 Satoshi Dice, 107  
 Schneider, Marian, 89  
 Schumer, Charles, 71  
 Seagal, Steven, 78  
*SEC v. W. J. Howey Co.*, 155  
 Securities Act of 1933, 148, 155, 159  
 Securities and Exchange Commission, 144, 146, 149, 155, 158, 179, 187  
 Securities Exchange Act of 1934, 148, 159  
 securities regulation, 148–49, 155–60  
 sexual orientation, 11  
 SHA- 256, 49, 55, 128, 130  
 ShapeShift, 107, 180  
 Siberia, 76  
 Sierra Leone, 88  
 Silk Road, 70, 71, 72, 95–97, 119, 205, 208, 209  
 Singapore, 183  
 Sirer, Emin Gün, 113–14  
 Skripal, Sergei, 95  
 smart contracts, 62, 81, 82, 83, 169  
 Smith, Adam, 36, 200  
 social meaning, 109  
 social proof, 108  
 Social Security Administration, 27  
 Socrates, 39, 101, 141  
 Solomon, David, 162

- Soluna, 140  
 Soviet Union, 36  
 Spanish Armada, 12  
 splitDAO function, 63  
 Stanford prison experiment, 117  
 Starscape Capital, 163  
 Stephenson, Neal, 10  
 Stiglitz, Joseph, 23  
 Story, Joseph, 142  
 Sturdivant, Jeremy, 69  
 Sun Microsystems, 18  
 Supreme Court, 16, 86, 152  
 Sweden, 122–26, 209  
 Szabo, Nick, 29, 30
- TARP. *See* Troubled Asset Relief Program  
 Tendon, Steve, 173–77  
 Tether cryptocurrency, 77  
*The Princess Bride*, 71  
 Thucydides, 12  
 Tor browser, 10, 70, 71, 205  
 TradeLens, 84–85  
 tragedy of the commons, 136  
 Treehotel, 122  
 Troubled Asset Relief Program, 67  
 Trump, Donald, 97, 178  
 Tucker, Albert, 137  
 Twitter, 191, 199  
*Two Treatises on Government*, 12, 13–14  
 tyranny of the majority, 39
- Uber, 211  
 UBS bank, 164  
 Ujo Music, 169  
 Ulbricht, Ross, 95–97, 209  
 ultimatum game, 198–99  
 University of California, Berkeley, 18, 28  
 University of Melbourne, 23  
 University of North Carolina, 103
- Verified Voting, 89  
 Vinnik, Alexander, 93–97, 105, 120  
 virtual currency, 26–30
- Visa, 27, 29  
 Voorhees, Erik, 107, 180  
 voter turnout, 87
- Waco siege, 24  
 Wall Street, 67, 79, 107, 132, 163, 181, 214, 227  
 Walmart, 208  
 WannaCry cyberattack, 99, 163  
 Watkins, Frederick Mundell, 16  
*Wealth of Nations*, 36, 200  
 Weber, Max, 116, 165  
 Weimar Germany, 32  
 West Virginia, 89  
 White, Mary Jo, 149  
 Whole Foods, 31  
 WikiLeaks, 23, 72, 206  
 Wilde, Oscar, 32  
 Wilson, James (political scientist), 116–18  
 Wilson, James (politician), 142  
 Winklevoss, Cameron, 73, 187, 208  
 Winklevoss, Tyler, 73, 187, 208  
*Wired* magazine, 17, 20  
 World Bank, 83  
 World Trade Organization, 186  
 Wright, Aaron, 168  
 Wright, Steve, 132  
 WTO. *See* World Trade Organization  
 Wu, Tim, 169, 170  
 Wyoming, 180
- x.ai personal assistant, 192–93
- Yale University, 102  
 Yaniv, Ilan, 198–99, 200  
 “yellow vests” protests, 195
- Zaslavskiy, Maksim, 144–49, 159  
 ZB.com, 175  
 Zimbabwe, 33  
 Zimbardo, Philip, 117  
 zollar, 33  
 Zuckerberg, Mark, 187