© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

CONTENTS

Introduction: The Passing Current 1

1 Speculating with Money 6

2 Secure Paper 21

3 Recognizable without Being Known 33

4 Blinding Factor 47

5 Collapse of Governments 62

6 Permanent Frontiers 80

7 Nanosecond Suitcase 97

8 Hayek in Biostasis 118

9 Future Desires 135

10 Emergency Money 153

11 Escape Geographies 171

12 Desolate Earth 187

Conclusion: Sometime in the Future 202

Acknowledgments 207

Notes 209

Bibliography 227

Index 245

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

INTRODUCTION

THE PASSING CURRENT

This book tells the largely untold story of digital cash and the people who sought to build it—some to bring down states and nations and create a utopia of ciphers, some to be rewarded by the collapse of global order, and some to spur the genesis of a machine by which they could live forever. It explains how cryptocurrencies came to be: the preconditions, the technologies and subcultures, and the ideas, fantasies, fictions, and models of the future behind Bitcoin's first announcement.

The main argument of this book starts with the fact that it tells the story of *digital cash* in particular, rather than electronic money more generally. The work of making cash digital means creating an object that is trivial to transact over networked computers and easy to verify—to prove that it is what it appears to be—but impossible to forge or duplicate, and that can carry the information about what it is and what it is worth, without generating any information about how it is used or by whom.

This is a set of seemingly paradoxical and impossible demands: it must be available but scarce, unique and anonymous but identifiable and reliable, and easy to transmit but impossible to copy. It must have all these attributes in the context of technologies that were designed and built to make copies in their very functioning—costlessly, immediately, and perfectly.

The case I make to you is that the story of digital cash is best understood as a problem of knowledge in the larger history of currency itself. How do you know that a given currency token

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

is valuable—that it can pass, that someone else will take it from you, that it can be settled and redeemed? The value of money in general—this intricate cultural microtechnology, this social medium—comes from powerful and often abstract beliefs about the way things are and the way they will be, as the first chapter of this book discusses in detail: the predictions, bets, and hopes that one kind of money will be accepted for payment of taxes, another will not be devalued by the market flooding with some rare metal or material, and that a social network of gifts, obligations, and reciprocities will hold for a third.

Zoom in from that lofty place to *practice*, to currency, cash, and coin. How do you know the value of this particular token of money? How are you sure of its identity, and how does it authenticate itself to you? We may know this through ductility, thermal conductivity, and sound: biting a coin, seeing how fast ice melts on it, the "ping test" of its chime when struck. We may know it from the smell and weight of a brick of compressed tea, the branding and bands on a cigarette, or through serial numbers, signatures, paper stock and fabric's "hand," and the security threads and watermarks on banknotes, letters of credit, or traveler's checks. We know all these things in the context of training, habit, and prior experience. With this in mind, how would you create a digital currency?

I want to convince you that we should understand digital cash as part of the challenge of *making digital data valuable*, and that many of the more puzzling aspects of digital cash resolve themselves when they're understood in terms of authentication, ownership, certainty, and proof for digital objects. The twin projects of digital ownership and digital cash always turn up together as the history told in this book unfolds, from building information marketplaces, to verifying anonymous statements, validating work and time, and battling counterfeiting and

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

copying. In other words, this book is a history of how data was literally and metaphorically *monetized.*

The secondary argument I make is that the history of digital cash can also show us a particularly vivid example of the use of money and technologies to tell stories about the future. These stories are a way of making assertions, getting buy-in, placing bets, marshaling allies, and taking power in the present. Over the course of this book I describe several utopian and speculative monetary projects, major and minor. Each comes with its model of time, its stories and fantasies of history and the future, and its associated technologies—cryonics, varieties of cryptography, ocean-going cities—on which it draws for prospective value. All also face a translation challenge. They must explain and convince outside the small, homogeneous groups where they were created: those of almost entirely white American men from youth to early middle age, with backgrounds in engineering or software development—most of whom lived on the coast of California, shared political theories and beliefs, and knew one another through mailing lists and events.

