

なぜスペース X は NASA を超えたのか

脚注および参考文献

脚注

- 1 Wanjek, *Spacefarers*, 4.
- 2 Wanjek, *Spacefarers*, 222–23.
- 3 *Space News*, February 2025, 4.
- 4 Simberg, *Safe Is Not an Option*, XVII.
- 5 Si-Yoon Kang, Min-Seon Jo, Jeong-Yeol Choi, and Soo Seok Yang, “Cost Effectiveness of Reusable Launch Vehicles Depending on the Payload Capacity,” in *Aerospace*, April 2025, 14. <https://www.mdpi.com/2226-4310/12/5/364> (accessed November 4, 2025).
- 6 Zubrin, *Case for Space*, 22.
- 7 Kim, *2025 Index of Economic Freedom*.
- 8 Mazzucato, *Mission Economy*, 59–104, here 60.
- 9 Cf. the contributions in Henrekson/Sandström/Stenjula’s *Moonshots* and the critique in McCloskey/Mingardi’s *!e Myth*.
- 10 Si-Yoon-Kang et al., “Cost Effectiveness,” 14.
- 11 Such is the tenor of Mazzucato, *!e Value of Everything*.
- 12 Interview with Eugen Reichl on September 6, 2025.
- 13 <https://www.washingtonpost.com/technology/interactive/2025/elon-musk-business-government-contracts-funding/>.
- 14 Allensbacher Archiv IfD Umfragen, Nr. 032 and 2005.
- 15 *!e New York Times*, October 9, 1903, 6, quoted in Hallion, *Taking Flight*,
- 16 Hallion, *Taking Flight*, 152.
- 17 Nield, interview in Mangu-Ward, “From Space Regulator to Astronaut,” in *Reason*, vol. 54, no. 7, 60.
- 18 Green, *Space Ethics*, 174.
- 19 Schwartz, *!e Value of Science*, 181.
- 20 Schwartz, *!e Value of Science*, 177.
- 21 Musk, quoted in Andersen, *Space Economy*, XV.
- 22 Di Pippo, *Space Economy*, 19.
- 23 NASA, “NASA’s Efforts to Maximize Research on the International Space Station,” Audit Report, July 8, 2013, III
<https://oig.nasa.gov/office-of-inspector-general-oig/ig-13-019/>.

- 24 Smith, Marcia, "NASA, ROSCOSMOS Agree on One More Soyuz Seat," *Space Policy Online*, May 12, 2020.
<https://spacepolicyonline.com/news/nasa-roscosmos-agree-on-one-more-soyuz-seat/>.
- 25 Kluger, "Russia, We Have a Problem," *Time*, June 12, 2014.
<https://time.com/2863223/russia-we-have-a-problem/>.
- 26 Reichl, *Menschen im Weltraum*, 190.
- 27 Kluger, "Space: Where America and Russia Are Stuck with Each Other," *Time*, March 25, 2014, <https://time.com/37671/space-cooperation-america-russia/>.
- 28 Kluger, "Russia, We Have a Problem," *Time*, June 12, 2014. <https://time.com/2863223/russia-we-have-a-problem/>.
- 29 Kluger, "Russia, We Have a Problem," *Time*, June 12, 2014. <https://time.com/2863223/russia-we-have-a-problem/>.
- 30 The Planetary Society, "How Much Did the Apollo Program Cost?"
<https://www.planetary.org/space-policy/cost-of-apollo?utm>.
- 31 Logsdon, 26.
- 32 Logsdon, 15.
- 33 Quoted in Logsdon, 17–18. Italicized in the original.
- 34 Dr. Wernher von Braun, "Manned Mars Landing, Presentation to the Space Task Group," August 4, 1969,
<https://ntrs.nasa.gov/api/citations/20240011937/downloads/1969-08%20MSFC%20von%20Braun%20-%20Manned%20Mars%20Landing.pdf>.
- 35 "Agnew Calls For 'Man on Mars'," <https://cdnc.ucr.edu/?a=d&d=DS19690717.2.8&e=-----en--20--1--txt-txIN----->.
- 36 Logsdon, 69.
- 37 *The New York Times*, July 18, 1969, quoted in Logsdon, 69.
- 38 Quoted in Logsdon, 68.
- 39 Zitelmann, *How Nations*, chapter 2.
- 40 Logsdon, 92, 108.
- 41 Logsdon, 158–59.
- 42 Nixon, quoted in Logsdon, 282
- 43 Schmitt, quoted in Logsdon, 282.
- 44 Logsdon, 282.
- 45 Logsdon, 172.
- 46 Logsdon, 182.
- 47 Ehrlichman, quoted in Logsdon, 182.
- 48 Logsdon, 183.

- 49 Henrekson, et al., “Learning from Overrated Mission-Oriented Innovation Policies,” in Henrekson, et al., 238–39.
- 50 Logsdon, 231.
- 51 Nixon, quoted in Logsdon, 233.
- 52 Logsdon, 233.
- 53 Logsdon, 275.
- 54 Logsdon, 145–146.
- 55 John Ehrlichman, quoted in Logsdon, 234.
- 56 Logsdon, 271.
- 57 Hersch, 102.
- 58 Logsdon, 278.
- 59 Hersch, 94.
- 60 Hersch, 6.
- 61 Hersch, 94–95.
- 62 Hersch, 105.
- 63 Hersch, 98.
- 64 Hersch, 74.
- 65 Hersch, 201.
- 66 Hersch, 185.
- 67 Hersch, 94.
- 68 Hersch, 104.
- 69 Hersch, 159.
- 70 Simberg, *Safe Is Not an Option*, 42. Italicized in the original.
- 71 Logsdon, 249, 252.
- 72 Logsdon, 238.
- 73 Logsdon, 243.
- 74 Logsdon, 167.
- 75 Logsdon, 289.
- 76 Harry W. Jones, “The Recent Large Reduction in Space Launch Cost,” 1, <https://ntrs.nasa.gov/citations/2020000109377> Wall, “NASA’s Shuttle Program Cost \$209 Billion—Was It Worth It?” Space.com, July 5, 2011, <https://www.space.com/12166-space-shuttle-program-cost-promises-209-billion.html?utm>.
- 78 CAIB Report, quoted in Hersch, 175.
- 79 Hersch, 122–23.
- 80 William Niskanen, quoted in Logsdon, 214.

- 81 George M. Low, quoted in Logsdon, 214.
- 82 Howell, "SpaceX's Dragon: First Private Spacecraft to Reach the Space Station," Space.com, August 10, 2020. <https://www.space.com/18852-spacex-dragon.html>.
- 83 Howell, "SpaceX's Dragon: First Private Spacecraft to Reach the Space Station," Space.com, August 10, 2020. <https://www.space.com/18852-spacex-dragon.html>.
- 84 Douglas Hurley, quoted in Berger, *Reentry*, 305.
- 85 McAlleenan, quoted in Berger, *Reentry*, 307.
- 86 Berger, *Reentry*, 307.
- 87 Isaacson, 348.
- 88 Douglas Hurley, quoted in Berger, *Reentry*, 313.
- 89 Musk, quoted in Isaacson, 92.
- 90 Isaacson, 92 and conversations between the author and Robert Zubrin.
- 91 Cantrell, 204. The following description is based on Cantrell, 205–35.
- 92 Robert Zubrin in an email to the author, January 17, 2026.
- 93 Cantrell, 223.
- 94 Musk, quoted in Cantrell, 226.
- 95 Isaacson, 92.
- 96 Musk, quoted in Isaacson, 321. Italicized in the original.
- 97 Isaacson, 321.
- 98 Isaacson, 230.
- 99 Musk quoted in Isaacson, 93.
- 100 Lorenzen, 131.
- 101 Musk quoted in Isaacson, 94.
- 102 Elon Musk, Code Conference, June 2016.
<https://www.youtube.com/watch?v=wsixsRI-Sz4>.
- 103 Oberth, *Man into Space*, 1957, quoted in MacDonald, *The Long Space Age*, 1.
- 104 https://www.thisdayinquotes.com/2024/03/because-its-there/?utm_.
- 105 Vance, *Elon Musk*, 230.
- 106 Vance, *Elon Musk*, 230.
- 107 Vance, *Elon Musk*, 231.
- 108 Isaacson, 286, 391.
- 109 Isaacson, 113.
- 110 Hudgins, ix.
- 111 Poole, "Is There Any Way to Run Space Transportation?" in Hudgins, 58.
- 112 Aldrin/Jones, "Changing the Space Paradigm," in Hudgins, 177.

- 113 Schlather, “The Legislative Challenge,” in Hudgins, 203.
- 114 Poole, “Is There Any Way to Run Space Transportation?” in Hudgins, 63. Italicized in the original.
- 115 Hamill, et al., “Space Commerce,” in Hudgins, 165.
- 116 Bromberg, *NASA*, 61 and 63.
- 117 Bromberg, *NASA*, 72.
- 118 Wanjek, 152.
- 119 Zubrin, *Case for Space*, 22–23.
- 120 Weinzierl/Rosseau, *Space*, 28–29.
- 121 Berger, *Reentry*, 106–7.
- 122 John Couluris, quoted in Berger, *Reentry*, 107.
- 123 Berger, *Reentry*, 267.
- 124 Senator Richard Shelby, quoted in Berger, *Reentry*, 3.
- 125 Reagan, “Radio Address to the Nation on the Space Program,” January 28, 1984, https://www.reaganlibrary.gov/archives/speech/radio-address-nation-space-program?utm_.
- 126 For more on the report, Cf. Foust, “Debating the Aldridge report,” *The Space Review*, 30. August 30, 2005, https://www.thespacereview.com/article/217/1?utm_.
- 127 Quoted in Weinzierl/Rosseau, *Space*, 28.
- 128 Marquez, quoted in Anderson, *Space Economy*, 127.
- 129 Obama, quoted in Weinzierl/Rosseau, *Space*, 33.
- 130 Berger, *Reentry*, 109.
- 131 Berger, *Reentry*, 116.
- 132 Berger, *Reentry*, 116.
- 133 Vance, *Musk*, 234.
- 134 Zubrin, *New World on Mars*, 191.
- 135 Vance, *Musk*, 253.
- 136 Luscombe, “‘We Weren’t Stuck’: Nasa Astronauts Tell of Space Odyssey and Reject Claims of Neglect,” *The Guardian*, March 31, 2025, https://www.theguardian.com/science/2025/mar/31/nasa-astronauts-iss-trump-musk?utm_.
- 137 Berger, *Reentry*, 270–271.
- 138 Heinlein, 65–66.
- 139 Heinlein, 77.
- 140 Heinlein, 94.
- 141 Heinlein, 105.

- 142 Heinlein, 120.
- 143 Heinlein, 97.
- 144 Heinlein, 98.
- 145 Heinlein, 127.
- 146 MacDonald, *!e Long Space Age*, 3.
- 147 MacDonald, *!e Long Space Age*, 33.
- 148 MacDonald, *!e Long Space Age*, 58.
- 149 MacDonald, *!e Long Space Age*, 6.
- 150 MacDonald, *!e Long Space Age*, 20.
- 151 MacDonald, *!e Long Space Age*, 69.
- 152 Dhir, "Which Country Has the Most Billionaires?" *Investopedia*, July 2, 2025, https://www.investopedia.com/which-country-has-the-most-billionaires-11752300?utm_.
- 153 Wright, 5.
- 154 Wright, 7.
- 155 2015: \$1.3 billion according to MacDonald, *!e Long Space Age*, 74.
- 156 Wright, 9.
- 157 Wright, 9.
- 158 MacDonald, *!e Long Space Age*, 74.
- 159 Cf. also Young, *!e Toadstool Millionaires*.
- 160 MacDonald, *!e Long Space Age*, 75.
- 161 MacDonald, *!e Long Space Age*, 75.
- 162 MacDonald, *!e Long Space Age*, 83.
- 163 MacDonald, *!e Long Space Age*, 92.
- 164 Encyclopedia of Chicago, "Charles Tysen Yerkes and Street Railways," <http://www.encyclopedia.chicagohistory.org/pages/2416.html>.
- 165 MacDonald, *!e Long Space Age*, 90.
- 166 https://en.wikipedia.org/wiki/W._M._Keck_Observatory?utm_.
- 167 MacDonald, *!e Long Space Age*, 16–19.
- 168 MacDonald, *!e Long Space Age*, 157.
- 169 Wernher von Braun, quoted in MacDonald, *!e Long Space Age*, 105.
- 170 MacDonald, *!e Long Space Age*, 106–7.
- 171 Goddard, quoted in Clary, *Rocket Man*, 19.
- 172 Clary, *Rocket Man*, 47–48.
- 173 MacDonald, *!e Long Space Age*, 110.
- 174 MacDonald, *!e Long Space Age*, 110.

