

# Index<sup>1</sup>

## A

- Absorb, 8, 113, 147  
Abundance, 8, 70, 81, 84, 140, 164  
Access, 2, 6, 11, 14, 15, 18, 48, 49,  
66n13, 88–89, 96, 97, 121, 135,  
147, 155, 156, 160  
Accommodations, 29, 30  
Accompany, 78  
Achievable, 38, 73  
Achievement, 34, 36–38, 53, 57,  
61, 156  
Acquire, 103, 108n2, 114, 114n21,  
118n42, 135, 146  
Acquisition, 64, 98, 149  
Act, 23, 103, 115, 115n31, 123, 125,  
151, 152, 156, 159, 179  
Actors, 110n8, 119n44, 130, 131  
Adequate, 8, 176, 177  
Advantages, 10, 23, 55, 62, 71, 72, 86,  
110n7, 127, 134, 138, 143, 159,  
162, 167, 168, 175, 178, 179  
Advocates, 37, 40, 50, 77, 101, 109n5,  
115, 118  
Aeronautics, 22, 98, 112n19  
Aerospace, 32  
Africa, 6, 134, 164  
Agencies, 14, 16, 18, 19, 25, 26, 31,  
35–37, 44, 58, 61, 65, 70, 72,  
76, 119n44, 126, 128–129, 133,  
134, 147  
Agenda, 37, 84, 89, 93, 120  
Agile, 45, 49  
Agreements, 23, 27, 29, 32, 76, 132,  
136, 141, 145, 176  
Agricultural, 1, 102, 161, 165  
AI, *see* Artificial Intelligence  
AIDA, *see* Asteroid Impact and  
Deflection Assessment  
Air, 7–9, 17, 30, 61, 64, 87, 88,  
108n2, 153, 162, 163  
Aldrin, Buzz, 14, 19  
Aliens, 21, 141, 142, 146–149  
Although, 45, 62, 76, 95, 103, 125,  
131, 133, 135, 137, 139,  
142–144  
Amazon, 29, 30, 53

---

<sup>1</sup>Note: Page numbers followed by 'n' refer to notes.

- America, 30, 32, 37, 61, 153, 156,  
159, 167, 172, 174, 175,  
177–179
- American, 12, 14, 16, 26, 42, 45, 49,  
50, 61, 62, 74, 147, 153, 154,  
165, 170, 177, 178
- Analogies, 132, 152, 161, 177–178
- Analogous, 138, 170, 174
- Analysis, 16, 107, 153, 172
- Anarchy, 132
- Anchored, 40, 85, 86
- Annum, 7, 32
- Antarctic, 110n7
- Antennas, 44, 54
- Anticipated, 70, 163
- APO, 90–92
- Apollo, 8, 14, 19, 61, 62, 136
- Appeared, 6, 28, 30, 38, 40, 42, 61, 64,  
73, 83, 84, 96, 112n19, 117n38,  
141, 144, 160, 176
- Application, 4, 13, 15, 60, 88, 133,  
138, 156, 163
- Approach, 26, 43, 48, 50, 70, 73, 78,  
86, 98, 103, 104, 117, 119n44,  
125, 128, 129, 131, 134, 137,  
140, 161, 163
- Aquatic, 36, 60
- Arctic, 105
- Argon, 88, 168
- Argue, 18, 76, 116n33, 126, 130
- Arizona, 41
- Arkyd, 69
- Arm, 25, 38, 43, 48, 59,  
118n42, 156
- Armstrong, Neil, 1, 14, 81
- Articulated, 43, 114, 115
- Artificial, 4, 63, 84, 99, 109n3, 146,  
153, 163, 165
- Artificial Intelligence (AI), 53, 54, 60,  
61, 65, 137
- Asia, 6, 33, 134, 142
- Asimov, Isaac, 60
- Assessed, 37, 59, 60, 88, 93
- Assets, 48, 50, 51, 56, 70–73, 75, 78,  
79, 145
- Assistance, 4, 59, 109n5
- Association, 34, 136
- Asteroid Impact and Deflection  
Assessment (AIDA), 93–105
- Asteroids, 5, 7, 9–11, 18, 22, 38–51,  
55, 57, 63–65, 69, 70, 72,  
74–77, 79, 81–89, 93–105, 109,  
109n3, 109n5, 113, 115n29,  
116, 117, 123–140, 159, 165,  
167–170, 175, 178, 179
- Astronautics/astronautical, 101, 102
- Astronauts, 1, 4, 8, 10–12, 14, 19, 22,  
25, 26, 29, 31, 35, 36, 61–63, 101
- Astronomical, 57, 72
- Astropolitical, 152
- Astropolitics, 3, 151–156
- Astropolitik*, 153
- Atlas, 26, 28
- Atmosphere, 11, 21, 22, 36, 44, 50,  
58, 73, 76, 82, 87, 88, 108n3,  
161, 163–166
- Atmospheric, 42, 58, 166
- Atomic, 24, 43
- Australia, 160, 170
- Author, 23, 37, 41, 102, 118n40, 130
- Authorities, 71, 72, 116n33, 125, 126,  
128, 129, 131–133, 136, 137, 152
- Automated, 66, 137, 138
- Automation, 138, 140, 167
- Autonomous, 16, 60, 98, 103, 137
- Autonomy, 60
- Aviation, 25, 31
- Avionics, 46, 49
- B**
- Babbage, Charles, 53
- Ballistic, 14, 153, 174
- Bankers, 143
- Banking, 143, 145, 146
- Barter, 143, 144, 149