All the speculative moneyers and mintmasters of this book work within their own particular historical condition: the Technocrats, diagramming prosperity with mechanical pencils on graph paper; the cypherpunks, undermining an anticipated totalitarian ultrastate; the Extropians, their frozen bodies launched like Pharaonic vessels into eternity, seeking disruptive chaos as fuel for a stellar motor; the libertarians and agorists and anarcho-capitalists and micronationalists and Objectivists and sovereign individuals, eagerly bracing for an oncoming collapse to validate their decisions, beliefs, and investments. Their work was in the prospective tense but required action in the present, from recruiting prototype communities to designing idea coupons to stockpiling weapons in anticipation of ruin—and all

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

entailed either the production or the adoption of speculative currencies and digital cash. They shared this time frame with the seventeenth-century proponents of credit and fixed metallic money, who "aimed to explain and induce, persuade and gain momentum; if they succeeded in convincing an audience that could act, they could capture the future."[1]

The project of this book can be summed up in a single phrase. *Passing current* is a term in the world of currency for money that is generally accepted for exchange, passing from person to person. The idea of the cash in your wallet being "current money," though, holds true only because it is anticipatory money: the next person offered will take it, and it can ultimately be accepted in taxes or otherwise redeemed. Its present-time "currency," the fact that it passes, is a product of its futurity. "Passing current" also appears in physics and electrical engineering, including the development of the transistors and computational hardware used in creating digital cash: this book is partially a story about the work of moving electrons down wires. Finally, and metaphorically, the "passing current" evokes the elapsing of present time—the passing of this current moment between the documented and narrated past and the predicted, desired, and feared future. The story of digital cash lies at the intersection of those three passing currents: the social puzzles of money, the technological history of computing, and our sense of our historical and future condition.

This book therefore has two goals. When you finish it, you will have a portrait of the components, concepts, and ideas of digital cash from experiments in the 1980s to the creation of Bitcoin. In this, you will see how data was cashed in, so to speak, and the trade-offs and struggles that process involved (particularly the surveillance of payments and transactions). You will also have a history of several near futures told through experimental

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

money, and the different ways prospective and anticipated events were applied in the present. This goes beyond the history of utopian currencies to the prototypes, images, narratives, functional systems, and speculative designs that worked as *techniques of futurity*. I hope to enrich what you know about currency (digital and otherwise) and computation, and to show you how powerful fantasies of the future were—and are—told using money, machines, and stories together.

With all that in mind: I hope with this book to give you an *experience*, a whirlwind tour of many different systems of utopian desire, future fantasy, and experimental life, including brief sketches of many of the personalities and practices involved—some of whom may seem wrongheaded, dangerous, even willfully perverse. The itinerary includes prototype countries and mathematical challenges, a financial system to bring its creator back from the dead, nonconductive liquids, Xanadu hypertext, leaf money, objective values, currency panics, private spaceships, public randomness, American Technocrats in capes, cryptographers in chadors, high-seas autonomous zones, Grace Hopper playing basketball, libertarian silver, geodesic schemes, broken time machines, idea coupons, forged signatures, a wall of lava lamps, and a tank of frozen human heads.

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

INDEX

accelerationism, 219n12
Adam, Ken, 86
Addison, Joseph, 188
Adleman, Leonard, 40–42
Agassiz, Louis, 43
agorism, 176–78
air-dollars, 18
Alcor, 137–38, 205
Aliens (film), 122
American Information Exchange (AMIX), 69–73, 75, 79–80, 85
American Rocket Company, 69, 139
AMIX. *See* American Information Exchange
anabiosis, 143–46
anarchy. *See* crypto anarchy
anon.penet.fi, 94
anonymity: Bitcoin and, 163–64; digital currency and, 58–59, 85–87, 163; online, 60, 66–67, 84–85, 87, 89, 94
Anonymous, 82
Appadurai, Arjun, 209n14
Arcosanti, 119
Arc Technologies, 69
Armer, Paul, 49–50
Ashe, Thomas, 24
Aspen Dollars, 175
Assange, Julian, 65, 74, 87
assignats, 23
asymmetric key encryption. *See* public key encryption
Atlantis (utopian project), 180
Atlantis II (ship), 181
Atwood, Margaret, *The Handmaid's Tale*, 50–51
Austrian School of economics, 119, 122–26, 137, 147, 182
authentication: of Bitcoin, 193–95, 201; of coded communications, 37–38, 41–42; of currency, 2, 23, 25–26, 28, 192–93; of digital cash, 54–56; hashes as means of, 104; material qualities as means of, 2, 25; printing as means of, 23; signatures as means of, 22–23. *See also* public key encryption; "recognizable without being known"; security
Autodesk, 73, 75, 79–81