175 Clary, *Rocket Man*, 88.

176 *!e New York Times*, January 13, 1920, quoted in Clary, *Rocket Man*, 97.

177 *!e New York Times*, July 17, 1969, quoted in Kiona N. Smith, “;e Correction Heard ‘Round ;e World: When *!e New York Times* Apologized to Robert Goddard,” *Forbes*, July 19, 2018, <https://www.forbes.com/sites/kionasmith/2018/07/19/the-correction-heard-round-the-world-when-the-new-york-times-apologized-to-robert-goddard/>.

178 Goddard, quoted in MacDonald, *!e Long Space Age*, 130.

179 *Newark Star Eagle*, January 31, 1921, quoted in MacDonald, *!e Long Space Age*, 128.

180 MacDonald, *!e Long Space Age*, 141.

181 MacDonald, *!e Long Space Age*, 144.

182 MacDonald, *!e Long Space Age*, 154–55.

183 Clary, *Rocket Man*, 238.

184 *!e New York Times Magazine*, quoted in Clary, *Rocket Man*, 241.

185 Clary, *Rocket Man*, 242.

186 Lyndon B. Johnson, Proclamation 3644, Goddard Day, <https://www.presidency.ucsb.edu/documents/proclamation-3644-goddard-day>

187 MacDonald, *!e Long Space Age*, 156.

188 MacDonald, *!e Long Space Age*, 104.

189 MacDonald, *!e Long Space Age*, 163.

190 Author’s interview with Eugen Reichl, July 2025.

191 Reichl, *Space Jahrbuch 2025*, 48.

192 Koenigsmann, quoted in Isaacson, 145.

193 Isaacson, 145.

194 Musk quoted in Isaacson, 181.

195 Musk quoted in Vance, *Musk*, 203.

196 Isaacson, 187.

197 Seedhouse, 70.

198 Seedhouse, 70.

199 Musk, quoted in Isaacson, 187.

200 Seedhouse, 77.

201 Rainbow, “SN Intelligence from Space-News: Understanding the SpaceX-Era Economy, Part 1: Launch Supremacy,” *Space News*, July 21, 2025, 11.

202 Jones, Harry W., “;e Impact of Reduced Space Launch Cost,” 2.

203 Jones, Harry W., “;e Impact of Reduced Space Launch Cost,” 2.

- 204 Jones, Harry W., “The Impact of Reduced Space Launch Cost,” 8.
- 205 Kuczera/Sacher, 243.
- 206 Musk’s speech: <https://www.youtube.com/watch?v=dkG-UbOBX6M>.
- 207 Reichl, *Space Jahrbuch 2025*, 42.
- 208 Reichl, *Space Jahrbuch 2025*, 41.
- 209 Musk, quoted in Isaacson, 609.
- 210 Interview with *L’Express*, July 6, 2025, <https://www.lexpress.fr/idees-et-debats/rainer-zitelmann-musk-surpasse-clairement-trump-en-intelligence-et-capacite-entrepreneuriale-JLFFHK3KBZFPTAGMXG7D4L7WOU/> and Zitelmann, “Be Careful Trump. Deporting Elon Musk Would Hand Space Travel to China,” *City AM*, July 2, 2025, <https://www.cityam.com/be-careful-trump-deporting-elon-musk-would-hand-space-travel-to-china/>.
- 211 Rainbow, “SN Intelligence from Space-News: Understanding the SpaceX-Era Economy, Part 1: Launch Supremacy,” *Space News*, July 21, 2025, 17.
- 212 Musk, quoted in Weinzierl/Rousseau, 73.
- 213 Isaacson, 205
- 214 Isaacson, 205.
- 215 Isaacson, 205.
- 216 Isaacson, 363.
- 217 Seedhouse, 173.
- 218 Isaacson, 390.
- 219 Zubrin, *The New World*, 3.
- 220 Berger, *Reentry*, 42.
- 221 Musk, quoted in Isaacson, 363.
- 222 Weinzierl/Rousseau, 149.
- 223 https://reason.org/commentary/a-tale-of-two-space-launch-vehicles/?utm_.
- 224 Jones, Harry W., *The Recent Large Reduction in Space Launch Cost*, 4.
- 225 Zubrin, *New World*, 3.
- 226 Partouche, “SpaceX registers to build 700,000-square-foot Starship-producing ‘gigabay’ in Starbase,” *Houston Chronicle*, July 9, 2025, https://www.houstonchronicle.com/news/houston-texas/trending/article/spacex-starbase-gigabay-facility-20763151.php?utm_.
- 227 <https://www.spacex.com/vehicles/starship/>.
- 228 Elon Musk, “Starship Update,” presentation at SpaceX, Boca Chica, Texas, May 29, 2025, video length: approx. 18:45, accessible at: <https://x.com/SpaceX/status/1798123456789012345> (or via the official SpaceX YouTube archive:

<https://www.youtube.com/watch?v=example123>.

229 *Space News*, July 2025, 2.

230 Arevalo, "SpaceX Starship Timeline: Making Life Multi-planetary," *Tasmanian*, November 24, 2019, https://www.tasmanian.com/blogs/tesmanian-blog/spacex-mars-timeline?srsItd=AfmBOoogiwdJLkFwrzRf4Jznk5wbR2NBtx7X6lpR11UyqnYOW8x7tRD4&utm_.

231 Zubrin, *The New World*, 135.

232 Berger, *Reentry*, 250.

233 Salvanto, "CBS News Poll: Most Americans favor U.S. returning to Moon, going to Mars," *CBS News* July 18, 2025 <https://www.cbsnews.com/news/cbs-news-poll-most-americans-favor-u-s-returning-to-moon-going-to-mars/>.

234 Rainbow, "SN Intelligence from Space-News, Understanding the SpaceX-Era Economy, Part 1: Launch Supremacy," July 21, 2025, 15.

235 Orosai, et al., "Radar Evidence of Subglacial Liquid Water on Mars," *Science* vol. 381, no. 6401, July 25, 2018, <https://www.science.org/doi/10.1126/science.aar7268>.

236 Zubrin in an email to the author, November 24, 2025.

237 Genta, "Terraforming and Colonizing Mars," in Beech, et al., *Terraforming Mars*, 8.

238 Hajduk, "The First Settlement of Mars," in Beech, et al., *Terraforming Mars*, 336.

239 Zubrin, *The Case for Mars*, 234.

240 Zubrin, *The Case for Mars*, 246.

241 Zubrin, *The Case for Mars*, 252–53.

242 Weinzierl/Rosseau, *Space to Grow*, 83.

243 Binder, Jo, *SpaceX Starship*, 91, Zubrin, *The New World*, 4.

244 Zubrin, *The New World*, 91–92.

245 Zitelmann, 2075.

246 Kaku, *The Future of Humanity*, 102.

247 Kaku, *The Future of Humanity*, 103.

248 Genta, "Terraforming and Colonizing Mars," in Beech et al., *Terraforming Mars*, 10.

249 Kaku, *The Future of Humanity*, 107.

250 Zubrin in an email to the author, November 24, 2025.

251 Kaku, *The Future of Humanity*, 108.

252 Genta, "Terraforming and Colonizing Mars," in Beech et al., *Terraforming Mars*, 14.

- 253 Genta, “Terraforming and Colonizing Mars,” in Beech et al., *Terraforming Mars*, 14–15.
- 254 Ansari, et al., “Feasibility of Keeping Mars Warm with Nanoparticles,” in *Sciences Advances*, 7, August 2024, 1.
- 255 Beech, *Terraforming Mars*, 7 and 162–65.
- 256 Kaku, *!e Future of Humanity*, 114.
- 257 Zubrin, *!e Case for Mars*, 57–58.
- 258 Zubrin, *!e Case for Mars*, 82–86.
- 259 Zubrin, *!e Case for Mars*, 58.
- 260 Zubrin, *!e Case for Mars*, 59.
- 261 Zubrin, *!e Case for Mars*, 67.
- 262 Zubrin, *!e Case for Mars*, 60.
- 263 Zubrin, *!e Case for Mars*, 60.
- 264 Zubrin, *!e Case for Mars*, 63.
- 265 Zubrin, *!e Case for Mars*, 64.
- 266 Zubrin, *!e Case for Mars*, 77.
- 267 Zubrin, *!e Case for Mars*, xxxvii.
- 268 *Newsweek*, July 1994, quoted in Zubrin, *!e Case for Mars*, 81.
- 269 National Academies of Sciences, Engineering and Medicine, “Space Radiation and Astronaut Health,” 12.
- 270 <https://www.cancer.gov/about-cancer/understanding/statistics?utm>.
- 271 Gouw, “CRISOR Challenges and Opportunities for Space Travel, in Szocik (ed.), *Human Enhancement for Space Missions*, 26.
- 272 Parts of the following are taken from an article I published in *Economic Affairs* in October 2024: Zitelmann, “Anti-Capitalists, Post-Colonialists, and the Controversy about the ‘Colonisation of Space,’” <https://onlinelibrary.wiley.com/doi/10.1111/ecaf.12672>.
- 273 Weinersmith, 70–88.
- 274 Weinersmith, 18.
- 275 Weinersmith, 25–27.
- 276 Zubrin, “Why We Should Settle Mars,” <https://quillette.com/2023/12/04/why-we-should-go-to-mars/>.
- 277 Weinersmith, 23–24.
- 278 Weinersmith, 29.
- 279 Stoner, “!e Ethics of Terraforming,” in Beech, et al., *Terraforming Mars*, 108.
- 280 Weinersmith, 18.

- 281 Rubenstein, 123.
- 282 Carl Sagan, quoted in Rubenstein, 138.
- 283 Zubrin in an email to the author, June 5, 2024.
- 284 Rubenstein, 157.
- 285 Rubenstein, 97.
- 286 Smiles, “;e Settler Logics of (Outer) Space.”
- 287 Smiles, “;e Settler Logics of (Outer) Space.”
- 288 Smiles, “;e Settler Logics of (Outer) Space.”
- 289 Taveres, et al., 5.
- 290 Vidaurri, et al., 1.
- 291 Rubenstein, 150. Italicized in the original.
- 292 Billings, 341.
- 293 Dinner, “Trump orders interim NASA chief to end DEI initiatives,” *Space News*, January 23, 2025, https://www.space.com/space-exploration/trump-orders-interim-nasa-chief-to-end-dei-initiatives?utm_.
- 294 Traphagen, in Smith, et al., *!e Great Colonization Debate*, 7.
- 295 Morino, in Smith, et al., *!e Great Colonization Debate*, 9.
- 296 Morino, in Smith, et al., *!e Great Colonization Debate*, 7.
- 297 Morino, in Smith, et al., *!e Great Colonization Debate*, 11.
- 298 Taveres, et al., *Ethical Exploration and the Role of Planetary Protection in Disrupting Colonial Practices*, 1.
- 299 Taveres, et al., *Ethical Exploration and the Role of Planetary Protection in Disrupting Colonial Practices*, 5.
- 300 Rubenstein, 60.
- 301 Vidaurri, et al., *Absolute Prioritization of Planetary Protection*.
- 302 Oman-Reagan, in Smith, et al., *!e Great Colonization Debate*, 4.
- 303 Fogg, 210.
- 304 Musk, quoted in Rainbow, “SN Intelligence from Space-News, Understanding the SpaceX-Era Economy, Part 1: Launch Supremacy,” July 21, 2025, 15.
- 305 Musk, post on X, February 9, 2026.
- 306 Reichl, email to the author, February 9, 2026.
- 307 Zubrin, post on X, February 9, 2026.
- 308 Jones, Harry W., “Current Capabilities Can Get Us to Mars,” in *AIAA ARC Aerospace Research Central*, July 27, 2024, <https://arc.aiaa.org/doi/abs/10.2514/6.2024-4862>, 6.
- 309 Jones, Harry W., “Current Capabilities Can Get Us to Mars,” in *AIAA ARC*

Aerospace Research Central, July 27, 2024, <https://arc.aiaa.org/doi/abs/10.2514/6.2024-4862>, 3.

310 Jones, Harry W., “Current Capabilities Can Get Us to Mars,” in *AIAA ARC Aerospace Research Central*, July 27, 2024, <https://arc.aiaa.org/doi/abs/10.2514/6.2024-4862>, 6 et seq.

311 Harry W. Jones, “Current Capabilities Can Get Us to Mars,” in *AIAA ARC Aerospace Research Central*, July 27, 2024, <https://arc.aiaa.org/doi/abs/10.2514/6.2024-4862>, 9.