- Bases, 9–12, 29, 36, 43, 59, 72–74, 82, 152, 161–162, 165, 178
- Battery, 44, 54
- Beacon, 3, 55, 123
- Beaming, 17, 34, 55, 87, 147
- Behavioral, 141, 177
- Behaviour, 96, 151–153
- Belt, 39, 75, 82, 159, 167–170, 178, 179
- Benefits, 3, 6, 11, 13, 24, 49, 62, 65, 96, 99, 108, 117n37, 120n46, 125, 127, 130, 133–136, 140, 163, 173, 175, 179
- Bennu, 43
- Best, 3, 5, 7, 29, 47, 50, 61, 65, 87, 126, 166, 178
- Bezos, Jeff, 28–30, 37, 39
- Big, 2, 4, 7, 9, 14, 15, 17, 18, 21, 28, 33, 35, 36, 65, 81
- Billionaire, 36, 37, 39, 104
- Billions, 2, 6, 7, 10, 22, 27, 28, 32, 39, 44, 47, 56, 60–63, 75, 76, 78, 82, 117n38, 173, 176
- Bills, 113, 114, 114n21, 143
- Binary, 94–96, 98, 99
- Blood, 58, 154
- Blue, 30, 95
- Body, 5, 6, 9, 42–44, 83, 86, 87, 94, 95, 98, 99, 101, 108–112, 108n2, 108–109n3, 109n4, 109n5, 110n7, 114–117, 115n26, 120, 121, 124–129, 132, 135, 159–161, 164–166, 168
- Boeing, 25–32, 34
- Bonds, 177, 178
- Booster, 28, 33, 35, 172
- Borrowing, 145
- Boundary, 61, 143, 147
- Branson, Richard, 6, 28–30, 36, 37, 39, 56
- Breath, 8, 163
- Breathable, 70, 73, 163
- Breathing, 163
- Brings, 4, 6, 9, 44, 56, 64, 75, 78, 82, 83, 93, 121, 133, 136, 173, 175, 179
- Britain, *see* United Kingdom (UK)
- British, 17, 37, 148, 152, 155, 160, 170
- Bubble, 8, 86
- Budgets, 4, 7, 25, 62, 75, 88, 161
- Build, 6–9, 11, 14–17, 22, 25, 29, 31, 35, 39, 42, 45, 47, 48, 51, 57, 61, 65, 69, 87, 101, 103, 115n26, 118n42, 124, 138, 154, 161–162, 165, 173
- Bulk, 146, 168
- Businesses, 2, 13, 14, 17, 19, 22, 24, 26, 28, 34, 42, 47, 50, 51, 70, 77, 78, 83, 101, 103, 109n4, 118, 131, 143, 144, 155, 177
- Buyers, 144
- C**
- Calculated, 169, 174
- Calculations, 43, 95, 174, 178
- California, 30, 35, 43, 54, 55, 77
- Calling, 29, 178
- Caltech, 39
- Cameras, 16, 59, 71, 97, 98
- Canada, 14, 24, 104
- Capabilities, 23, 39, 42, 45, 49, 72, 74, 100, 132, 154, 156, 162
- Capacity, 49, 60, 129, 131, 136, 138, 142, 165, 171
- Capital, 15, 38, 117, 117n37, 149, 176
- Capsules, 17, 22, 26, 33, 43, 173
- Carbon, 84, 164
- Carbonaceous, 42, 101, 168
- Cargo, 11, 17, 26, 31, 34, 35, 70, 150, 169, 172
- Cases, 4, 5, 23, 24, 48, 49, 95, 98, 108n2, 115, 115n30, 117, 118, 119n43, 125, 128–132, 136, 143, 156, 164, 167, 176

- Catalogued, 38, 70, 88  
 CCP, *see* Commercial Crew Program  
 Celestial, 5, 6, 24, 41, 44, 70, 101,  
 102, 108–111, 108n2, 109n3,  
 109n4, 109n5, 110n7, 114–117,  
 115n26, 120, 121, 124, 125,  
 132, 135  
 Celsius, 17  
 CEO, 15, 25, 35, 46, 49, 74, 77  
 Ceres, 43, 69, 168, 169  
 Certainty, 21, 40, 48  
 Challenges, 2, 5, 13, 18, 61, 64, 78,  
 109, 109n4, 114n21, 153, 173  
 Cheap, 18, 65, 167, 168  
 Cheaper, 11, 14, 15, 18, 26, 39, 45,  
 59, 62  
 Chem, 168, 169  
 Chemical, 101, 161, 167–169, 174  
 China, 33, 34, 37, 54, 65, 109n4, 112,  
 112n19, 118n39, 119, 120,  
 120n45, 120n46, 121n49, 148,  
 152, 156  
 Chinese, 120n45, 148, 155  
 Choose, 4, 100, 128  
 Citizens, 2, 4, 5, 29, 109, 109n4, 110,  
 115n29, 116, 117, 118n42,  
 120n45, 123, 138  
 City, 16, 36, 165  
 Civilian, 4, 14, 138, 154  
 Civilizations, 1, 5, 12, 47, 141, 145,  
 146, 159, 162, 164, 166, 173,  
 175, 178, 179  
 Claims, 5, 6, 17, 45, 49, 62, 75, 82,  
 108, 109n4, 114, 116n33,  
 117–120, 118n42, 120n45,  
 121n49, 124, 127, 129,  
 131–133, 154, 160, 176  
 Climate, 22, 73, 110n9, 165  
 Closest, 146, 175  
 Clothing, 144, 162  
 Cobalt, 39, 57, 63, 84  
 Codified, 114, 131  
 Collaboration, 14, 25–51, 56, 93  
 Collecting, 47, 48, 102  
 Collision, 82, 93, 98, 128, 132  
 Colonies, 7–9, 11, 19, 29, 33, 38, 63,  
 64, 73, 125, 145, 160, 165,  
 170, 177  
 Colonisation/colonization, 21, 32, 34,  
 38, 48, 51, 54, 62, 71, 81, 154,  
 159–179  
 Colonize, 18  
 Colonizing, 22, 141, 159, 178  
 Colorado, 27  
 Columbia, 63  
 Comets, 42, 44–46, 57, 63, 79,  
 109n3, 117  
 Commerce, 13, 166, 170  
 Commercial, 2, 3, 7, 15–16, 18, 19,  
 22, 25–35, 37, 42, 45–48, 50,  
 64, 70, 76, 81, 82, 102, 110n8,  
 111–113, 115n29, 123, 134,  
 135, 155  
 Commercial Crew Program (CCP),  
 25, 26  
 Commercialization, 21, 32  
 Commercially, 16, 87  
 Commodities, 2, 9–11, 45, 63, 74, 78,  
 82, 83, 87, 133, 134, 143, 146  
 Common/commonly, 4, 5, 19, 34, 65,  
 72, 84, 108n2, 111, 112,  
 112n15, 117n37, 125, 127–128,  
 131, 134, 141, 144, 149, 151  
 Communication/communications, 4,  
 44, 50, 54, 55, 65, 71, 72, 85,  
 89, 97, 99, 103, 142, 146, 147,  
 149, 155  
 Companies, 2, 6, 7, 10, 15, 16, 18,  
 26–30, 32–40, 42, 45–51, 60,  
 62, 64, 69, 70, 74–76, 82,  
 100–103, 109n4, 117, 117n35,  
 117n38, 126–128, 130, 132,  
 134, 136, 138  
 Company/companies, 25–30, 32–40,  
 42, 45, 46  
 Complex, 17, 28, 146, 163, 166