Back, Adam, 97–99, 101–2, 105, 107–8, 110, 117, 155, 157
Bakhmet'ev, Porfirii, 143
banks, virtual, 112–15
Barlow, John Perry, 88–89, 91; "Declaration of the Independence of Cyberspace," 90
Bauhaus, 119
Beer, Stafford, 48
Bell, Tom. *See* Morrow, T. O.
Bellamy, Edward, *Looking Backward*, 220n11
Bell Telephone, 74, 93
Bendiken, Arto, 176
Benjamin, Walter, 16, 21
Benkler, Yochai, 68
Bernanke, Ben, 154
Biagioli, Mario, 53
bills of exchange, 22–23
bin Ibrahim, Datuk Muhammad, 21
Biosphere II, 133
biostasis. *See* cryonics

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

Bitcoin: algorithms for, 107; and anonymity/identity, 163–64; blockchain of, 38, 111, 154, 159–60, 199–200, 204–5; career of, 204; computational nature of, 157–58; core features of, 158; creation of, 111, 117, 120, 153–56; digital signatures for, 42; Extropians and, 120; Finney and, 205; and the future, 197–98; hybrid character of, 156, 159; and institutional finance, 84; libertarians and, 191, 197–99; Merkle and, 38, 93; mining of, 159–60, 167, 200–201; precursors of, 42, 111, 155–59; scarcity as property of, 199–200, 201; and value, 195–96, 201; verification of, 193–95, 201
bit gold, 111, 155, 157–60, 162
BitTorrent, 110
black market: crypto anarchy as inspiration for, 203–4; for digital cash, 58, 66; for information, 79, 83–84
black market, for information, 83–84
BlackNet, 83–87, 90, 111, 120
Black Unicorn, 129
Blanchette, Jean-François, 41, 42, 46, 60
blinding factor, 57
blockchains, 38, 105, 111, 154, 159–60, 199–200, 204–5
b-money, 82, 102, 115–17, 155–59
Bogdanov, Alexander, 144, 146
Boltzmann, Ludwig, 123
Bond, James (film character), 86
Brand, Stewart, 71, 89
Brassard, Gilles, 58
Bretton Woods Conference, 190
Brik, Lili, 145
bureaucracy, 23
Bush, Vannevar, "As We May Think," 47
Cabral, Anna, 21
capital, 126–27
cargo cults, 138
Carnap, Rudolf, 123
cash hoarding, 7
catallactics, 124–25
Chaum, David, 46, 52–61, 106, 111, 128, 139, 157, 186, 204
Chile, 123, 177
Church of Scientology, 94
ciphers. *See* codes and ciphers
Cloudflare, 105
Cocks, Clifford, 39
codes and ciphers, 34–37
coins: for Atlantis project, 181; digital, 112–13, 161–62, 169; as documents, 187–89; as expression of values, 171, 187–89; laws about minting/issuing, 172; libertarianism and, 150, 170, 171, 181–83, 191–92, 196–97; Liberty Dollar, 172–73; material properties of, 171, 173–74; for Minerva project, 173–74
collisions (computing), 104, 107–9
Community Memory, 64
computational currency, 157, 165
computational work, 99–101, 116, 165–66
confidential personal advertisements, 84–85
cosmograms: defined, 6, 11; energy certificates as, 12, 16; money as, 18; overview of, 10–12; self-reflexive, 88; time modeled by, 11–12
Counterfeit Detection System, 31–32
counterfeiting, 29–32, 56–57, 190, 193, 211n16. *See also* forgery
Craib, Raymond, 181, 182
Cray, Seymour, 166
Cray supercomputers, 166

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

credit cards, 48, 220n11
Cripeau, Claude, 58
cryonics, 73, 96, 119, 132–33, 135–46, 191, 205
Cryonics (magazine), 137
crypto anarchy, 66, 79–80, 82, 92, 95, 98, 113, 115, 203–4
CryptoCredits, 85, 111
cryptocurrency, 157–58, 191–93, 204. *See also* digital cash
Cunanan, Andrew, 184
Cuperman, Miron, 84
currency: analog and digital aspects of, 29–32; authentication of, 2, 23, 25–26, 28, 192–93; case examples of, 26–30; computational, 157, 165; crypto-, 157–58, 191–93, 204; as document to be read, 26–29; energy as, 9–10, 12; iron as, 189–90; material properties of, 9, 17, 25, 31, 177, 193; schemes for encouraging exchange of, 12; signatures on, 21–23; social relationships expressed through, 22–23, 28–29, 67–68; in the Technate, 9; technological imaginaries involving, 19–20. *See also* money
CWI Amsterdam, 218n12
Cybernetic Culture Research Unit, 219n12
cyberspace, 88–89, 91
cypherpunks, 63–64, 66–68, 74, 79, 80, 87, 91–95, 97–98, 113, 120, 183, 215n34