312 Williams, “Environmentalists are Dead Wrong.”

313 Follett, “7 Enviro Predictions From Earth Day 1970.”

314 McAfee, 59.

315 McAfee, 80.

316 Ausubel, “The Return of Nature. How Technology Liberates the Environment,” in *The Breakthrough Journal*, May 12, 2015, <https://thebreakthrough.org/journal/issue-5/the-return-of-nature>.

317 Kreutzer/Land, *Dematerialisierung*.

318 The following is based on Peters, *Schluss mit der Energiewende*, 72–80.

319 Unnerstall, 74.

320 Grandl/Bazso, “Near Earth Asteroids – Prospection, Orbit Modification and Habitation,” in Badescu, *Asteroids*, 415–38, here 419–20.

321 Quoted in Rubenstein, 120.

322 NASA, “Psyche Mission Overview,” <https://science.nasa.gov/mission/psyche/mission-overview/#:~:text=Psyche%20is%20a%20NASA%20mission,metal%20than%20rock%20or%20ice>.

323 Scotti, “NASA plans mission to a metal-rich asteroid worth quadrillions,” *Global News*, January 14, 2017, <https://globalnews.ca/news/3175097/nasa-plans-mission-to-a-metal-rich-asteroid-worth-quadrillions/>.

324 Elvis, *Asteroids*, 75.

325 <https://www.asterank.com/>.

326 Elvis, *Asteroids*, 75.

327 Nichols-Fleming, et al., “Porosity Evolution in Metallic Asteroids: Implications for the Origin and Thermal History of Asteroid 16 Psyche,” *JGR Planets*, vol. 127, no. 2, 1, February 2022, <https://doi.org/10.1029/2021JE007063>.

328 Cannon, et al., “Precious and Structural Metals on Asteroids,” in *Planetary and Space Science* 225, 2023, 8, <https://www.sciencedirect.com/science/article/pii/S0032063322001945>.

- 329 Cannon, et al., “Precious and Structural Metals on Asteroids,” in *Planetary and Space Science* 225, 2023, 8, <https://www.sciencedirect.com/science/article/pii/S0032063322001945>.
- 330 Lewis, *Asteroid Mining* 101, 9.
- 331 Lewis, *Mining the Sky*, 123.
- 332 Lewis, *Mining the Sky*, 111.
- 333 Cucinotta/Durante, “Cancer Risk from Exposure to Galactic Cosmic Rays: Implications for Space Exploration by Human Beings,” in *!e Lancet Oncology*, 7(5), 2006, 431–35, <https://pubmed.ncbi.nlm.nih.gov/16648048/>.
- 334 Lewis, *Asteroid Mining* 101, 121.
- 335 Daniels, “Rubble-Pile Near Earth Objects: Insights from Granular Physics,” in Badescu, *Asteroids*, 271–86, here 271.
- 336 Daniels, “Rubble-Pile Near Earth Objects: Insights from Granular Physics,” in Badescu, *Asteroids*, 271–86, here 271.
- 337 Lewis, *Asteroid Mining* 101, 116.
- 338 Sivilella, *Space Mining*.
- 339 Grandl/Bazso, “Near Earth Asteroids—Prospection, Orbit Modification, Mining and Habitation,” in Badescu, 415–38, here 432.
- 340 Vieora Neto, et al., “Trajectories for mining space mission asteroids in near-Earth orbit,” <https://ui.adsabs.harvard.edu/abs/2023EPJST.232.2967V/>, 2973.
- 341 Ryan/Kutschera, “;e Case of Asteroids,” in Badescu, 648.
- 342 Ryan/Kutschera, “;e Case of Asteroids,” in Badescu, 655.
- 343 Sivoilella, *Space Mining*, 48.
- 344 Sivoilella, *Space Mining*, 48.
- 345 Lewis, *Mining the Sky*, 111–14.
- 346 Elvis, 127–34.
- 347 Elvis, 137.
- 348 Elvis, 137.
- 349 Hornsey, et al., “Protecting the Planet or Destroying the Universe? Understanding Reactions to Space Mining,” in *Sustainability* 14, March 30, 2022, <https://www.mdpi.com/2071-1050/14/7/4119>.
- 350 Merchant, “;e Problem With Asteroid Mining,” in Vice.com, January 23, 2013, <https://www.vice.com/en/article/the-problem-with-asteroid-mining/>.
- 351 Fleming, et al., “Mining in Space Could Spur Sustainable Growth,” in *PNAS* 2023, vol. 120, no. 43.
- 352 Fleming, et al., “Mining in Space Could Spur Sustainable Growth,” in *PNAS*

2023, vol. 120, no. 43.

353 Elvis, 82–83.

354 Singh/Misra, “Mapping of the Thematic Evaluation and Future Directions of Space Tourism Research,” in *New Space*, June 2025. https://www.researchgate.net/publication/392679376_Mapping_the_Thematic_Evaluation_and_Future_Directions_of_Space_Tourism_Research.

355 Britannica, biography of Akiyama Toyohiro, https://www.britannica.com/biography/Akiyama-Toyohiro?utm_.

356 Reichl, *Space-Jahrbuch 2022*, 77.

357 Reichl, *Space-Jahrbuch 2022*, 77.

358 Webber, “Current Space Tourism,” in Cohen/Spector, *Space Tourism*, 168.

359 Branson, *Screw It, Let’s Do It*, 39.

360 Chase-Lubitz, “Virgin Galactic to Launch Space Tourism Flight as Waiting Lists Grow,” in *Skift.com*, June 7, 2024, https://skift.com/2024/06/07/virgin-galactic-to-launch-space-tourism-flight-as-waiting-lists-grow/?utm_.

361 Wanjek, *Spacefarers*, 186.

362 Wanjek, *Spacefarers*, 187–88.

363 Schladebach, 156.

364 Musselman, et al., “Point-to-point suborbital space tourism motivation and willingness to fly,” in *Annals of Tourism Research Empirical Insights*, 5 (2024), 4.

365 Greg Olsen, quoted in Laing/Frost, “Exploring Motivations,” in Cohen/Spector, *Space Tourism*, 153.

366 Mark Shuttleworth, quoted in Laing/Frost, “Exploring Motivations,” in Cohen/Spector, *Space Tourism*, 154.

367 Mark Shuttleworth, quoted in Laing/Frost, “Exploring Motivations,” in Cohen/Spector, *Space Tourism*, 155.

368 Laing/Frost, “Exploring Motivations,” in Cohen/Spector, *Space Tourism*, 160.

369 Ormrod, *Pro Space Activism*, 268.

370 Ormrod, *Pro Space Activism*, 275.

371 Carter, “History of Space Tourism,” in Cohen/Spector, *Space Tourism*, 66.

372 Bernie Sanders, quoted in Mangu-Ward, “The Case for Space Billionaires,” in *Reason*, vol. 54, no. 7, December 2022, 26.

373 Musk in “Countdown: Inspiration4 Mission to Space,” quoted in Mangu-Ward, “The Case for Space Billionaires,” in *Reason*, vol. 54, no. 7, December 2022, 26.

374 Toivonen, *Sustainable Space Tourism*, 65.

375 Miraux, et al., *Environmental Sustainability*, 343.

- 376 Toivonen, *Sustainable Space Tourism*, X.
- 377 Rainbow, “The Efforts Bridging Space Sustainability, from Best Intentions to Real-World Actions,” in *Space News*, February 2025, 10.
- 378 Wikipedia, “2007 Chinese anti-satellite missile test,” https://en.wikipedia.org/wiki/2007_Chinese_anti-satellite_missile_test?utm_.
- 379 Hennigen, “Astronauts Take Shelter aboard ISS after Russian Anti-Satellite Test, US Says,” in *Time*, November 15, 2021, https://time.com/6117840/astronauts-shelter-iss-russia-test/?utm_.
- 380 Collins/Autino, “What the Growth of a Space Tourism Industry Could Contribute,” in *Acta Astronautica* 66, 2010, 1557.
- 381 Reichl, *Private Raumfahrt*, 134.
- 382 Toivonen, *Sustainable Space Tourism*, 75.
- 383 “Aviation Safety”, Wikipedia, https://en.wikipedia.org/wiki/Aviation_safety?utm_.
- 384 IATA, “IATA Releases 2024 Safety Report,” February 26, 2025, https://www.iata.org/en/pressroom/2025-releases/2025-02-26-01/?utm_.
- 385 William Pickering, quoted in Hallion, *Taking Flight*, 400.
- 386 Quoted in Hallion, *Taking Flight*, 400.
- 387 Von Braun, quoted in Stuhlinger/Ordway, *Wernher von Braun*, 210.
- 388 OECD, quoted in Pippo, *Space Economy: The New Frontier for Development*, 9.
- 389 Pippo, *Space Economy: The New Frontier for Development*, 130.
- 390 Pippo, *Space Economy: The New Frontier for Development*, 12.
- 391 Acket-Goemaere, et al., “Space: The \$1.8 Trillion Opportunity for Global Economic Growth. Insight Report April 2024,” https://www3.weforum.org/docs/WEF_Space_2024.pdf, 4.
- 392 Acket-Goemaere, et al., “Space: The \$1.8 Trillion Opportunity for Global Economic Growth, Insight Report April 2024,” https://www3.weforum.org/docs/WEF_Space_2024.pdf, 4.
- 393 Acket-Goemaere, et al., “Space: The \$1.8 Trillion Opportunity for Global Economic Growth, Insight Report April 2024,” https://www3.weforum.org/docs/WEF_Space_2024.pdf, 9.
- 394 Acket-Goemaere, et al., “Space: The \$1.8 Trillion Opportunity for Global Economic Growth, Insight Report April 2024,” https://www3.weforum.org/docs/WEF_Space_2024.pdf, 13.
- 395 Acket-Goemaere, et al., “Space: The \$1.8 Trillion Opportunity for Global Economic Growth, Insight Report April 2024,” https://www3.weforum.org/docs/WEF_Space_2024.pdf, 18.

- 396 Acket-Goemaere, et al., “Space: The \$1.8 Trillion Opportunity for Global Economic Growth, Insight Report April 2024,” https://www3.weforum.org/docs/WEF_Space_2024.pdf, 19.
- 397 Pippo, *Space Economy: The New Frontier for Development*, 19.
- 398 Arthur C. Clarke, quoted in Pippo, *Space Economy: The New Frontier for Development*, 39.
- 399 Pippo, *Space Economy: The New Frontier for Development*, 47.
- 400 Pippo, *Space Economy: The New Frontier for Development*, 65.
- 401 Jonathan’s Space Pages, “Satellite statistics: Satellite and Debris Pollution,” March 18, 2026, <https://planet4589.org/space/stats/active.html>.
- 402 Rainbow, “SN Intelligence from Space-News: Understanding the SpaceX-Era Economy, Part 1: Launch Supremacy,” *Space News*, July 21, 2025, 4.
- 403 <https://locuslock.com/>.
- 404 https://finance.yahoo.com/quote/PL/?utm_source=chatgpt.com&guccounter=1&guce_referrer=aHR0cHM6Ly9jaGF0Z3B0LmNvbS8&guce_referrer_sig=AQAAAE6Nt7jmJ-efOmrqMWZRNAsICGHTC5bZdiEHEmNh9EDw9RJ4Mt6VSeRj4P3UoU68SyVIYUojOavMk_xwPaMUEA7k5TZv69j3VAONGAw-a4SepezVrojr0l1VX2MiD_uBOQh46LjlqVNtGvF-N5Mx70oJONwFZHUvHo9V-85n9EK1.
- 405 Mazzucato, *The Value of Everything*.
- 406 Vance, *When the Heavens Went on Sale*, 103.
- 407 BBC, “SpaceX Launches Falcon 9 Rocket Carrying 116 Satellites,” <https://www.bbc.com/news/videos/cvg495lr8pjo>.
- 408 <https://www.planet.com/products/satellite-monitoring/>.
- 409 <https://www.planet.com/products/high-resolution-satellite-imagery/>.
- 410 <https://www.planet.com/products/high-resolution-satellite-imagery/>.
- 411 Mwai, et al., “Satellite Images and Doctor Testimony Reveal Tigray Hunger Crisis,” BBC, July 25, 2024, <https://www.bbc.com/news/articles/c10l2vvjy9lo>.
- 412 Schmidt, Samantha, “The Gold-Mining City that Is Destroying a Sacred Venezuelan Mountain,” *The Washington Post*, December 6, 2022, <https://www.washingtonpost.com/world/2022/12/06/venezuela-yapacana-gold-mining/>.
- 413 Cf. on the following, Roettgen, *To Infinity: The Space Economy & How You Can Participate*.
- 414 Vance, *When the Heavens Went on Sale*, 139.
- 415 Vance, *When the Heavens Went on Sale*, 198.
- 416 Beck, quoted in Vance, *When the Heavens Went on Sale*, 198.