- Compliance, 126, 131  
 Composed, 82, 93, 129, 164  
 Composition, 41–43, 58, 84–85, 95, 99, 135  
 Computer, 28, 53, 54  
 Concentrated, 164, 166, 167  
 Concepts, 31, 42, 65, 79, 81–89, 93, 100, 107, 108, 108n2, 112–118, 132, 136, 137, 152, 153, 156, 163, 171  
 Conditions, 3, 4, 16, 30, 31, 71, 84, 88, 95, 137, 155, 159, 163, 167, 178, 179  
 Conflict, 4, 78, 111, 148  
 Congress, 25, 113, 114n21  
 Conquer, 35, 37, 56  
 Consciousness, 60  
 Consortium, 145  
 Constellations, 16, 17  
 Construction, 25, 60, 63, 72, 87, 101, 104, 127, 133, 154, 165  
 Containment, 72, 86  
 Contracts, 27, 29, 31, 35, 74, 126–128  
 Control, 23, 24, 38, 44, 54, 59, 94, 95, 102, 108n2, 111, 116, 145, 153, 155, 156, 177  
 Convention, 132  
 Convertible, 144  
 Converting, 48, 115, 164  
 Cooperation, 4, 44, 128, 145, 155, 156  
 Cores, 10, 60, 82, 94, 152, 153, 156  
 Corporate, 21–23, 29, 56, 81  
 Corporations, 4, 6, 11, 21, 61, 104, 132  
 Corpus, 23, 121  
 Cosmic, 33, 34, 38, 40, 43, 75  
 Cosmos, 76, 79, 154  
 Countries, 24, 28, 39, 40, 45, 74, 78, 108, 109n4, 118, 119, 126, 129, 130, 133, 134, 140, 145, 165  
 Courts, 5, 109, 109n5, 114n21, 116n33, 127, 130–132, 145  
 Covey, Stephen, 49  
 Cradle, 175  
 Craft, 7, 11, 16, 17, 27, 30, 46, 60, 65, 103, 137, 170  
 Crash, 24, 30  
 Crater, 33, 94, 95, 99  
 Created, 4, 40, 41, 53, 87, 95, 109, 110, 117n38, 119, 120n46, 136, 164, 165, 179  
 Crews, 26, 28, 34–36, 72, 139, 162  
 Crisis, 1  
 Critical/critically, 11, 47, 57, 66, 103, 110, 116, 141  
 Crops, 3, 8–10, 71, 162, 165, 166, 170  
 CST-100 Starliner, 26, 27  
 CubeSat, 15–17, 70, 97, 101, 102  
 Cubic, 29, 33  
 Cultures, 135, 146, 167, 178  
 Curiosity, 1, 76, 146  
 Currencies, 10, 141, 143, 144, 149  
 Customs, 102, 119, 131, 149, 177, 178  
 Cycle, 17, 71, 165
- D**
- Dangerous, 10, 66, 71, 101, 139, 149  
 DART, *see* Double Asteroid Redirection Test  
 Dates, 1–3, 9, 14, 25, 58, 61, 70, 72, 74, 75, 94, 101, 104, 142, 151  
 Debris, 18, 60, 97, 139  
 Debts, 135, 145, 149  
 Dedicated, 41, 94  
 Deep, 1–12, 31, 36, 53–55, 55n3, 61, 63, 64, 69, 72, 74, 78, 79, 83, 84, 97, 100, 102, 113, 151–153, 156, 164  
 Deep Space Industries (DSI), 38–51, 56, 100, 101, 103, 104  
 Deep Space Network (DSN), 54  
 Deep Space Optical Communications(DSOC), 55, 97  
 Defense, 93n1, 94, 138  
 Deflect, 93, 94, 100  
 Deflecting, 96, 105