Dafoe, Willem, 31
Dai, Wei, 82, 102, 114–17, 120, 155–57, 159, 183
Daily Princetonian (newspaper), 8
darknet, 92
D'Aureous, Skye, 122
Dawidowicz, Lucy, *The War Against the Jews, 1933–1945*, 50
debit cards, 50
Debord, Guy, 119
decas, 181
decentralization, 115–16, 125
Deleuze, Gilles, 51–52
Deng Xiaoping, 78
Depression. *See* Great Depression
Deringer, William, 210n17
Desan, Christine, 15, 19
Deutsche Bank, 60
de Wolf, Aschwin, 137
Diffie, Whitfield, 37–42, 46, 158
DigiCash, 53, 58–60, 128, 157
digital banks, 67–68
digital bearer certificates, 214n26
digital cash: authenticity and security of, 54–59; basic conditions for, 1; Chaum's experiment with, 53–61; chief issues for, 1–2; cryonics in relation to, 137, 139; dystopian perspective on, 151; Extropians and, 127–29, 147; future orientation of, 203; how it works, 54–55; as information, 72–73; minting of, 116–17; motivations for promotion of, 1; origins of, 53; potential audiences for, 95–96
digital data: authentication and counterfeiting issues in, 30–32; coded communications using, 38–42; surveillance and control using, 49–53; value of, 2–3. *See also* information marketplace
digital gold currencies (DGCs), 175–76
digital metallism, 169

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

disciplinary society, 51
discounting, 13–15, 210n17
Dodd, Nigel, *The Social Life of Money*, 7, 13, 200
double-spending, 158–59, 168
Dow Chemical, 7
Draghi, Mario, 21
Drinan, Robert, 149
Dr. Strangelove (film), 86
Duvos, Mike, 129
Dwiggins, W. A., 17, 28
Dwork, Cynthia, "Pricing via Processing," 218n6
Dyson, Esther, 71–73

Eames, Charles, 31
e-bullion, 175
e-cash, 53–61, 139
Edgerton, David, 210n16
e-gold, 175–76
Eichacker, Reinhold, *Der Kampf ums Gold*, 19
Einstein, Albert, 140, 141
Electronic Frontier Foundation, 81, 89
Electronic Funds Transfer (EFT), 49
Electronic Value Exchange (EVE), 49
elitism, 149
Ellis, James, 39
Emergency Economic Stabilization Act, 153
energy, expended by working with digital currency, 165–66, 168, 200–201
energy certificates, 9–10, 12, 16
Enigma machine, 37
entropy, 105
Ethereum, 204
Ettinger, R. C. W., 141, 145
EURion Constellation, 31–32
Executive Order 6102, 170
Extropians, 77, 78, 111; and Austrian economists, 12, 118, 119, 122–25; chief concerns of, 120–21; core features of, 118, 122; and cryonics, 135–46; and digital currency, 127–29, 147; legacy of, 204; origins of, 120; overview of, 118–22; strategies of, for bringing about the future, 127–36, 146–47
Extropy (journal/zine), 118, 120, 122, 128, 129, 136, 139, 182
Extropy Institute, 133

Fairey, Shepard, *Obey*, 31
Farads, 9
Federal Reserve, 29, 112
fidelity, 71–72
filtering, 98
Finney, Fran, 136
Finney, Hal, 55, 61, 107–8, 110–11, 115, 117, 120, 128, 129, 154–58, 165–66, 205
Florida, 24
FM-2030 (né Fereidoun M. Esfandiary), 122
Ford, Henry, 149
forgery, 45, 160. *See also* counterfeiting
Foucault, Michel, 51
Fox News, 174
France, 10, 23
Franklin, Benjamin, 189–90
fraud, 58
Frayling, Christopher, 86
freedom, 93, 131, 147
Freedom of Information Act, 93
Free Marijuana Church of Honolulu, 172
Free Oceana, 133