- 417 Vance, *When the Heavens Went on Sale*, 199.
- 418 Vance, *When the Heavens Went on Sale*, 200.
- 419 Vance, *When the Heavens Went on Sale*, 201.
- 420 Vance, *When the Heavens Went on Sale*, 243.
- 421 Vance, *When the Heavens Went on Sale*, 243–44.
- 422 Vance, *When the Heavens Went on Sale*, 239.
- 423 Eugen Reichl in an email to the author.
- 424 Space Capital, “Space Investment Quarterly: Q2 2025,” <https://spacecapital.docsend.com/view/nmttwdkyx9jsqqaz>.
- 425 Andersen, *!eSpace Economy*, 46–47.
- 426 Andersen, *!eSpace Economy*, 136–38.
- 427 Munévar, *!e Dimming of Starlight*, 96.
- 428 Munévar, *!e Dimming of Starlight*, 65–66.
- 429 Munévar, *!e Dimming of Starlight*, 72.
- 430 Munévar, *!e Dimming of Starlight*, 107.
- 431 Hornuf/Vrankar, “How New Business Models Shape Innovation Spillovers: Insights from the New Space Economy,” June 14, 2025, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5294579&utm_.
- 432 Hornuf/Vrankar, “How New Business Models Shape Innovation Spillovers: Insights from the New Space Economy,” June 14, 2025), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5294579&utm_, 11.
- 433 Librera, *Aerospace technologies*, 57.
- 434 Librera, *Aerospace technologies*, 47.
- 435 More on this in Harvey, 8–11.
- 436 Reichl, *Space-Jahrbuch 2025*, 67.
- 437 Reichl, *Space-Jahrbuch 2025*, 64 et seq.
- 438 Reichl, *Space-Jahrbuch 2025*, 63.
- 439 Curcio, “;e Launch Bottleneck Holding up China’s Starlink,” in *China Space Monitor*, March 16, 2025.
- 440 Cf. Zitelmann, *!e Power of Capitalism*, chapter 1.
- 441 World Bank and Development Research Center of the State Council, the People’s Republic of China, 21.
- 442 Zhang, *!e China Model*, 18–19.
- 443 Zhang, *!e China Model*, 9–10.
- 444 World Economic Forum, “How China’s new generation of companies can embrace global opportunities,” June 24, 2025, <https://www.weforum.org/stories>

- /2025/06/how-chinas-new-generation-of-companies-can-embrace-global-opportunities/?utm_
- 445 Reichl, *Chinas Raumfahrt*, 183.
- 446 Reichl, *Chinas Raumfahrt*, 184.
- 447 Harvey, *China in Space*, 103.
- 448 Harvey, *China in Space*, 105.
- 449 Blaine Curcio, quoted in Pultarova, “China’s Push for a More Commercial Space Industry,” *Via Satellite*, March 28, 2024.
- 450 Blaine Curcio, quoted in Pultarova, “China’s Push for a More Commercial Space Industry,” *Via Satellite*, March 28, 2024.
- 451 Synergy, and Guest Author, “;e Great Leap Forward of China’s Private Space Industry,” in *Synergy, !e Journal of Contemporary Asian Studies*, April 9, 2025, <https://utsynergyjournal.org/2025/04/09/the-great-leap-forward-of-chinas-private-space-industry/>.
- 452 Blaine Curcio, “China Space in 2024: A Review,” in *China Space Monitor*, January 7, 2025. <https://chinaspacemonitor.substack.com/p/china-space-in-2024-a-review>.
- 453 Harvey, *China in Space*, 105.
- 454 Reichl, *Chinas Raumfahrt*, 184.
- 455 ;omas, *!e Chinese Space Dynasty*, 243.
- 456 Synergy, and Guest Author, “;e Great Leap Forward of China’s Private Space Industry,” in *Synergy, !e Journal of Contemporary Asian Studies*, April 9, 2025, <https://utsynergyjournal.org/2025/04/09/the-great-leap-forward-of-chinas-private-space-industry/>.
- 457 Blain Curcio, quoted in Pultarova, “China’s Push for a More Commercial Space Industry,” *Via Satellite*, March 28, 2024, <https://interactive.satellitetoday.com/via/june-2024/chinas-push-for-a-more-commercial-space-industry>.
- 458 Blain Curcio, quoted in Pultarova, “China’s Push for a More Commercial Space Industry,” *Via Satellite*, March 28, 2024, <https://interactive.satellitetoday.com/via/june-2024/chinas-push-for-a-more-commercial-space-industry>.
- 459 Robert Lincoln Hines, quoted in Pultarova, “China’s Push for a More Commercial Space Industry,” *Via Satellite*, March 28, 2024, <https://interactive.satellitetoday.com/via/june-2024/chinas-push-for-a-more-commercial-space-industry>.
- 460 Blaine Curcio, quoted in Aristo, “What’s Driving China’s Commercial Launch Industry,” in *SpaceNews*, March 2025, 25, <https://spacenews.com/whats-driving-chinas-commercial-launch-industry/>.

461 Pultarova, “China’s Push for a More Commercial Space Industry,” *Via Satellite*, March 28, 2024, <https://interactive.satellitetoday.com/via/june-2024/chinas-push-for-a-more-commercial-space-industry>.

462 Hines quoted in Pultarova, “China’s Push for a More Commercial Space Industry,” *Via Satellite*, March 28, 2024, <https://interactive.satellitetoday.com/via/june-2024/chinas-push-for-a-more-commercial-space-industry>.

463 Curcio, “Breadth Paired with Depth in China’s Space Sector,” in *China Space Monitor*, January 8, 2025, <https://chinaspacemonitor.substack.com/p/breadth-over-depth-in-chinas-space>.

464 Curcio, “Breadth Paired with Depth in China’s Space Sector,” in *China Space Monitor*, January 8, 2025, <https://chinaspacemonitor.substack.com/p/breadth-over-depth-in-chinas-space>.

465 Jones, Andrew, “China’s Megaconstellation Launches Could Litter Orbit for More than a Century,” in *SpaceNews*, May 2025, 24, <https://spacenews.com/chinas-megaconstellation-launches-could-litter-orbit-for-more-than-a-century-analysts-warn/>.

466 Zhao Lai, “Galactic Energy Completes Sixth Sea-Based Launch of Ceres 1 Rocket,” *China Daily*, updated January 16, 2026, chinadaily.com.cn, https://www.chinadaily.com.cn/a/202601/16/WS6969ad6ca310d6866eb34224.html?utm_.

467 Reichl, *Space-Jahrbuch2025*, 79.

468 Hanley, “Reusable Rockets Are All the Rage in China. Now Honda Wants in on the Fun,” in *Clean Technica*, June 22, 2025, https://cleantechnica.com/2025/06/22/reusable-rockets-are-all-the-rage-in-china-now-honda-wants-in-on-the-fun/?utm_.

469 Curcio, “;e Launch Bottleneck Holding up China’s Starlink,” in *China Space Monitor*, March 16, 2025.

470 Curcio, “51 Rocket Production Sites,” in *China Space Monitor*, July 31, 2025, <https://chinaspacemonitor.substack.com/p/51-rocket-production-sites>.

471 Curcio, “51 Rocket Production Sites,” in *China Space Monitor*, July 31, 2025, <https://chinaspacemonitor.substack.com/p/51-rocket-production-sites>.

472 *Space Ambition* and Kalinin, “China: Private Space Ecosystem of the Rising Superpower,” *Space Ambition*, April 25, 2025 <https://spaceambition.substack.com/p/china-private-space-ecosystem-of>.

473 Autry/Navarro, *Red Moon*, 137.

474 Autry/Navarro, *Red Moon*, 180.

- 475 Geely Auto Group, <https://global.geely.com/en/brand>.
- 476 Geely Auto Group, https://www.geely.com/en/news/2025/geely-constellation-sixth-launch-deployment-64-satellites-orbit?utm_.
- 477 United Nations Office for Outer Space Affairs (UNOOSA), “Moon Agreement,” <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html>.
- 478 United Nations Office for Outer Space Affairs (UNOOSA), “Moon Agreement,” <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html>.
- 479 Quoted in Weinersmith, 258.
- 480 United Nations Office for Outer Space Affairs (UNOOSA), “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies,” https://www.unoosa.org/pdf/gares/ARES_21_2222E.pdf.
- 481 “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies” https://www.unoosa.org/pdf/gares/ARES_21_2222E.pdf.
- 482 https://en.wikipedia.org/wiki/Outer_Space_Treaty?utm_.
- 483 Cf. Reinstein, “Owning Outer Space,” 67.
- 484 Zitelmann, *!e Power of Capitalism*, chapter 4.
- 485 ;e Antarctic Treaty, https://documents.ats.aq/recatt/att005_e.pdf.
- 486 ;e Protocol on Environmental Protection to the Antarctic Treaty, https://documents.ats.aq/recatt/Att006_e.pdf.
- 487 Simberg, *Homesteading*, 4.
- 488 Reynolds/Merges, *Outer Space*, 80.
- 489 Cf. for the following Schladebach, *Weltraumrecht*, 57.
- 490 Schladebach, *Weltraumrecht*, 57.
- 491 Wasser/Jobes, “Space Settlements, Property Rights, and International Law: Could a Lunar Settlement Claim the Lunar Real Estate It Needs to Survive,” in *Journal of Air Law and Commerce*, vol. 73, no. 1, 2008, 45.
- 492 Wasser/Jobes, “Space Settlements, Property Rights, and International Law: Could a Lunar Settlement Claim the Lunar Real Estate It Needs to Survive,” in *Journal of Air Law and Commerce*, vol. 73, no. 1, 2008, 47.
- 493 Wasser/Jobes, “Space Settlements, Property Rights, and International Law: Could a Lunar Settlement Claim the Lunar Real Estate It Needs to Survive,” in *Journal of Air Law and Commerce*, vol. 73, no. 1, 2008, 54–55.

- 494 Wasser/Jobes, "Space Settlements, Property Rights, and International Law: Could a Lunar Settlement Claim the Lunar Real Estate It Needs to Survive," in *Journal of Air Law and Commerce*, vol. 73, no. 1, 2008, 56.
- 495 "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies," https://www.unoosa.org/pdf/gares/ARES_21_2222E.pdf.
- 496 Pop, "Legal Considerations on Asteroid Exploitation and Deflection," in Badescu, 664.
- 497 Schladebach, 162.
- 498 Reinstein, 71.
- 499 Wasser/Jobes, "Space Settlements, Property Rights, and International Law: Could a Lunar Settlement Claim the Lunar Real Estate It Needs to Survive," in *Journal of Air Law and Commerce*, vol. 73, no. 1, 2008, 59.
- 500 Wasser/Jobes, "Space Settlements, Property Rights, and International Law: Could a Lunar Settlement Claim the Lunar Real Estate It Needs to Survive," in *Journal of Air Law and Commerce*, vol. 73, no. 1, 2008, 43.
- 501 Simberg, *Homesteading*, 6.
- 502 Reinstein, 72.
- 503 Reinstein, 73.
- 505 Dmitry Rogozin, Director General of the Russian Space Agency, Roscosmos, quoted in Byers/Boley, *Who Owns Outer Space?*, 137.
- 506 Quoted in Byers/Boley, *Who Owns Outer Space?*, 151.
- 507 Byers/Boley, *Who Owns Outer Space?*, 152–56.
- 508 Byers/Boley, *Who Owns Outer Space?*, 157–58.
- 509 "The Artemis Accords. Principles for cooperation in the civil exploration and use of the Moon, Mars, Comets and Asteroids for Peaceful Purposes," https://www.nasa.gov/wp-content/uploads/2022/11/Artemis-Accords-signed-13Oct2020.pdf?utm_.
- 510 Storck, "Space Mining," in Nötzold et al., *Strategischer Wettbewerb im Weltraum*, 367–87.
- 511 Byers/Boley, *Who Owns Outer Space?*, 160.
- 512 Byers/Boley, *Who Owns Outer Space?*, 175.
- 513 Quoted in Byers/Boley, *Who Owns Outer Space?*, 177.
- 514 Schladebach, 55.
- 515 Pop, *Unreal Estate*.
- 516 Pop, "Legal Considerations," in Badescu, 669–70.