- Deflection, 93–105  
 Democrats, 113, 114n21, 153  
 Departure, 168, 169  
 Depending, 85  
 Deploy/deployed, 3, 38, 47, 48, 69, 85, 99, 100, 102n6, 160, 165, 166  
 Deployment, 11, 32, 48, 59  
 Deposits, 12, 41, 81, 117n37, 144  
 Depots, 11, 29, 104  
 Designed, 14, 29, 30, 33, 44–46, 48, 64, 65, 83, 87, 94, 96, 102, 104, 139  
 Designs, 16, 27, 31, 48, 50, 65, 102, 143  
 Detected, 10, 145  
 Developed, 3, 8, 11, 22, 31, 33, 44, 48, 60, 76, 83, 99, 103, 125, 137, 156, 166, 178  
 Developing, 13, 17, 22, 26, 32, 41–47, 55, 56, 63, 84, 94, 103, 120, 125, 127, 130, 133–136, 140, 154  
 Development, 3, 4, 9–10, 14, 15, 19, 21–51, 53, 54, 56, 57, 59, 59n8, 62, 64, 65, 75, 83, 87, 89, 98, 102, 104, 105, 108, 117n38, 120n46, 130, 134–136, 145, 154–156, 160, 165, 176, 179  
 Devices, 16, 49, 60, 165  
 Diamandis, 56, 74, 76–78  
 Digging, 51, 84  
 Dioxide, 8, 36, 46  
 Diplomatic, 149  
 Director, 39, 58n5, 64, 78n14, 98, 116n34  
 Disaster, 38, 60  
 Discovered, 8, 44, 49, 69, 101, 142, 147  
 Discovery, 41, 62, 96, 145, 178  
 Dispute, 109n5, 131–133, 150  
 Distance/distances, 34, 54–56, 58, 61, 75, 85, 99, 141–145, 147–149, 153, 173  
 Distributed, 146  
 Distribution, 99, 130, 136, 139  
 Diverse, 40, 49, 156  
 Dollars, 2, 7, 14, 39, 47, 61, 63, 78, 82, 132, 140, 160  
 Domains, 77, 88–89, 165  
 Dome/domes, 165, 166, 175, 177  
 Double Asteroid Redirection Test (DART), 94–99, 95n2  
 Dragon, 16, 26–28, 35, 103  
 Drawback, 118n42, 127, 131  
 Drivers, 42, 104, 138, 153  
 Dry, 164, 168, 169  
 DSI, *see* Deep Space Industries  
 DSN, *see* Deep Space Network  
 DSOC, *see* Deep Space Optical Communications  
 Dust, 41, 43, 73, 76, 86  
 Dwarf, 43, 147, 175
- E**
- Earth, 2, 6, 7, 168, 172, 174, 178  
 Easy, 86, 167, 168  
 Economic, 9, 14, 71, 75, 101, 103, 108, 117, 117n37, 117n38, 118n39, 129, 130, 135, 141–143, 145–149, 152, 153, 156, 159–179  
 Economical/economically, 31, 42, 45, 47, 75, 82, 87, 105, 133, 140  
 Economics, 39, 62, 160–162  
 Economies, 2, 6, 7, 143, 144, 153  
 Economy, 1–12, 15, 39, 42, 81, 100, 101, 104, 130, 135, 137, 143, 144, 152, 153, 156, 159, 179  
 Ecosystem, 7, 51, 86n3, 117n37, 140  
 Effect, 24, 82, 88, 93, 94, 96, 107, 109, 111, 116, 117, 117n38, 119–121, 124–126, 142, 144, 163, 165, 173, 177  
 Efficiency, 55, 164, 173  
 Electric, 72, 87, 168, 169, 174  
 Electrical, 59, 99  
 Electron, 17

- Elements, 12, 56, 75, 87, 88, 101, 102, 159, 164, 179
- Embargoes, 145
- Embedded, 137, 155
- Emigrate, 159, 171, 175, 179
- Empire, 152, 153
- Enable, 11, 16, 49, 65, 70, 71, 76, 101, 103
- Encounter, 72, 126, 143, 148, 149
- Energy, 2, 3, 8, 9, 11, 12, 39, 54, 72, 73, 85, 87, 89, 102, 105, 135, 143, 146, 147, 164, 165, 167, 173, 177
- Engine, 17, 53, 101, 178, 179
- Engineer, 56, 64, 65, 87, 100, 102, 156, 174
- Engineering, 41, 49, 50, 65, 89, 102, 148, 161, 164, 165, 176
- Engines, 8, 17, 27, 30, 31, 33, 44, 167, 168, 172
- England, *see* United Kingdom (UK)
- English, 120
- Enough, 3, 17, 27, 33, 36, 39, 54, 71, 85, 98, 163, 175
- Enterprises, 22, 30, 34, 36, 37, 81, 112, 132
- Entertainment, 36, 147
- Entirety, 10, 62, 109, 109n4
- Entrepreneurs, 2, 3, 6, 16, 29, 30, 35, 36, 40, 74, 74n7, 142
- Entrepreneurship, 41
- Entry, 42, 154, 155
- Environmental, 82, 88, 89, 110n7
- Environments, 3, 8, 51, 57, 60, 62, 85, 94, 112, 130–134, 137, 152, 160, 162, 163, 165, 167, 175, 179
- Equatorial, 142, 154, 155
- Equipment, 12, 50, 55, 64, 71, 73, 85, 130, 133, 137, 139, 162
- Equitable, 5, 129
- ESA, *see* European Space Agency
- Escape, 11, 37n15, 151, 159, 168, 174, 179
- Especially, 6, 19, 71, 87, 108, 125, 128, 129, 133, 134, 136, 138, 139, 143, 148, 156
- Established, 26, 28, 30, 34, 64, 71, 74, 77, 81, 83, 118, 119n43, 127, 129, 162
- Establishment, 29, 36, 104, 149, 163
- Estimate, 9, 15, 18, 39, 44, 46, 48, 95, 104, 105, 143, 164
- EU, *see* European Union
- Europe, 14, 16, 44, 54, 65, 148, 155, 160, 167, 174, 175, 178
- European, 18, 46, 49, 117n38, 142, 155, 159, 160, 178, 179
- European Space Agency (ESA), 18, 32, 44, 45, 50, 93, 123, 129
- European Union (EU), 40, 92, 118n39, 123, 131, 138, 143, 155
- Eventual/eventually, 12, 18, 21, 22, 25, 34, 35, 44, 60, 73, 76, 96, 100, 103, 105, 119, 128, 143, 144, 174
- Evolve, 12
- Exchange, 109n5, 117n38, 118n39, 120n48, 139, 141–146, 148, 149
- Excursion, 22, 26, 62
- Exercise/exercises, 22–24, 70, 128, 129, 159, 177, 179
- Existence, 4, 5, 56, 78, 109n5, 160, 167, 177, 179
- Existing, 17, 23, 39, 40, 45, 49, 50, 69, 88, 104, 113, 141, 161
- Exotic, 133, 142
- Expected, 7, 28, 32, 34–37, 39, 44, 55, 57, 70, 81, 94, 174, 176
- Experimental, 45, 71, 102
- Experiments, 28, 62, 95, 96, 98, 99
- Experts, 12, 120n46
- Exploded, 1, 37
- Exploit/exploitation, 7, 65, 98, 101, 110n7, 111, 112, 120n48, 121, 125, 133–135, 140, 152, 153