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

free/open source software movement, 68, 87–88, 93
Free Republic of Liberland, 197–98
Free State Project, 191
Freud, Sigmund, 123
Friedkin, William, *To Live and Die in L.A.*, 31
Friedman, Elizebeth and William, 93
Friedman, Milton, 177, 184
Friedman, Patri, 184, 198
frontier, electronic, 88–92
Fukuyama, Francis, 203
Fuller, Buckminster, 48, 181
future: cryonics and, 135–46; idea futures and, 129–30; role of, in money and currency, 4–5, 13–17, 202–3; strategies for bringing about, 118–19, 127, 131–34, 146–47

Galileo Galilei, 54
Gastev, Alexei, 8
Geddes, Norman Bel, *Horizons*, 17
Geithner, Timothy, 21, 30
Gernsback, Hugo, 19
Gesell, Silvio, 209n10
Gibson, William, 88–89; *Zero History*, 31–32
Gilbert, Emily, 29
Gilmore, John, 80, 92–93
Gitelman, Lisa, 25
Glapiński, Adam, 21
global financial crisis (2008), 150, 153
Gödel, Kurt, 123
gold: digital currency compared to, 111–13, 168–69; digital gold currencies (DGCs), 175; future value of, 196; injunction against hoarding of, 170; physical properties of, 179. *See also* silver
GoldMoney, 175
Google, 218n12
Government Communications Headquarters (United Kingdom), 39
governments: anti-government sentiment, 90–91, 114, 172–75, 178–79; collapse of, 66; currency freed from, 125
Great Depression, 7–8, 12, 17
Greenberger, Martin, "Computers of Tomorrow," 47–48
Grimmelmann, James, 186
guns, 114, 183–84

Hacker News, 121
Hackers Conference, 80
Hamilton, Alexander, 189
Hanson, Robin, 78, 129
hashcash, 102, 105, 110–12
hashing (data), 101–9, 159
Hastings, Sean, 184
HavenCo, 184–86
Hawthorne Exchange (HEx market), 127–28
Hayek, Friedrich, 70, 119, 122–27, 147–52, 176, 177
heat, generated by computers, 166
Heinlein, Robert, *The Moon Is a Harsh Mistress*, 178
Hellman, Martin, 38, 40–42, 46, 158
Helsingius, Johan, 94–95
Hettinga, Robert, 214n26
hierarchical navigation interface, 216n49
Hillis, Danny, 166
Hock, Dee, 48–49, 157
Hong Kong, 185
Hopper, Grace, 5, 99–101, 103, 166
Howells, James, 164–65, 194

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

Howland, Sylvia, 42–44
Hubbert, Marion King, 209n2
Hughes, Eric, 64, 69, 80, 93
Huxley, Aldous, 172
Huygens, Christiaan, 54
hypertext, 76

idea futures, 129–30, 203
identification friend or foe (IFF), 38
immortalists, 95–96
indices (semiotics), 44–45
Indonesia, 193
information: audiences for covert, 93–94; digital cash as, 72–73; liberation of, 92–96; as money, 75–78, 117, 157; prices as, 123–24, 126
information marketplaces, 69–79, 83
infrastructural mutualism, 87–88
ING (financial institution), 60
Initial Coin Offerings, 204
Intel, 65
intellectual property, 72, 90
Internet, 49, 89
Interpol, 94
IntGold, 175
iron, as currency, 189

Johns, Adrian, *Death of a Pirate*, 184
Juettner, Emerich (aka Edward Mueller, Old Mr. 880), 29, 211n16

Kelly, Kevin, 215n34
Kelty, Chris, 87
Keynes, John Maynard, 16, 168, 174, 192
keys, to coded information, 36–39
KGB (Russian State Security Committee), 35, 50
Kirschenbaum, Matthew, 103
Knott, G. D., 102
Konkin, Samuel Edward, III, 177
Koselleck, Reinhart, 20
kosmos (order), 148
Kotelnikov, Vladimir, 36
Kraus, Karl, 123
Kriyananda, Swami, 172