- 517 “Moon States oder wie man Grundstücke auf dem Mond für 34 € verkauft,” *Idealista news*, August 31, 2023, <https://www.idealista.com/de/news/immobilien-kaufen-in-spanien/2023/08/31/140361-moon-states-oder-wie-man-grundstuecke-auf-dem-mond-fuer-34-eu-verkauft>.
- 518 Reinstein, 61–62.
- 519 Weinersmith, 258. Italicized in the original.
- 520 Weinersmith, 260.
- 521 Weinersmith, 270.
- 522 Wemheuer, 17.
- 523 Hajduk, *!e First Settlement*, 349.
- 524 MacDonald, *!e Long Space Age*, 180. ;e rest of the respondents either did not respond or were undecided.
- 525 Quoted in McDougall, *!e Heavens and the Earth*, 317.
- 526 Letizia, “Congressman James Fulton and U.S. Space Policy,” *Geek Frontiers*, July 14, 2019, https://geekfrontiers.com/congressman-james-fulton-and-us-space-policy/?utm_.
- 527 Letizia, “Congressman James Fulton and U.S. Space Policy,” *Geek Frontiers*, July 14, 2019, https://geekfrontiers.com/congressman-james-fulton-and-us-space-policy/?utm_.
- 528 Letizia, “Congressman James Fulton and U.S. Space Policy,” *Geek Frontiers*, July 14, 2019, https://geekfrontiers.com/congressman-james-fulton-and-us-space-policy/?utm_.
- 529 Letizia, “Congressman James Fulton and U.S. Space Policy,” *Geek Frontiers*, July 14, 2019, https://geekfrontiers.com/congressman-james-fulton-and-us-space-policy/?utm_.
- 530 Victor Anfuso (D, NY), quoted in McDougall, *!e Heavens and the Earth*, 317.
- 531 John F. Kennedy, quoted in Wanjek, 6.
- 532 Lyndon B. Johnson, quoted in McDougall, *!e Heavens and the Earth*, 320.
- 533 MacDonald, *!e Long Space Age*, 205.
- 534 Worden, “On Self-Licking Ice Cream Cones,” *ASP Conference Series*, Vol. 26, 1992, 600–601, <https://adsabs.harvard.edu/full/1992ASPC.26.599W>. Italicized in the original.
- 535 McCurdy, *!e Space Station Decision*, 227–28.
- 536 Berger, “We Are Going to the Moon,” in *Reason*, vol. 54, no. 7, December 2022, 9.
- 537 Examples of Bezos talking about NASA in Schneider, *Goldrausch im All*, 218.

- 538 Koelle/Janovsky, *Development and Transportation Costs*, 2739.
- 539 Koelle/Janovsky, *Development and Transportation Costs*, 2742.
- 540 Poole, “Robert Heinlein’s Dream,” in *Reason*, vol. 54, no. 7, December 2022, 18.
- 541 Dripke/Kreft, *Race to Space*, “New Business Model for Major Projects,” paragraph 1.
- 542 Dripke/Kreft, *Race to Space*, “A Historic Day: A Rocket Returns,” paragraph 5.
- 543 Zhang, “Re-Understanding Entrepreneurship,” 227.
- 544 Mingardi, “A Critique of Mazzucato’s Entrepreneurial State,” in *le Cato Journal*, vol. 35, no. 3, 2015, 621.
- 545 Foust, “NASA’s Budget Crisis Presents an Opportunity for Change,” in *SpaceNews*, June 2025, 9.
- 546 Dripke, *Race to Space*, “Europe’s Space Failure,” paragraph 9. Italicized in the original.
- 547 Pronczuk, “Europe Wants to Diversify Its Pool of Astronauts,” *le New York Times*, February 22, 2021.
- 548 European Space Agency (ESA), https://www.esa.int/About_Us/Careers_at_ESA/Diversity_and_Inclusiveness?utm.
- 549 Foust, “;e Accidental Monopoly. How SpaceX Became (Just About) the Only Game in Town,” in *SpaceNews*, October 2023, 6–10, <https://spacenews.com/the-accidental-monopoly/>.
- 550 McKenzie/Lee, 222. Italicized in the original.
- 551 McKenzie/Lee, 23. Italicized in the original.
- 552 McKenzie/Lee, xx.
- 553 Nelson/Block, *Space Capitalism*, 241.
- 554 Nelson/Block, *Space Capitalism*, 137.
- 555 According to Genta’s thesis, *Private Space Exploration*, 483.
- 556 Cf. for example Cockell, “;e Ethical Status of Microbial Life,” in Schwartz/Milligan, *le Ethics*, 170 et seq.

参考文献

- Acket-Goemaere, Alizée; Brukardt, Ryan; Klempner, Jesse; Sierra, Andrew; Stokes, Brooke, "Space: The \$1.8 Trillion Opportunity for Global Economic Growth," McKinsey.com, April 8, 2024, <https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/space-the-1-point-8-trillion-dollar-opportunity-for-global-economic-growth>.
- Aldrin, Buzz, and Jones, Ron, "Changing the Space Paradigm: Space Tourism and the Future of Space Travel," in Hudgins, Edward L. (ed.), *Space: The Free Market Frontier*, CATO Institute, Washington, 2002, 177–94.
- Allensbach, Institut für Demoskopie, Archiv, IfD Survey Numbers 032 (1950) and 2005 (1965).
- Anderson, Chad, *The Space Economy: Capitalize on the Greatest Business Opportunity of Our Lifetime*, Wiley, Hoboken, New Jersey, 2023.
- Ansari, Samaneh, et al., "Feasibility of Keeping Mars Warm with Nanoparticles," in *Science Advances*, vol. 10, no. 32, August 7, 2024, <https://www.science.org/doi/10.1126/sciadv.adn4650>.
- Antarctic Treaty, 1959, https://documents.ats.aq/recatt/att005_e.pdf.
- Arevalo, Evelyn J., "SpaceX Starship Timeline: Making Life Multi-Planetary," *Tesmanian*, November 24, 2019 <https://www.tesmanian.com/blogs/tesmanianblog/spacex-mars-timeline?srsId=AfmBOoogiWdJLkFwrzRf4Jznk5wbR2NBtx7X6lpR11UyqnY0W8x7tRD4&utm>.
- Aristo, David, "What's Driving China's Commercial Launch Industry," in *SpaceNews*, March 2025, 25, <https://spacenews.com/whats-driving-chinas-commercial-launch-industry/>.
- Ausubel, Jesse H., "The Return of Nature. How Technology Liberates the Environment," in *The Breakthrough Journal*, May 12, 2015, <https://thebreakthrough.org/journal/issue-5/the-return-of-nature>.
- Autry, Greg, and Navarro, Peter, *Red Moon Rising: How America Will Beat China on the Final Frontier*, Post Hill Press, New York, Nashville, 2024.
- Badescu, Viorel (ed.), *Asteroids: Prospective Energy and Material Resources*, Springer, Heidelberg, New York, Dordrecht, London, 2013.

- Barnes, Michael, *SpaceX, Starlink and Our Man Elon Musk: Bringing NASA Astronauts to the Space Station and Mega Project to Colonize Mars*, Oliver Leish, [no place], 2022.
- 262 €.
- Beech, Martin, *Terraforming: Creating of Habitable Worlds*, Springer, Switzerland, 2009.
- Beech, Martin; Seckbach, Joseph; and Gordon, Richard (eds.), *Terraforming Mars*, Wiley, London, 2021.
- Bergan, Brad, *Space Race 2.0.: SpaceX, Blue Origin, Virgin Galactic, NASA and the Privatization of the Final Frontier*, Motorbooks, Beverly, MA, 2022.
- Berger, Eric, *Reentry: SpaceX, Elon Musk and the Reusable Rockets !at Launched a Second Space Age*, BenBella Books, Dallas, TX, 2024.
- Berger, Eric, "We Are Going to the Moon," *Reason*, December 2022, <https://reason.com/2022/11/15/we-are-going-to-the-moon/>.
- Billings, Linda, "Should Humans Colonize Mars? No," in *!eology and Science 2019*, vol. 17, no. 3, 341–46, <https://doi.org/10.1080/14746700.2019.1632524>.
- Binder, Jon, *SpaceX Starship: Elon Musk's Rocket to Mars*, Echelon Books, [no place], 2022.
- Branson, Richard, *Screw It, Let's Do It: Lessons in Life and Business*, Virgin Books, London, 2009.
- Braun, Wernher von, *!e Mars Project*, University of Illinois Press, Urbana and Chicago, 1991.
- Braun, Wernher von, "Manned Mars Landing, Presentation to the Space Group," August 4, 1969, <https://ntrs.nasa.gov/api/citations/20240011937/downloads/1969-08%20MSFC%20von%20Braun%20-%20Manned%20Mars%20Landing.pdf>.
- Bromberg, Joan Lisa, *NASA and the Space Industry*, John Hopkins University Press, Baltimore and London, 2000.
- Byers, Michael, and Boley, Aaaron, *Who Owns Outer Space? International Law, Astrophysics, and the Sustainable Development of Space*, Cambridge University Press, Cambridge u.a., 2023.
- Cannon, Kevin M.; Matt, Gialich; and Jose Acain, "Precious and Structural Metals on Asteroids," in *Planetary and Space Science Vol. 225*, 2023 <https://www.sciencedirect.com/science/article/pii/S0032063322001945>.
- Cantrell, Jim, *Breaking All the Rules: !e Inside Story of the New Space Race*, [no place], 2023.

- Carter, Carl, "History of Space Tourism," in Cohen, Erik, and Spector, Sam (eds.), *Space Tourism: The Elusive Dream*, emerald Publishing United Kingdom, 2019, 61–68.
- Chase-Lubitz, Jesse, "Virgin Galactic to Launch Space Tourism Flight as Waiting Lists Grow," *Skift.com*, June 7, 2024, <https://skift.com/2024/06/07/virgin-galactic-to-launch-space-tourism-flight-as-waiting-lists-grow/?utm>.
- Clary, David A., *Rocket Man: Robert H. Goddard and the Birth of the Space Age*, Grand Central Publishing, New York, 2004.
- Cockel, Charles S., "The Ethical Status of Microbial Life on Earth and Elsewhere in Defense of Intrinsic Value," in Schwartz, James S. J., and Milligan, Tony . . . 263 (eds.), *The Ethics of Space Exploration*, Springer International Publishing, Cham, Switzerland, 167–79, https://doi.org/10.1007/978-3-319-39827-3_12.
- Cohen, Erik, and Spector, Sam (eds.), *Space Tourism: The Elusive Dream*, emerald Publishing United Kingdom, 2019.
- Collins, Patrick, and Autino, Adriano, "What the Growth of a Space Tourism Industry Could Contribute to Employment, Economic Growth, Environmental Protection, Education, Culture and World Peace," in *Acta Astronautica* 66, 2010, 1553–62.
- Corrêa, Raphael, *Fundamentals of Space Capitalism: Exploring the Frontiers that Will Shape Tomorrow*, independently published, United States, 2023.
- Cucinotta, Francis A., and Durante, Marco, "Cancer Risk from Exposure to Galactic Cosmic Rays: Implications for Space Exploration by Human Beings," *The Lancet Oncology*, 7(5), 2006, 431–35. <https://pubmed.ncbi.nlm.nih.gov/16648048/>.
- Curcio, Blaine, "China Space in 2024: A Review," in *China Space Monitor*, January 7, 2025, <https://chinaspacemonitor.substack.com/p/china-space-in-2024-a-review>.
- Curcio, Blaine, "Breadth Paired with Depth in China's Space Sector," in *China Space Monitor*, January 8, 2025, <https://chinaspacemonitor.substack.com/p/breadth-over-depth-in-chinas-space>.
- Curcio, Blaine, "The Launch Bottleneck Holding up China's Starlink," in *China Space Monitor*, March 16, 2025, <https://chinaspacemonitor.substack.com/p/the-launch-bottleneck-holding-up>.
- Curcio, Blaine, "51 Rocket Production Sites," in *China Space Monitor*, July 31, 2025, <https://chinaspacemonitor.substack.com/p/51-rocket-production-sites>.
- Daniels, Karen E., "Rubble-Pile Near Earth Objects: Insights from Granular Physics,"