- Exploration, 2, 3, 12, 21, 24, 31, 32,  
 34, 36, 40, 42, 45, 47, 48, 54,  
 65, 67, 70, 72, 76, 79, 81,  
 83–85, 89, 102–104, 108, 111,  
 120n48, 125, 130, 133–135,  
 141, 142, 149, 152, 154, 156,  
 161, 162, 177, 178  
 Exploratory, 83, 100, 101  
 Explorer/explorers, 23, 26, 38, 59,  
 66, 161  
 Exploring, 61, 62  
 Explosive, 44, 86  
 Export, 160, 162, 166, 167, 178  
 Express, 58, 71, 74–78, 109, 109n4  
 Extract/extracted/extracting, 7, 9, 36,  
 42, 45, 64, 70, 82, 87, 101, 117,  
 117n38, 120n45, 139, 162, 176  
 Extraction, 41, 48, 64, 73, 75, 81,  
 85–87, 86n2, 101, 110–112,  
 110n7, 117, 123, 127, 134  
 Extractive, 159, 160, 178, 179  
 Extraterrestrial, 57, 111, 114, 123,  
 141, 146, 160, 164, 166
- F**
- FAA, *see* Federal Aviation Authority  
 Fabricated, 134  
 Failed, 109n5, 112, 113, 125, 155  
 Failure, 3, 33, 59, 88, 113, 127, 140  
 Falcon, 16, 26, 27, 33, 35, 102  
 Famine, 3, 133  
 Farming, 3, 73  
 Feasibility, 47, 50, 89, 160, 163  
 Feasible, 45, 77, 135, 160  
 Features, 33, 44, 71, 81, 85, 151, 178  
 Federal, 25, 109, 109n5, 111n11,  
 114n21, 116n33, 118n42  
 Federal Aviation Authority (FAA),  
 30, 33  
 Federation, 112, 112n19, 120, 121  
 Fees, 5, 6, 118n42, 126, 173  
 Fidelity, 121, 176  
 Finance, 70, 143, 167, 174–176  
 Firms, 2, 3, 6, 11, 14–18, 103, 145, 147  
 Fish, 16, 114–116  
 Fissionable, 139  
 Flares, 165  
 Fleet, 138, 160, 177  
 Flight/flights, 17, 22, 23, 25–28,  
 33–37, 49, 55–57, 62, 77, 82,  
 83, 97, 102  
 Flood, 15, 167  
 Florida, 32, 35, 64  
 Flow, 8, 23, 149  
 Flown, 37, 61  
 Fluid, 46, 48, 73, 86, 101  
 Fly, 27, 31, 33, 46, 77  
 Flyby, 92, 174  
 Fobos, 33, 89  
 Food, 3, 8, 9, 35, 71, 74, 84, 144, 162,  
 167, 170, 173  
 Forbids, 114, 116n33  
 Force, 4, 25, 51, 110n7, 138, 153, 154  
 Formation, 95, 99  
 Former Soviet Union (FSU), 34, 40  
 Foundation, 6, 12, 15, 77, 117n38,  
 154, 163  
 Four, 10, 31, 36, 48, 65, 70, 101, 161,  
 162, 165, 172, 178  
 Framework/frameworks, 24, 31, 40,  
 45, 73, 76, 77, 113, 123–140  
 Freight, 28, 31  
 French, 44, 115, 116, 119, 120, 160  
 Fresh, 3, 32, 87  
 Frontier, 3–4, 21, 42, 77–79, 101, 152,  
 159, 167, 175, 177–179  
 Frozen, 10–12, 172  
 FSU, *see* Former Soviet Union  
 Fuel, 7–12, 18, 26, 36, 42, 46–51, 57,  
 64, 70, 72–74, 78, 82, 83, 87,  
 101, 104, 117n37, 118, 133,  
 155, 161, 162, 166, 173  
 Fukushima, 60  
 Fund/funds, 15, 38, 127, 130, 134  
 Funded, 17, 37, 89, 94, 102, 104