Lackey, Ryan, 114, 183–86
land banks, 189–90
lava lamps, 105
leaking, of information, 87, 94
ledgers, 159–60, 162–63, 195, 201
Lenin, Vladimir, 145
Less Wrong, 121
letter one-time pad (LOP), 35–36, 212n5
Levy, Simon! D., 122
Lew, Jacob, 21
libertarianism: and Bitcoin, 191; catastrophe predictions of, 150–51, 174, 191, 196–99; and coinage/precious metals, 150, 170, 171, 181–83, 191–92, 197; and cryptocurrency, 191–93; economic and political theories of, 177; escape fantasies and projects of, 170, 180–83, 198–99; Extropians and, 121, 122; gatherings associated with, 190–91; literature favored by, 178; and money, 171–75, 178–80, 192–93, 196–97; and politics, 190–91; Rand and, 85, 180
liberty. *See* freedom
Liberty Dollars, 172–75
Lincoln, Abraham, 29
Lindstrom, Monty, 182
logical machines, 212n22
Lovell, Stanley, 193
Luhn, Hans Peter, 103
Lycurgus, 189

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

Mach, Ernst, 123
Machado, Romana, 133
Marks, Leo, 35, 212n5
Marquand, Allan, 212n22
Marx, Karl, 126–27
Maurer, Bill, 169
May, Timothy C., 65–69, 73–74, 79–80, 82–86, 89–96, 98, 111, 113–15, 120, 128, 161, 177, 183, 200, 217n12
Mayakovsky, Vladimir, 144–46
McCarthy, John, 37–38, 48
medallions, 172
Meirelles, Henrique, 21
Melanesia, 138
Melville, Herman: *The Confidence-Man*, 25; *Moby Dick*, 45
memory, computer, 102–3
Merkle, Ralph, 38, 93, 120, 155
Merkle tree, 38
Metzger, Perry, 120, 155, 170
Microsoft, 60
Milhon, Jude "StJude," v, 62–64, 66, 79, 81, 82, 90, 198
Miller, Mark, 77–78, 111, 120, 216n49
Minerva, Republic of, 181–83
mining, of Bitcoin, 159–60, 167, 200, 200–201
minting, of digital cash, 116–17
Mises, Ludwig von, 123, 126, 178, 182, 191, 194
Mises Institute, 176
Mondo 2000 (magazine), 64
money: alternatives to, 7–8; Austrian economists' conception of, 125–26; chief issues for, 2; cryonics in relation to, 136–37; electronic, 47–51; as information, 75–78, 117, 157; intrinsic value of, 126, 137; libertarian/agorist conceptions of, 171–75, 178–80, 192–93, 196–97; objective value of, 9, 151, 170, 175, 179–80; origins of, 13; role of time in, 13–17, 202–3; science fiction accounts of, 19; social relationships expressed through, 14–16, 51, 188–89; strategic role of, in shaping the future, 134; surveillance and control of electronic, 49–53; time as, 118. *See also* currency; digital cash
More, Max (né O'Connor), 118–19, 121–22, 134, 137, 150, 205
More, Thomas, *Utopia*, 85
Morrow, T. O. (né Tom Bell), 121, 122
Moses coin, 224n2
MP-Infinity, 122
Mueller, Edward. *See* Juettner, Emerich
Musil, Robert, 123

Naess, Arne, 219n7
Nakamoto, Satoshi (pseudonym), 111, 117, 120, 154–59, 161–63, 169, 170, 200
names, 81–82. *See also* anonymity
nanoseconds, 100
Naor, Moni, "Pricing via Processing," 218n6
Narayanan, Arvind, 61
National Institute for Standards and Technology (NIST), 106
National Organization for the Repeal of the Federal Reserve and the Internal Revenue Code (NORFED), 172–74
Nelms, Taylor, 169
Nelson, Theodor "Ted," 74–77, 80, 155, 161
Neurath, Otto, 123
New Hebrides, 182

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

New Nutrition movement, 17–18
newsgroups, 84
Nietzsche, Friedrich, 67, 148
Nixon, Richard, 29, 50, 65, 182
Nock, Albert Jay, 198–99
nonplaces, 85–86, 89, 185
North Sea platform. *See* Sealand
NotHaus, Bernard von, 171–75, 193
nowhere. *See* nonplaces
nuclear chain reaction test, 140–41
Nuclear Weapons Freeze Campaign, 94–95