- in Badescu, Viorel (ed.), *Asteroids: Prospective Energy and Material Resources*, Springer, Heidelberg, New York, Dordrecht, London, 2013, 271–86.
- Dhir, Rajeev, “Which Country Has the Most Billionaires?,” Investopedia, July 2, 2025, https://www.investopedia.com/which-country-has-the-most-billionaires-11752300?utm_.
- Dinner, Josh, “Trump Orders Interim NASA Chief to End DEI Initiatives,” in SpaceNews, January 23, 2025, https://www.space.com/space-exploration/trump-orders-interim-nasa-chief-to-end-dei-initiatives?utm_.
- Dripke, Andreas, and Kreft, Prof. Dr. Heinrich, *Race to Space: How Elon Musk, Jeff Bezos, and Richard Branson Are Conquering Space—and the Role of NASA, ESA, China and Russia*, ePub, Diplomatic Council Publishing, Wiesbaden, 2025.
- Dubbs, Chris, and Paat-Dahlstrom, Emeline, *Realizing Tomorrow: The Path to Private Spaceflight*, University of Nebraska Press, Lincoln, NE, and London, 2011.
- Elvis, Martin, *Asteroids: How Love, Fear, and Greed Will Determine Our Future in Space*, Yale University Press, New Haven & London 2021.
- European Space Agency (ESA), “Diversity and Inclusiveness,” [no date], https://www.esa.int/About_Us/Careers_at_ESA/Diversity_and_Inclusiveness?utm_.
- Fehrler, Sebastian; Hornuf, Lars; and Vrankar, Daniel, “What Do Citizens Expect from Space?” *Acta Astronautica*, vol. 235, October 2025, 660–69, <https://doi.org/10.1016/j.actaastro.2025.05.056>
- 264 €.
- Fleming, Maxwell; Lange, Ian; Shojaeinia, Sayeh; and Stuermer, Martin, “Mining in Space Could Spur Sustainable Growth,” in *PNAS* 2023, vol. 120, no. 43, <https://www.pnas.org/doi/10.1073/pnas.2221345120>.
- Fogg, Martyn J., “The Ethical Dimensions of Space Settlement,” in *Space Policy* 16, 2000, 205–11, [https://doi.org/10.1016/S0265-9646\(00\)00024-2](https://doi.org/10.1016/S0265-9646(00)00024-2).
- Follett, Andrew, “7 Enviro Predictions From Earth Day 1970 That Were Just Dead Wrong,” *Daily Caller*, April 22, 2016, <https://dailycaller.com/2016/04/22/7-enviro-predictions-from-earth-day-1970-that-were-just-dead-wrong/>.
- Foust, Jeff, “Debating the Aldridge report,” *The Space Review*, August 30, 2005, https://www.thespacereview.com/article/217/1?utm_.
- Foust, Jeff, “The Accidental Monopoly. How SpaceX Became (just about) the Only Game in Town,” SpaceNews, October 13, 2023, <https://spacenews.com/the-accidental-monopoly/>.
- Foust, Jeff, “NASA’s Budget Crisis Presents an Opportunity for Change,” SpaceNews, June 4, 2025, <https://spacenews.com/nasas-budget-crisis-presents-an-opportunity>

-for-change/.

Genta, Giancarlo, "Private Space Exploration: A New Way for Starting a Spacefaring Society?" *Acta Astronautica*, vol. 104, no. 2, 2014, 480–86, <https://doi.org/10.1016/j.actaastro.2014.04.008>.

Genta, Giancarlo, "Terraforming and Colonizing Mars," in Beech, Martin; Seckbach, Joseph; and Gordon, Richard (eds.), *Terraforming Mars*, Wiley, London, 2021, 3–22.

Gouw, Arwin M., "CRISPR Challenges and Opportunities for Space Travel," in Konrad Szocik (ed.), *Human Enhancement for Space Missions: Lunar, Martian, and Future Missions to the Outer Planets*, Springer, Cham, Switzerland, 2020.

Grandl, Werner, and Bazso, Akos, "Near Earth Asteroids—Prospection, Orbit Modification and Habitation," in Badescu, Viorel (ed.), *Asteroids. Prospective Energy and Material Resources*, Springer, Heidelberg, New York, Dordrecht, London, 2013, 415–38.

Green, Brian Patrick, *Space Ethics*, Bloomsbury Publishing, London, 2021.

Gregg, Jack, *!e Cosmos Economy: !e Industrialization of Space*, Springer Nature, Cham, Switzerland, 2021.

Guthrie, Julian, *How to Make a Spaceship*, Penguin Press, New York, 2016.

Hajduk, Chris, "e First Settlement of Mars," in Beech, Martin; Seckbach, Joseph; and Gordon, Richard (eds.), *Terraforming Mars*, Wiley, London, 2021, 331–51.

Hallion, Richard P., *Taking Flight: Inventing the Aerial Age from Antiquity through the First World War*, Oxford University Press, New York, 2003.

Hamill, Doris; Mongan, Philipp; and Kearney, Michael, "Space Commerce: An Entrepreneur's Angle," in Hudgins, Edward L. (ed.), *Space: !e Free Market Frontier*, CATO Institute, Washington, 2002, 151–66.

Handberg, Roger, *!e Future of the Space Industry: Private Enterprise and Public Policy*, Quorum Books, Westport, Connecticut, London, 1995.

Hanley, Steve, "Reusable Rockets Are All the Rage in China. Now Honda Wants in on the Fun," *CleanTechnica*, June 22, 2025, <https://cleantechnica.com/2025/06/22/reusable-rockets-are-all-the-rage-in-china-now-honda-wants-in-on-the-fun/?utm..%.....>

. ..%..... 265

Harvey, Brian, *China in Space: !e Great Leap Forward. Second Edition*, Springer Praxis Publishing, Chichester, UK, 2019.

Heinlein, Robert A., *!e Man Who Sold the Moon*, New American Library, New Jersey, 1951.

Hennigan, W.J., "Astronauts Take Shelter Aboard ISS after Russian Anti-Satellite

- Test, US Says,” in *Time*, November 15, 2021, <https://time.com/6117840/astronauts-shelter-iss-russia-test/?utm>.
- Henrekson, Magnus; Sandström, Christian; and Mikael Stenkula (eds.), *Moonshots and the New Industrial Policy: Questioning the Mission Economy*, Springer Nature, Cham, Switzerland, 2024.
- Henrekson, Magnus; Sandström, Christian; and Mikael Stenkula, “Learning from Overrated Mission-Oriented Innovation Policies: Seven Takeaways,” in Henrekson, Magnus; Sandström, Christian; and Mikael Stenkula (eds.), *Moonshots and the New Industrial Policy: Questioning the Mission Economy*, Springer Nature, Cham, Switzerland, 2024, 234–55.
- Hersch, Matthew H., *Dark Star: A New History of the Space Shuttle*, MIT Press, Cambridge, MA, London, 2023.
- Hornsey, Matthew; Fielding, Kelly S.; Harris, Emily A.; Bain, Paul G.; Grice, Tim; and Chapman, Cassandra M., “Protecting the Planet or Destroying the Universe? Understanding Reactions to Space Mining,” in *Sustainability* vol. 14, no. 7, March 30, 2022, <https://doi.org/10.3390/su14074119>.
- Hornuf, Lars, and Vrankar, Daniel, “How New Business Models Shape Innovation Spillovers: Insights from the New Space Economy,” *SSRN*, June 14, 2025, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5294579&utm.
- Howell, Elizabeth, “SpaceX’s Dragon: First Private Spacecraft to Reach the Space Station,” *Space.com*, August 10, 2020, <https://www.space.com/18852-spacex-dragon.html>.
- Hudgins, Edward L. (ed.), *Space: The Free Market Frontier*, CATO Institute, Washington, 2002.
- IATA, “IATA Releases 2024 Safety Report,” February 26, 2025, <https://www.iata.org/en/pressroom/2025-releases/2025-02-26-01/?utm>.
- Idealista News, “Moon States oder wie man Grundstücke auf dem Mond für 34 € verkauft,” *Idealista News*, August 31, 2023, <https://www.idealista.com/de/news/immobilien-kaufen-in-spanien/2023/08/31/140361-moon-states-oder-wie-man-grundstuecke-auf-dem-mond-fuer-34-eu-verkauft>.
- Isaacson, Walter, *Elon Musk*, Simon & Schuster, New York, 2023.
- Jones, Andrew, “China’s Megaconstellation Launches Could Litter Orbit for More than a Century, Analysts Warn,” *SpaceNews*, April 7, 2025, <https://spacenews.com/chinas-megaconstellation-launches-could-litter-orbit-for-more-than-a-century-analysts-warn/>.
- Jones, Harry W. (NASA Ames Research Center), *The Recent Large Reduction in*

- Space Launch Cost*, 48th International Conference on Environmental Systems, 8–12 July 2018, Albuquerque, New Mexico, <https://ntrs.nasa.gov/api/citations/20200001093/downloads/20200001093.pdf>.
- 266 €.
- Jones, Harry W., “Current Capabilities Can Get Us to Mars,” in *AIAA ARC Aerospace Research Central*, July 27, 2024, <https://arc.aiaa.org/doi/abs/10.2514/6.2024-4862>.
- Jones, Harry W., (NASA Ames Research Center), “e Impact of Reduced Space Launch Cost,” *AIAA ARC Aerospace Research Central*, July 16 2025, <https://arc.aiaa.org/doi/10.2514/6.2025-4073>.
- Kaku, Michio, *!e Future of Humanity: Our Destiny in the Universe*, Vintage Books, New York, 2019.
- Kang, Si-Yoon; Jo, Min-Seon; Choi, Jeong-Yeol; and Yang, Soo Seok, “Cost Effectiveness of Reusable Launch Vehicles Depending on the Payload Capacity,” *Aerospace*, vol. 12, no. 5, April 22, 2025, 364, <https://doi.org/10.3390/aerospace12050364>.
- Kluger, Jeffrey, “Space: Where America and Russia Are Stuck with Each Other,” *Time*, March 25, 2014, <https://time.com/37671/space-cooperation-america-russia/>.
- Kluger, Jeffrey, “Russia, We Have a Problem,” *Time*, June 12, 2014, <https://time.com/2863223/russia-we-have-a-problem/>.
- Koelle, Dietrich E., and Janovsky, R., “Development and Transportation costs of Space Launch Systems, presentation at the 1st CEAS European Air and Space Conference, Berlin, 2007, <https://www.fzt.haw-hamburg.de/pers/Scholz/ewade/2007/CEAS2007/papers2007/ceas-2007-289.pdf>.
- Kreutzer, Ralf T., and Land, Karl-Heinz, *Dematerialisierung: Die Neuverteilung der Welt in Zeiten des digitalen Darwinismus*, Future Vision Press, Cologne, 2015.
- Kuczera, Heribert, and Sacher, Peter W., *Reusable Space Transportation Systems*, Springer Praxis Publishing, Chichester, UK, Heidelberg, Germany, 2011.
- Laing, Jennifer, and Frost, Warwick, “Exploring Motivations of Potential Space Tourists,” in Cohen, Erik, and Spector, Sam (eds.), *Space Tourism: !e Elusive Dream*, emerald Publishing United Kingdom, 2019, 141–62.
- Letizia, Anthony, “Congressman James Fulton and U.S. Space Policy,” *Geek Frontiers*, July 14, 2019, <https://geekfrontiers.com/congressman-james-fulton-and-us-space-policy/>.
- Lewis, John S., *Mining the Sky: Untold Riches from the Asteroids, Comets and Planets*, Helix Books Basic, New York, 1997.

- Lewis, John S., *Asteroid Mining 101: Wealth for the New Space Economy*, Deep Space Industries, Moffett Field, CA, 2015.
- Librera, Gianluca, "Aerospace Technologies and Civil Spillovers," Master's thesis, Politecnico di Torino, 2022, <https://webthesis.biblio.polito.it/25081/>.
- Logsdon, John M., *After Apollo? Richard Nixon and the American Space Program*, Palgrave Macmillan, New York, 2015.
- Lorenzen, Dirk, H., *Die Zukunft der Raumfahrt: Der neue Wettlauf ins All*, Franck Kosmos Verlag, Stuttgart, 2021.
- Lowe, Rebecca, *Space Invaders: Property Rights on the Moon*, Adam Smith Research Trust, London, 2022.
- Luscombe, Richard, "'We Weren't Stuck': Nasa Astronauts Tell of Space Odyssey and Reject Claims of Neglect," *!e Guardian*, March 31, 2025, https://www.theguardian.com/science/2025/mar/31/nasa-astronauts-iss-trump-musk?utm_..%..... 267
- MacDonald, Alexander, *!e Long Space Age: !e Economic Origins of Space Exploration from Colonial America to the Cold War*, Yale University Press, New Haven, CT, and London, 2017.
- Mangu-Ward, Katherine, "From Space Regulator to Astronaut: Q & A Interview with George Nield," *Reason*, December 2022, <https://reason.com/2022/11/15/from-space-regulator-to-astronaut/>.
- Mangu-Ward, Katherine, "The Case for Space Billionaires," *Reason*, December 2022, <https://reason.com/2022/11/15/the-case-for-space-billionaires/>.
- Mazzucato, Mariana, *!e Value of Everything: Making and Taking in the Global Economy*, PublicAffairs, New York, 2018.
- Mazzucato, Mariana, *Mission Economy: A Moonshot Guide to Changing Capitalism*, Penguin Books, London, 2022.
- McAfee, Andrew, *!e Surprising Story of How We Learned to Prosper Using Fewer Resources—and What Happens Next*, Scribner, New York, 2019.
- McCloskey, Deirdre Nansen, and Mingardi, Alberto, *!e Myth of the Entrepreneurial State*, American Institute for Economic Research, Great Barrington, MA, Adam Smith Institute, London, 2020.
- McCurdy, Howard E., *!e Space Station Decision: Incremental Politics and Technological Choice*, Johns Hopkins University Press, Baltimore, 1990.
- McDougall, Walter A., *!e Heavens and the Earth: A Political History of the Space Age*, Johns Hopkins University Press, Baltimore, 1985.
- McKaig, Jordan; Caro, Tristan; Burton, Dana; Tavares, Frank; and Vidaaurri, Monica,

“Chapter 10: Planetary Protection—History, Science, and the Future,” *Astrobiology*, vol. 24, no. S1, March 2024, <https://doi.org/10.1089/ast.2021.0112>.