- Fusion, 87, 139, 164, 166  
 Future, 3–6, 8, 9, 18, 19, 30, 31, 33,  
     37, 38, 40, 45, 46, 51, 54–57,  
     59, 65, 70–72, 76, 89, 94, 97,  
     98, 103, 104, 109n6, 119, 121,  
     123, 125, 128, 134, 135, 137,  
     140, 143–145, 161, 162, 170,  
     175, 176, 178  
 Futurist, 77, 102
- G**
- Gagarin, Yuri, 14, 22  
 Gained, 4, 25, 29, 36, 134, 136,  
     138, 156  
 Galactic, 6, 17, 23, 29, 30, 32–34, 36,  
     37, 45, 56, 76  
 Galileo, 16, 62, 155  
 Gaps, 17, 40–42, 73, 154  
 Gas, 9, 15, 63, 73, 76, 79, 86–88, 105,  
     124, 135, 163, 164  
 Gear, 28, 35, 36, 48, 163  
 Generating, 28, 62, 98  
 Generation, 9–10, 38, 87, 99, 103, 142  
 Geologic, 87, 96, 164, 166  
 Geophysical, 46  
 Geopolitical, 107–121, 133, 140  
 Geostationary, 136, 155  
 German, 152, 154  
 Germany, 98, 154  
 Giant, 29, 31, 43, 85, 124  
 Glenn, John, 62  
 Gliese, 147  
 Global, 4, 7, 15, 32, 40, 48, 60, 77, 84,  
     96, 147, 155, 160  
 Global Position Satellites (GPS), 3, 16,  
     155, 156  
 Goal, 22, 26, 31, 37, 47, 48, 50, 55,  
     61, 65, 70, 100, 104, 117n38  
 Gold, 10, 63, 74, 75, 77, 82, 84, 101,  
     104, 164, 167  
 Goldman Sachs, 70  
 Google, 34, 53, 56  
 Google XPRIZE, 10, 17, 34  
 Governance, 22, 25, 125–128  
 Governing, 125–133  
 Government, 2, 4, 6, 7, 14, 16, 17, 19,  
     21, 22, 24, 32, 36, 37, 40,  
     43–45, 56, 109n4, 110, 110n8,  
     110n9, 111, 118n42, 119n44,  
     120n45, 137, 145, 147, 160,  
     162, 171, 173, 176  
 Governmental, 135, 162  
 GPS, *see* Global Position Satellites  
 Graps, Amara, 40, 41  
 Gravitational, 11, 43  
 Gravity, 11, 18, 21, 26, 47, 48, 61, 63,  
     75, 82–85, 87, 151, 167, 174  
 Greenhouses, 163–165  
 Ground, 14, 17, 25, 28, 30, 34, 55, 63,  
     70, 124, 134  
 Ground-breaking, 29, 40, 43, 61  
 Guide, 3, 71, 84, 93, 153
- H**
- Habitable, 51, 175–177  
 Habitation, 32, 84, 133, 135, 136,  
     140, 166, 172, 177  
 Habitats, 30, 31, 36, 49, 71, 131,  
     134, 162  
 Hardware, 15, 28, 49, 55, 65, 66, 70,  
     72–73, 101, 102, 134, 139  
 Harvest/harvested/harvesting, 16, 38,  
     39, 47, 49–51, 53, 57, 69, 72,  
     75, 84, 87, 101, 114, 116  
 Hawking, Stephen, 37, 37n15, 38  
 Hayabusa, 42–44, 136  
 Hazardous, 24, 60, 88, 93, 94, 96,  
     98, 139–140  
 Heart, 4, 17, 66  
 Heavy, 10, 49, 73, 76, 77, 120n46,  
     133, 171  
 Helium, 87, 88  
 Heritage, 97, 111, 112, 112n19, 125,  
     127–128, 134, 136

- Highest, 34, 49, 167
- History, 1, 5, 13, 22, 25, 43, 45, 54, 62, 71, 75, 78, 83, 100, 107, 110n7, 112n17, 113–114, 116n33, 120, 142, 148, 152, 154, 159, 161, 164, 166, 173, 177–178
- Hoarding, 127, 140
- Home, 6, 7, 17, 32, 37, 39, 45, 53, 61–63, 74, 78, 144, 161, 177, 178
- Honor, 145
- Horizon, 142
- Hot, 78
- Hotel, 29, 30, 37
- House, 36, 74, 163, 172, 174, 177
- Humanities, 19, 23, 36, 37, 54, 56, 81, 100, 151–154, 156
- Humankind, 4, 19, 53, 60, 105, 134, 153
- Humans, 3, 4, 6–10, 14, 19, 24, 25, 27, 36–38, 46, 47, 56, 57, 61–63, 65, 66, 70–75, 77, 81, 83, 85, 99, 104, 117n37, 131, 134, 135, 137, 141, 142, 145, 148, 149, 151, 156, 159–164, 166, 172, 173, 175, 178, 179
- Hydrocarbons, 74, 105
- Hydrogen, 8–10, 46, 48, 57, 63, 70, 73, 76, 82, 87, 164
- Hyper, 3
- Hyperbole, 107, 118
- I
- Ice, 11, 46, 69, 73, 164
- Identified/identifying, 3, 12, 24, 41, 42, 47, 60, 70, 72, 81, 85, 96, 111, 113
- IEEE, 64
- IGO, *see* Intergovernmental organization
- Imager, 97, 98, 102
- Imagery, 15, 16, 18, 46
- Images, 15–18, 34, 61, 96, 102, 154
- Imaging, 18, 58, 69, 99
- Immigrants, 171–173, 175, 177, 179
- Immigration, 159, 171, 179
- Impacts, 2, 9, 63, 94–99, 135, 174
- Imported, 143, 164, 166
- Improving, 4, 16
- Income, 137, 159, 160, 175, 177, 179
- Incredible, 41, 46, 61
- India, 17, 33, 37, 54, 65, 69, 155, 156
- Indian, 156
- Indian Space Research Organization (ISRO), 33
- Indicating, 40, 86, 146
- Indigenous, 162, 166, 178
- Individuals, 6, 16, 23, 51, 58, 63, 65, 71, 83, 84, 103, 109, 109n4, 110, 117, 142, 159, 173, 175, 179
- Industrial, 21, 60, 98, 136, 161, 163, 164
- Industry, 2, 3, 6–9, 15, 30, 32, 38, 39, 45, 49, 50, 60, 75–77, 81, 88, 104, 110n7, 113, 117n38, 118, 136, 138, 139
- Inflatable, 29, 31, 162, 163, 165, 177
- Infrared, 46, 69, 70, 97
- Infrastructure, 4, 7, 10, 45, 89, 102, 156
- Innovations, 3–4, 17, 22, 29, 45, 47, 48, 50, 56, 64, 167, 174, 179
- Innovative Solutions in Space (ISISpace), 49
- Insights, 2, 3, 60, 142, 152
- In-situ Space Resource Utilization (ISRU), 72, 73, 76, 133–135
- Instruments, 44, 59, 71, 78, 99, 102, 103, 143
- Insurance, 15, 24
- Intangible, 142–149
- Intellectual, 2, 145, 146, 167, 176
- Intelligent, 60, 148
- Interaction, 58, 146