O'Connor, Max. *See* More, Max
Office of Strategic Service (OSS), 193
Old Mr. 880. *See* Juettner, Emerich
one-dollar bills, 26–29
Oneida Perfectionists, 119
Onion Routing, 115
open source software. *See* free/open source software movement
Orwell, George, *1984*, 50
OSGold, 175
Overcoming Bias, 129
ownership. *See* property, information as

paraphs, 45
Parekh, Sameer, 95, 184
partial hash collision algorithms, 101, 109, 117
passing current, 4, 69
Passports for Bitcoin, 197
Patreon, 95
PayPal, 95, 175, 198
Pecunix, 175
Peirce, Benjamin, 43–44
Peirce, Charles Sanders, 43–44, 212n22
Pergamit, Gayle, 74
PGP. *See* pretty good privacy (PGP)
Phoenix Foundation, 182
Pinochet, Augusto, 123, 148, 177
PipeNet, 115
place. *See* nonplaces
planning, ineffectiveness of, 124–27, 132, 147–48. *See also* spontaneous order
Platt, Charles, 138–39
Plutarch, 189
Poe, Edgar Allan, 83, 85
poem ciphers, 34–35
Poovey, Mary, 28
Popper, Karl, 70, 123, 124
PorcFest, 190–91
postage stamps, 109–10
posthuman era, 73, 95, 119–20, 131, 136, 139
Potvin, Richard, 130–31
praxeology, 123, 127, 194
Presley, Telle, 172
pretty good privacy (PGP), 94–95
prices, 123–25
Prometheus Project, 139
proofs of work, 97, 102, 108, 110–11, 158–61. *See also* reusable proof of work
property, information as, 76–77. *See also* intellectual property
pseudonyms, 116
public key encryption, 38–39, 55–56, 97–98
pyramid schemes, 130–31

Rabinbach, Anson, 109
Rake, Denis, 34
Rand, Ayn, 151, 191; *Atlas Shrugged*, 18, 85, 178–80, 184, 198–99; *The Fountainhead*, 6
randomness, 105–6
reading, 28

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

realness, 173–74, 178
"recognizable without being known," 42, 45, 54
recursive publics, 87
Reddit, 121
the Remnant, 198–99
reserve technologies, 14, 210n16
reusable proof of work (RPOW), 110–11, 158
"The Revolt of the Scientists" (story), 19
Rid, Thomas, 85
Rivest, Ron, 40–41, 42, 218n6
Robertson, Frances, 27
Robin, Corey, 148
Robinson, Hetty, 42–43
Romain, Tiffany, 137, 139
Roosevelt, Franklin Delano, 7, 29, 170
Rothbard, Murray, 123, 178
Royal Hawaiian Mint Company, 171
RPOW. *See* reusable proof of work
RSA algorithm, 41, 97–98
Rucker, Rudy, 80–81

Salin, Phillip, 69–70, 72–75, 79, 83, 139, 200
scatter storage, 103
Schroeppel, Richard, 38
Schulman, J. Neil, *Alongside Night*, 177–78
Schwartz, Hillel, 45
science: currencies in imaginaries of, 19–20; visions of society based on, 8, 10, 17–18
Scott, Howard, 6–9, 17–18, 124, 203
Scott, Michael, 69
Sealand, 114, 184–86
sealed-envelope approach, 54
Searls, Doc, 71
seasteading, 133, 180–81, 184, 198
Second Amendment Dollars, 175
secure paper, 25–26
security: of digital cash, 54–59; of virtual banks, 113. *See also* authentication
semiotics, 44
Serviss, Garrett, *The Moon Metal*, 19
SHA-1 algorithm, 107–8, 218n12
SHA-256 algorithm, 167
Shamir, Adi, 40–41, 42
Shannon, Claude, 36
Shirriff, Ken, 167
signature blocks, 65–66
signatures: authentication of digital, 46; authentication of written, 43–44; Bitcoin and, 162; on currency, 23; digital, 41–42, 45–46, 162; properties of, 43–46; written, 43–44, 46
signs (semiotics), 44–45
Silicon Valley, 88, 122
Silk Road (darknet market), 92, 123, 175, 177
silver, 173–75, 181, 188, 191–93. *See also* gold
Simberg, Rand, 139
the Singularity, 81, 138, 204
Situationist International, 119
Smith, Vera, *The Rationale of Central Banking and the Free Banking Alternative*, 176
social credit, 12
social organization: digital surveillance and control of, 49–52; money/currency as expression of, 14–16, 22–23, 28–29, 51, 67–68, 188–89; open source computing and, 87–88; science as basis for, 8, 10, 17–18