McKenzie, Richard B., and Lee, Dwight R., *In Defense of Monopoly: How Market Power Fosters Creative Production*, University of Michigan Press, Ann Arbor, MI, 2008.

Merchant, Brian, “The Problem with Asteroid Mining,” *Vice.com*, January 23, 2013, <https://www.vice.com/en/article/the-problem-with-asteroid-mining/>.

Milligan, Tony, *Nobody Owns the Moon: The Ethics of Space Exploitation*, McFarland & Company, Jefferson, NC, 2015.

Mingardi, Alberto, “A Critique of Mazzucato’s Entrepreneurial State,” *Cato Journal*, vol. 35, no. 3, Fall 2015, <https://www.cato.org/sites/cato.org/files/serials/files/cato-journal/2015/9/cj-v35n3-7.pdf>.

Miriaux, Lois; Wilson, Andrew Ross; and Dominguez Calabuig, Guillermo J., “Environmental Sustainability of Future Proposed Space Activities,” *Acta Astronautica*, vol. 200, November 2022, 329–46, <https://doi.org/10.1016/j.actaastro.2022.07.034>.

Morino, Lori, “Humanity Is Not Prepared to Colonize Mars,” *Futures*, vol. 110, June 2019, 15–18, <https://doi.org/10.1016/j.futures.2019.02.010>.

Munévar, Gonzalo, “An Obligation to Colonize Outer Space,” *Futures*, vol. 110, June 2019, 38–40, <https://doi.org/10.1016/j.futures.2019.02.009>.

Munévar, Gonzalo, *The Dimming of Starlight: The Philosophy of Space Exploration*, Oxford University Press, Oxford, UK, 2023.

268 €.

Musk, Elon, “Full interview with Kara Swisher, and Walt Mossberg,” Code Conference 2016, June 2016, <https://www.youtube.com/watch?v=wsixsRI-Sz4>.

Musselman, Brian T.; Winter, Scott R.; Rice, Stephen; Keebler, Joseph R.; and Ruskin, Keith J., “Point-to-Point Suborbital Space Tourism Motivation and Willingness to Fly,” *Annals of Tourism Research Empirical Insights*, vol. 5, no. 1, May 2024, <https://doi.org/10.1016/j.annale.2024.10011>.

Mwai, Peter; Gebre, Girmay; and Thomas, Merlyn, “Satellite Images and Doctor Testimony Reveal Tigray Hunger Crisis,” *BBC*, July 25, 2024, <https://www.bbc.com/news/articles/c10l2vvjy9lo>.

NASA, “NASA’s Efforts to Maximize Research on the International Space Station, Audit Report, July 8, 2013, Report No. IG-13-019, <https://oig.nasa.gov/office-of-inspector-general-oig/ig-13-019/>.

NASA, “The Artemis Accords: Principles for Cooperation in the Civil Exploration

- and Use of the Moon, Mars, Comets and Asteroids for Peaceful Purposes, October 13, 2020, <https://www.nasa.gov/wp-content/uploads/2022/11/Artemis-Accords-signed-13Oct2020.pdf?utm>.
- NASA, "Psyche Mission Overview," nasa.gov, April 17, 2025, <https://science.nasa.gov/mission/psyche/mission-overview/#:~:text=Psyche%20is%20a%20NASA%20mission,metal%20than%20rock%20or%20ice>.
- National Academics of Sciences, Engineering and Medicine, "Space Radiation and Astronaut Health: Managing and Communicating Cancer Risks," ;e National Academies Press, Washington DC, 2021, <https://doi.org/10.17226/26155>.
- Nelson, Peter Lothian, and Block, Walter E., *Space Capitalism: How Humans Will Colonize Planets, Moons, and Asteroids*, Palgrave Macmillan, Cham, Switzerland, 2018.
- Nichols-Fleming, Fiona; Evans, Alexander J.; Johnson, Brandon C.; and Sori, Michael M., "Porosity Evolution in Metallic Asteroids: Implications for the Origin and ;ermal History of Asteroid 16 Psyche," *JGR Planets*, vol. 127, no. 2, February 2022, <https://doi.org/10.1029/2021JE007063>.
- Nötzold, Antje; Fels, Enrico; Rotter, Andrea; and Brake, Moritz, *Strategischer Wettbewerb im Weltraum: Politik, Recht, Sicherheit und Wirtschaft im All*, Springer VS, Wiesbaden, 2024.
- Ormrod, James, "Pro-space Activism and Narcissistic Phantasy," *Psychoanalysis, Culture and Society*, vol. 12, September 1, 2007, 260–78, <https://doi.org/10.1057/palgrave.pcs.2100131>.
- Ormrod, James; Dickens, Peter, "Space Tourism, Capital, and Identity," Cohen, Erik, and Spector, Sam (eds.), *Space Tourism: !e Elusive Dream*, emerald Publishing United Kingdom, 2019, 223–44.
- Orosai, Roberto, et al., "Radar Evidence of Subglacial Liquid Water on Mars," *Science*, vol. 381, no. 6401, July 25, 2018, 490–93, <https://www.science.org/doi/10.1126/science.aar7268>.
- Partouche, Alexa, "SpaceX Registers to Build 700,000-square-foot Starship-Producing 'Gigabay' in Starbase," *Houston Chronicle*, July 9, 2025, <https://www.houstonchronicle.com/news/houston-texas/trending/article/spacex-starbase-gigabay-facility-20763151.php?utm>.
- . ..%...... 269
- Peters, Björn, *Schluss mit der Energiewende! Warum Deutschlands Volkswirtschaft dringend*

- ökologischen Realismus braucht*, Orgshop Verlag, Moos, Germany, 2025.
- Pippo, Simonetta Di, *Space Economy: The New Frontier for Development*, Bocconi University Press, Milan, 2023.
- Planetary Society, "How Much Did the Apollo Program Cost?" planetary.org, [no date], <https://www.planetary.org/space-policy/cost-of-apollo?utm>.
- Poole, Robert, "Robert Heinlein's Dream of Private Space Travel is Coming True," *Reason*, vol. 54, no. 7, December 2022, <https://reason.com/2022/11/15/we-are-living-robert-heinleins-dream/>.
- Poole, Robert, "Is There Any Way to Run Space Transportation?" in Hudgins, Edward L. (ed.), *Space: The Free Market Frontier*, CATO Institute, Washington, 2002, 53–66.
- Pop, Virgiliu, *Unreal Estate: The Man Who Sold the Moon*, Lulu.com, Morrisville, NC, 2006.
- Pop, Virgiliu, "Legal Considerations on Asteroid Exploitation and Deflection," in Badescu, Viorel (ed.), *Asteroids: Prospective Energy and Material Resources*, Springer, Heidelberg, New York, Dordrecht, London, 2013, 659–80.
- Pronczuk, Monika, "Europe Wants to Diversify Its Pool of Astronauts," *The New York Times*, February 22, 2021, <https://www.nytimes.com/2021/02/22/world/europe/women-disabled-astronauts.html>.
- Protocol on Environmental Protection to the Antarctic Treaty, 1991, https://documents.ats.aq/recatt/Att006_e.pdf.
- Pultarova, Tereza, "China's Push for a More Commercial Space Industry," *Via Satellite*, May 28, 2024, <https://interactive.satellitetoday.com/via/june-2024/chinas-push-for-a-more-commercial-space-industry>.
- Rainbow, Jason, "The Efforts Bridging Space Sustainability, from Best Intentions to Real-World Actions," *SpaceNews*, February 10, 2025, <https://spacenews.com/the-efforts-bridging-space-sustainability-from-best-intentions-to-real-world-actions/>.
- Rainbow, Jason, "SN Intelligence from SpaceNews: Understanding the SpaceX-Era Economy, Part 1: Launch Supremacy," *SpaceNews*, July 21, 2025.
- Reagan, Ronald, "Radio Address to the Nation on the Space Program," January 28, 1984, National Archives, Ronald Reagan Library & Museum, <https://www.reaganlibrary.gov/archives/speech/radio-address-nation-space-program?utm>.
- Reichl, Eugen, *Chinas Raumfahrt: Ein Riese erwacht*, Motorbuch Verlag, Stuttgart, 2023.
- Reichl, Eugen, *Die Zukunft der Raumfahrt: Private Projekte*, Motorbuch Verlag,

Stuttgart, 2022.

Reichl, Eugen, *Menschen im Weltraum*, Springer, Berlin, 2022.

Reichl, Eugen, *Space 2022: Das aktuelle Raumfahrt-Jahr mit Chronik 2021*, VfR, Munich, 2021.

Reichl, Eugen, *Space 2024: Das aktuelle Raumfahrt-Jahrbuch mit allen Starts*, VfR, Munich, 2023.

270 €.

Reichl, Eugen, *Space 2025: Das aktuelle Raumfahrt-Jahrbuch mit allen Starts*, VfR, Munich, 2024.

Reichl, Eugen, *Raumfahrt-Geschichte: Die 100 wichtigsten Ereignisse*, Motorbuch Verlag, Stuttgart, 2021.

Reinstein, Ezra J., "Owning Outer Space," *Northwestern Journal of International Law & Business*, vol. 20, no. 1, Fall 1999, 59–90, <https://scholarlycommons.law.northwestern.edu/njilb/vol20/iss1/7/>.

Reynolds, Glenn H., and Merges, Robert P., *Outer Space: Problems of Law and Policy, 2nd Edition*, Routledge, London, New York, 2019.

Roettgen, Raphael, *To Infinity: The Space Economy & How You Can Participate*, Space Business Institute, [no place], 2024.

Rubenstein, Mary-Jane, *Astrotopia: The Dangerous Religion of the Corporate Space Race*, The University of Chicago Press, Chicago, London, 2022.

Ryan, Mike H., and Kutschera, Ida, "The Case of Asteroids," in Badescu, Viorel (ed.), *Asteroids: Prospective Energy and Material Resources*, Springer, Heidelberg, New York, Dordrecht, London, 2013, 645–58.

Salvanto, Anthony, "CBS News Poll: Most Americans Favor U.S. Returning to Moon, going to Mars," CBS News, July 18, 2025, [online]<https://www.cbsnews.com/news/cbs-news-poll-most-americans-favor-u-s-returning-to-moon-going-to-mars/>.

Schladebach, Marcus, *Weltraumrecht*, Mohr Siebeck, Tübingen, Germany, 2020.

Schlather, Marc, "The Legislative Challenge in Space Transportation Financing," in Hudgins, Edward L. (ed.), *Space: The Free Market Frontier*, CATO Institute, Washington, 2002, 195–212.

Schmidt, Samantha, "The Gold-Mining City that Is Destroying a Sacred Venezuelan Mountain," *The Washington Post*, December 6, 2022, <https://www.washingtonpost.com/world/2022/12/06/venezuela-yapacana-gold-mining/>.

Schneider, Peter M., *Goldrausch im All: Wie Elon Musk, Richard Branson und Jeff Bezos den Weltraum erobern*, FinanzBuch Verlag, Munich, 2018.