Intercept, 98, 99, 103, 139  
 Intergovernmental, 119n44, 129–130  
 Intergovernmental organization (IGO),  
 129, 130  
 Interior, 33, 41, 166  
 International/internationally, 5, 14, 17,  
 18, 24, 37, 40, 45, 46, 56, 71,  
 93, 96, 98, 107, 108, 109n6,  
 111–113, 115n29, 118–121,  
 119n43, 119n44, 120n46,  
 121n49, 123–141, 143–145,  
 151–156, 176  
 International Space Station (ISS), 22,  
 25–29, 31, 32, 34, 35, 38, 59,  
 62, 63, 74, 83, 100, 101, 103,  
 104, 130, 133  
 Interplanetary, 46, 54, 58, 71, 73, 79,  
 134, 141–150, 152, 159, 166,  
 167, 169–171, 173, 179  
 Interstellar, 1, 11, 66n13, 141–150  
 Introduction, 40, 113, 143, 148  
 Invention, 159, 167, 175, 179  
 Invested, 144, 153  
 Investigation, 23, 48, 57, 66, 71, 77, 97  
 Investing, 22  
 Investments, 2, 6, 15, 21, 22, 78, 93,  
 104, 110n9, 117n38, 118, 132,  
 136, 140, 143, 147, 154  
 Investors, 2, 3, 6, 14, 21, 83  
 Ion, 44, 47  
 Iridium, 38, 63, 167  
 Iron, 12, 39, 49, 57, 63, 82, 84, 87, 101  
 IRSU, 72, 73, 76  
 ISIspace, *see* Innovative  
 Solutions in Space  
 Isotopes, 139, 166  
 Ispace, 10n7, 34, 36  
 Israel, 17, 32, 128  
 ISRO, *see* Indian Space Research  
 Organization  
 ISRU, *see* In-situ Space Resource  
 Utilization  
 ISS, *see* International Space Station

## J

January, 47, 58, 102  
 Japan, 14, 17, 37, 44, 54, 60, 65,  
 118n39, 155  
 Japanese, 34, 35, 42, 44, 59, 60  
 JAXA, 42–45, 50, 89  
 Jet, 36, 86  
 Jet Propulsion Laboratory (JPL), 43,  
 54, 55, 59  
 John Hopkins University, 50, 93  
 Journey, 3, 10, 11, 28, 44, 46, 47, 63,  
 69, 70, 76, 175  
 JPL, *see* Jet Propulsion Laboratory  
 Jupiter, 61, 62, 65, 75, 82, 133, 135  
 Jurisdiction, 5, 111, 115–117, 115n30,  
 116n33, 131, 133

## K

Kennedy Space Centre, 12, 28, 31, 64  
 Kilograms (Kg), 11, 35, 77, 94, 98, 173  
 Kilometer, 24, 76, 95, 99, 165, 176  
 Kinetic, 93, 94, 96–98  
 Knowledge, 5, 6, 29, 34, 35, 40–42,  
 60, 61, 74, 88, 161, 164  
 Korolev, Sergei, 151, 153, 154  
 Kosmo, Joe, 64  
 Kuiper, 147

## L

Laboratory, 17, 31, 32, 66, 96, 99  
 Lagrange, 19, 134  
 Land, 3, 7, 10, 14, 17, 31, 34, 43, 44,  
 48, 51, 74, 102, 105, 108n3,  
 109, 114, 118n42, 124, 176, 177  
 Landed, 5, 33, 58, 76, 111  
 Landers, 4, 44, 45, 59, 62, 71, 97  
 Landings, 1, 4, 5, 34, 37, 41, 44,  
 61–63, 71, 72, 109n5, 126,  
 136, 162  
 Landscape, 73, 136, 140  
 Lasers, 54, 55, 164