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

social prototypes, 88
sovereign citizen movement, 173
Soviet Union, 8, 225n12
space shuttles, 70, 73, 75
Spacewar! (video game), 71, 89
spam, 98–99, 101
Spang, Rebecca, 14, 22, 23, 24, 131, 188
Special Operations Executive (SOE), 34–35
speculative currencies, 6, 16–17, 128–29, 150
spontaneous order, 118, 121, 124–27, 133, 148
Spooner, Lysander, 191
Stallman, Richard, 93; "The Road to Tycho," 93
stamp scrip, 12, 209n10
Starheim, Odd, 34
Starstruck, 69
steel engraving, 27
Sterling, Bruce, 203
Sternlight, David, 216n9
Stevens, Jimmy, 182
Stiefel, Werner (pen name: Warren Stevens), 180–81
StJude. *See* Milhon, Jude
St. Kitts and Nevis, 197
StockGeneration, 130–31
Strugatsky, Boris and Arkady, *Roadside Picnic*, 133
substitution squares, 35–36, 212n5
Sunshine Minting, 172–73
surveillance and control, 49–53
Swartz, Lana, 29, 87, 169
symmetry, for coded communication, 36–39
Szabo, Nick, 111, 120, 134, 155, 159, 160, 162
Szilard, Leo, 140–43, 145

Talking Heads, 65
Tarkovsky, Andrei, *Stalker*, 133
Technate, 9, 12
Technocracy Inc., 6–10, 12–13, 16–18, 20, 124, 203, 209n2
thalers, 188, 193
Thales of Miletus, 16
Thiel, Peter, 198
Thomlinson, Matt, 129
Thoreau, Henry David, *On the Duty of Civil Disobedience*, 95
thresholds, 81–82, 85
time: cosmograms as models of, 11–12; as money, 118; role of, in money, 13–17, 202–3. *See also* future
Time League, 8
Tor, 115
transhumanism, 130–32
trapdoor cryptosystems, 40–42
Treasury bills, 13
Tresch, John, 10–11, 16
Trichet, Jean Claude, 21
trust, 169
tumbler system, 77
Turner, Fred, 80, 88, 89
twenty-dollar bills, 29–30
Twin Oaks community, 119

Ulbricht, Ross, 92, 123, 175–77
United States, credit in, 24–25
Unix, 93
Urbit, 219n20
utopian engineering, 124
utopianism, 6, 119–20, 150, 180

value: Bitcoin and, 195–96, 201; coins as expression of, 171, 187–89; of digital data, 2–3; of gold, 196; of money, 9, 126, 137, 151, 170, 175, 179–80

For general queries, contact info@press.princeton.edu

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.

Vanuatu, 182
Vatican, 20
Veblen, Thorstein, 18
Ver, Roger, 197
verification. *See* authentication
Versace, Gianni, 184
Vesco, Bobby, 182
Vian, Boris, v
Vienna Circle, 123
Vinge, Vernor, 81; *True Names*, 79, 81–83, 91, 185
violence, 82, 115
Visa, 48–49, 60
Vita-More, Natasha, 122

Wake, Nancy, 34, 37
Walford, Roy, 133
Walker, John, 75–76, 78
warehouse receipts, 173–75
WELL (social network), 89
Wells, H. G., 13, 194; *The Shape of Things to Come*, 18
WerBell, Mitchell Livingston, III, 182
White, Harry Dexter, 192, 225n12
whitelisting, 98
WikiLeaks, 87, 95
Wilder, Billy, *The Spirit of St. Louis*, 31
Williamson, Malcolm, 39
Wired (magazine), 184–85, 215n34
Wittgenstein, Ludwig, 123
Wittgenstein family, 149
Wonder Stories (magazine), 19
Wörgl experiment, 209n10

Xanadu Operating Company (XOR), 74–80, 161, 200, 215n37
Xth Column, 92, 97, 177

Yale University, 13
Yarvin, Curtis "Mencius Moldbug," 219n20
Yudkowsky, Eliezer, 219n20

Zelizer, Viviana, 15
Zuse, Konrad, 72

For general queries, contact info@press.princeton.edu