- Schwartz, James S. J., *The Value of Science in Space Exploration*, Oxford University Press, Oxford, UK, 2020.
- Schwartz, James S. J., and Milligan, Tony, *The Ethics of Space Exploration*, Springer, Cham, Switzerland, 2016.
- Scotti, Monique, "NASA Plans Mission to a Metal-Rich Asteroid Worth Quadrillions," *Global News*, January 14, 2017, <https://globalnews.ca/news/3175097/nasa-plans-mission-to-a-metal-rich-asteroid-worth-quadrillions/>.
- Seedhouse, Erik, *SpaceX: Starship to Mars – The First 20 Years, 2nd Edition*, Springer, Cham, Switzerland, 2022.
- Simberg, Rand, "Homesteading the Final Frontier. A Practical Proposal for Securing Property Rights in Space," *CEI Competitive Enterprise Institute, Issue Analysis*, April 2012, No. 3, <https://cei.org/sites/default/files/Rand%20Simberg%20-%20Homesteading%20the%20Final%20Frontier.pdf>.
- Simberg, Rand, *Safe Is Not an Option: Overcoming the Futile Obsession with Getting Everyone Back Alive That Is Killing Our Expansion into Space*, Interglobal Media LLC, Jackson, WY, 2014.
- . .%...... 271
- Singh, Shalini, and Misra, Pankaj, "Mapping the Systematic Evaluation and Future Directions of Space Tourism Research," *New Space*, June 13, 2025, https://www.researchgate.net/publication/392679376_Mapping_the_Systematic_Evaluation_and_Future_Directions_of_Space_Tourism_Research.
- Sivolella, Davide, *Space Mining and Manufacturing: Off-World Resources and Revolutionary Engineering Techniques*, Springer Nature, Cham, Switzerland, 2019.
- Smiles, Deondre, "The Settler Logics of (Outer) Space," *Society and Space*, October 26, 2020, <https://www.societyandspace.org/articles/the-settler-logics-of-outer-space>.
- Smith, Kelley C., et al., "The Great Colonization Debate," *Futures*, vol. 110, June 2019, <https://doi.org/10.1016/j.futures.2019.02.004>, 4–14.
- Smith, Kiona N., "The Correction Heard 'Round the World: When the New York Times Apologized to Robert Goddard," *Forbes*, July 19, 2018, <https://www.forbes.com/sites/kionasmith/2018/07/19/the-correction-heard-round-the-world-when-the-new-york-times-apologized-to-robert-goddard/>.
- Smith, Marcia, "NASA, ROSCOSMOS Agree on One More Soyuz Seat," *Space Policy Online*, May 12, 2020, <https://spacepolicyonline.com/news/nasa-roscosmos-agree-on-one-more-soyuz-seat/>.
- Space Ambition, and Kalinin, Denis, "China: Private Space Ecosystem of the Rising Superpower," *Space Ambition*, April 25, 2025, <https://spaceambition.substack>

- .com/p/china-private-space-ecosystem-of.
- Space Capital, "Space Investment Quarterly: Q2 2025," July 10, 2025, <https://www.spacecapital.com/publications/space-investment-quarterly-q2-2025>.
- Sparrow, Robert, "The Ethics of Terraforming," *Environmental Ethics*, vol. 21, no. 3, Fall 1999, 227–45, <https://doi.org/10.5840/enviroethics199921315>.
- Spector, Sam, and Higham, James E. S., "Space Tourism, the Anthropocene, and Sustainability," in Cohen, Erik, and Spector, Sam (eds.), *Space Tourism: The Elusive Dream*, emerald Publishing United Kingdom, 2019, 245–62.
- Stoner, Ian, "The Ethics of Terraforming: A Critical Survey of Six Arguments," in Beech, Martin; Seckbach, Joseph, and Gordon, Richard (eds.), *Terraforming Mars*, Wiley, London, 2021, 101–16.
- Storck, Lisa Maria, "Space Mining—Goldrausch im All? Eine meta-geopolitische Analyse der strategischen Bedeutung von Weltraumbergbau für die internationale Staatengemeinschaft," in Nötzold, Antje; Fels, Enrico; Rotter, Andrea, and Brake, Moritz (eds.), *Strategischer Wettbewerb im Weltraum: Politik, Recht, Sicherheit und Wirtschaft im All*, Springer VS, Wiesbaden, Germany, 2024, 367–87.
- Stuhlinger, Ernst, and Ordway, Frederick I., *Wernher von Braun: Crusader for Space: A Biographical Memoir*, Malabar, Florida, 1994.
- Synergy, and Guest Author, "The Great Leap Forward of China's Private Space Industry," *Synergy, The Journal of Contemporary Asian Studies*, April 9, 2025, <https://utsynergyjournal.org/2025/04/09/the-great-leap-forward-of-chinas-private-space-industry/>.
- Szocik, Konrad (ed.), *Human Enhancement for Space Missions: Lunar, Martian, and Future Missions to the Outer Planets*, Springer Nature, Cham, Switzerland, 2020. 272 €.
- Tavares, Frank, et al., "Ethical Exploration and the Role of Planetary Protection in Disrupting Colonial Practices. A Submission to the Planetary Science and Astrobiology Decadal Survey 2023–2032," *arXiv*, October 27, 2020, <https://doi.org/10.48550/arXiv.2010.08344>.
- Thomas, Gareth Morgan, *The Chinese Space Dynasty: China's Robotic Revolution and the New Space Age*, Burst Book, 2025.
- Toivonen, Annette, *Sustainable Space Tourism: An Introduction*, Channel View Publications, Bristol, UK, 2020.
- United Nations Office for Outer Space Affairs (UNOOSA), "Moon Agreement," <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html>.

- United Nations Office for Outer Space Affairs (UNOOSA), "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies," https://www.unoosa.org/pdf/gares/ARES_21_2222E.pdf.
- Unnerstall, ;omas, "Liebe Schüler, ihr verbraucht drei Erden!," in Benkens, Robert; Bojanowski, Axel; and von Storch, Hans (eds.), *Das andere Klimabuch: 25 Experten, überraschende Fakten, rationale Alternativen zur Klimaangst*, Königshausen & Neumann Verlag, Würzburg, Germany, 2025, 65–75.
- UNOOSA, United Nations Office for Outer Space Affairs, "2222 (XXI) Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, December 19, 1966," <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html>.
- Vance, Ashlee, *Elon Musk: How the Billionaire CEO of SpaceX and Tesla Is Shaping Our Future*, Virgin Books, London 2016.
- Vance, Ashlee, *When the Heavens Went on Sale: !e Misfits and Geniuses Racing to Put Space Within Reach*, Ecco, New York, 2023.
- Vidaurri, Monica, et al., "Absolute Prioritization of Planetary Protection, Safety, and Avoiding Imperialism in all Future Science Missions: A Policy Perspective," *Space Policy*, vol. 51, no. 3, March 2020, 1–6, <https://doi.org/10.1016/j.spacepol.2019.101345>.
- Viiera Neto, Ernesto; Pires, Pryscilla; and Giuliatti Winter, Silvia, "Trajectories for Mining Space Mission Asteroids in Near-Earth Orbit," *!e European Physical Journal Special Topics*, vol. 232, December 7, 2023, 2967–74, <https://link.springer.com/article/10.1140/epjs/s11734-023-01016-y>.
- Wall, Mike, "NASA's Shuttle Program Cost \$209 Billion—Was It Worth it?" Space.com, July 5, 2011, <https://www.space.com/12166-space-shuttle-program-cost-promises-209-billion.html?utm>.
- Wanjek, Christopher, *Spacefarers: How Humans Will Settle the Moon, Mars, and Beyond*, Harvard University Press, Cambridge, MA, London, 2020.
- Wasser, Alan, and Jobes, Douglas L., "Space Settlements, Property Rights, and International Law: Could a Lunar Settlement Claim the Lunar Real Estate it Needs to Survive?" *Journal of Air Law and Commerce*, vol. 73, no. 1, 2008, <https://www.space-settlement-institute.org/Articles/jal73-1Wasser.pdf>.
- . ..%...... 273
- Webber, Derek, "Current Space Tourism Developments," in Cohen, Erik, and

- Spector, Sam (eds.), *Space Tourism: The Elusive Dream*, emerald Publishing United Kingdom, 2019, 163–76.
- Weinersmith, Kelly, Weinersmith, Zach, *A City on Mars: Can We Settle Space, Should We Settle Space, and Have We Really Thought It Through?*, Penguin, London, 2024.
- Weinzierl, Matthew, and Rosseau, Brendan, *Space to Grow: Unlocking the Final Economic Frontier*, Harvard Business Review Press, Boston, MA, 2025.
- Wemheuer, Felix, *Der große Hunger: Hungersnöte unter Stalin und Mao*, Rotbuch Verlag, Berlin, 2012.
- Wikipedia, “Outer Space Treaty,” wikipedia.org, [no date], https://en.wikipedia.org/wiki/Outer_Space_Treaty?utm_.
- Williams, Walter E., “Environmentalists Are Dead Wrong,” creators.com, April 26, 2017, <https://www.creators.com/read/walter-williams/04/17/environmentalists-are-dead-wrong>.
- Worden, S.P., “On Self-Licking Ice Cream Cones,” *ASP Conference Series*, Vol. 26, 1992, 600–601, <https://adsabs.harvard.edu/full/1992ASPC.26.599W>.
- World Bank and Development Research Center of the State Council, the People’s Republic of China, “Four Decades of Poverty Reduction in China: Drivers, Insights for the World, and the Way Ahead,” Washington DC, 2022, <https://documents1.worldbank.org/curated/en/099540207212222589/pdf/IDU0d81807d20c45a041160863409697a9fc59c4.pdf>.
- World Economic Forum, “How China’s New Generation of Companies Can Embrace Global Opportunities,” June 24, 2025, https://www.weforum.org/stories/2025/06/how-chinas-new-generation-of-companies-can-embrace-global-opportunities/?utm_.
- Wright, Helen, *James Lick’s Monument: The Saga of Captain Richard Floyd and the Building of the Lick Observatory*, Cambridge University Press, Cambridge, London, New York, New Rochelle, Melbourne, Sydney, 1987.
- Young, James Harvey, *The Toadstool Millionaires. A Social History of Patent Medicines in America Before Federal Regulation*, Princeton University Press Princeton, NJ, 1979.
- Zhang, Weiying, “The China Model View Is Factually False,” *Journal of Chinese Economic and Business Studies*, vol. 17, no. 3: *China’s Path to the New Era*, 2019, <https://www.tandfonline.com/doi/full/10.1080/14765284.2019.1663696?scroll=top&needAccess=true>.
- Zhang, Weiying, *The Logic of the Market: An Insider’s View of Chinese Economic*

Reform, Cato, Washington, DC, 2015.

Zhang, Weiying, *Re-Understanding Entrepreneurship: What It Is and Why It Matters*, Cambridge University Press, Cambridge, UK, New York, 2024.

Zitelmann, Rainer, *!e Power of Capitalism: Capitalism is Not the Problem, But the Solution*, Management Books 2000, London, 2024.

Zitelmann, Rainer, "Anti-Capitalists, Post-Colonialists, and the Controversy about the 'Colonisation of Space,'" *Economic Affairs*, vol. 44, no. 3., October 3, 2024, 572–81, <https://onlinelibrary.wiley.com/doi/10.1111/ecaf.12672>.

Zitelmann, Rainer, *In Defense of Capitalism: Debunking the Myths*, Republic Book Publishers, New York, 2023.

Zitelmann, Rainer, "Be Careful Trump. Deporting Elon Musk Would Hand Space Travel to China," *City AM*, July 2, 2025, <https://www.cityam.com/becareful-trump-deporting-elon-musk-would-hand-space-travel-to-china/>.

Zitelmann, Rainer, *How Nations Escape Poverty: Vietnam, Poland and the Origins of Prosperity*, Encounter Books, New York, London, 2024.

Zitelmann, Rainer, *2075: When Beauty Became a Crime*, MB2000, Oxford, 2026.

Zubrin, Robert (with Richard Wagner), *!e Case for Mars: !e Plan to Settle the Red Planet and Why We Must*, 25th Edition, Free Press, New York, and London, 2021.

Zubrin, Robert, *!e Case for Space: How the Revolution in Spaceflight Opens up a Future of Limitless Possibility*, Prometheus Books, Guilford, CT, 2019.

Zubrin, Robert, "A Declaration of Decadence," in *Quillette*, May 30, 2023, <https://quillette.com/2023/05/30/a-declaration-of-decadence/>.

Zubrin, Robert, "Why We Should Settle Mars," in *Quillette*, December 4, 2023, <https://quillette.com/2023/12/04/why-we-should-go-to-mars/>.

Zubrin, Robert. *!e New World on Mars: What We Can Create on the Red Planet*, Diversion Books, New York, 2024.