- Last, 4, 14, 29, 31, 32, 38, 49, 54, 59, 77, 167, 168, 178
- Launcher/launchers, 7, 14, 16–17, 155
- Launches/launched/launching, 1, 6, 7, 9–12, 14–18, 21–51, 55, 57–59, 61, 62, 64, 69, 71, 72, 76, 89, 94–96, 98–103, 102n6, 111, 111n11, 115n30, 116, 123, 129, 134, 153, 155, 161, 169, 171–173
- Lava, 125, 140
- Lawful, 5, 22
- Laws, 2–6, 21–51, 75, 77, 107, 108, 108n2, 109n5, 109n6, 111–116, 111n11, 114n21, 115n29, 116n34, 117n38, 118–121, 118n39, 119n43, 119n44, 120n45, 120n46, 124–127, 130–137
- Lawyers, 5, 6, 75, 113, 118, 133
- Lead, 6, 18, 34, 38–40, 63, 65, 78, 109, 115, 119–121, 125, 128, 136, 153, 163
- Legal, 5, 18, 24, 40, 45, 76, 107–121, 123–140
- Legislation, 22, 23, 38, 40, 113, 125
- Legislative, 22, 107, 113–114, 123, 167
- LEO, *see* Low-Earth orbit
- Leicester, 151
- Lenders, 145
- Length, 43, 142
- Liabilities, 22, 24, 132, 133, 136, 137
- Liberating, 45, 64, 138, 140
- Licensed, 29, 110, 112, 159, 167, 175, 179
- Life, 3, 6–10, 38, 39, 42, 44, 47, 58, 60, 61, 66, 67, 71–73, 82, 121, 142, 147, 156, 161, 164, 174, 178
- Limit, 56, 105, 111, 139, 177
- Liquid, 4, 73, 76, 87, 101, 163, 164
- List, 4
- Live, 6, 11, 14, 48, 51, 57, 99, 146, 163, 166, 175
- Living, 3, 4, 10, 29, 31, 34, 35, 57, 66, 133, 144, 160, 167, 172, 179
- Load, 27, 31, 165
- Lockheed, 26, 27, 29–31
- Logistics, 61, 134, 161
- Logsdon, John, 78
- London, 17, 154
- Loss, 37, 86, 88
- Low-Earth orbit (LEO), 11, 16–18, 31, 32, 45, 54, 102, 153, 171, 173, 174
- Luna, 14
- Lunar, 10, 12, 14, 17, 18, 29, 33–36, 76, 77, 82, 109, 109n4, 134, 135, 164
- Luxembourg, 40, 41, 45, 46, 115, 116, 117n38, 118n39, 119, 120, 123, 126
- M**
- Machine/machines, 48, 53–67, 83, 138n58, 164
- Magnetic, 87, 174
- Man, 14, 53–67
- Mankind, 3–4, 6, 37, 51, 53, 54, 57, 125, 135
- Manned, 37, 152
- Manufacture, 16, 39, 87, 88, 138
- Manufacturing, 49, 62, 101, 133, 136, 138, 161, 166, 173
- Map, 3, 41, 46, 58, 75
- Mapping, 10, 42, 43, 46, 48, 58, 75
- Maritime, 111, 127, 132
- Marketable, 56, 78
- Marketing, 15, 61
- Markets, 6, 16, 17, 24, 29, 32, 34, 38, 39, 42, 45, 47, 49–51, 63, 78, 82, 100, 128, 132n47, 133, 139, 140, 143, 146, 148, 178

- Mars, 4, 5, 9–12, 18, 19, 26, 29,  
31–36, 38, 41, 44, 46, 57–59,  
61–66, 70–73, 75, 76, 78, 82,  
85, 103, 131, 133, 136, 142,  
145, 149, 156, 159–179
- Mars Reconnaissance Orbiter  
(MRO), 71, 72
- Martian/Martians, 9, 10, 29, 31, 36,  
58, 59, 64, 64n10, 66, 72–76,  
135, 145, 160–163, 166, 167,  
172–176, 178, 179
- MASCOT, 44, 97
- Massive, 37, 49, 73, 168
- Masters, 56, 133, 161
- Material/materials, 2, 4, 9, 12, 18, 38,  
39, 41–43, 47, 48, 50, 51, 56,  
57, 60, 63, 72, 75, 76, 79,  
81–87, 94, 99, 104, 105, 133,  
134, 139, 152, 155, 156, 159,  
161, 162, 164, 166, 176, 177
- MBA, 91, 92, 102
- Mbar, 163, 164
- MCA, 91
- Mechanical, 48, 53, 58–60, 66, 73,  
86, 99
- Media, 1, 33, 61, 72, 118
- Meet, 9, 28, 34, 113
- Melted, 60, 164
- Merchant, 130, 132, 143
- Mercury, 14, 65
- Met, 40, 50, 120
- Metal/metals, 9, 10, 21, 38, 39, 47–49,  
51, 59, 74, 76–79, 82, 84, 87,  
88, 100, 101, 104, 162, 164,  
167, 170
- Metallic, 38, 82, 164
- Meteorites, 41, 42
- Microgravity, 48, 62, 96
- Microwave, 16, 87
- Military, 16, 124, 138, 145, 151, 153,  
155, 156
- Million/millions, 7, 14, 24, 26, 27, 34,  
37, 39, 48, 50, 53, 56, 62, 75,  
81, 90–92, 98, 99, 142, 160,  
164–166, 173, 176
- Mined, 2, 9, 11, 12, 47, 63, 74–76,  
82, 139
- Mineral/minerals, 2, 4, 9, 21, 39, 40,  
42–47, 51, 63, 64, 69, 73–76,  
78, 79, 81, 84, 85, 102, 105,  
109, 110n7, 117, 117n37,  
117n38, 118n42, 125, 164,  
166, 175, 176
- Miner/miners, 12, 41, 42, 101, 124,  
126–133, 135, 137n53, 138, 140
- Mining, 7, 9–11, 15, 21, 22, 32,  
38–51, 53–67, 69, 74–79,  
81–89, 93–105, 109, 111,  
113–116, 116n33, 118, 121,  
123–140, 142, 153, 166, 176
- Missile, 14, 93, 154
- Mission/missions, 11, 12, 18, 22, 26,  
28, 31–36, 39–48, 51, 54–56,  
58, 61, 62, 65, 66, 71–73, 76,  
78, 81, 83–85, 89, 93–105,  
128–129, 136, 137, 161, 168,  
169, 173, 174
- Mobile, 44, 58, 99
- Model/models, 14, 24, 29, 31, 55, 96,  
107, 114, 118, 120n48,  
126–136, 132n47, 138, 140,  
146, 156, 171, 173
- Module, 30, 31, 44, 45, 48
- Momentum, 94, 95, 99
- Money, 22, 38, 39, 117n38, 136, 143,  
144, 146, 174–176
- Monitoring, 16, 86
- Moon/moons, 1, 7, 9–12, 14, 17–19,  
22, 26, 29–36, 38, 40, 41, 46,  
50, 57, 61, 62, 64, 65, 70,  
72–78, 81–84, 87, 93–95, 108,  
108n1, 109, 109n4, 111–113,  
112n18, 112n19, 118n39, 120,  
121, 124–128, 133–136, 142,  
153, 154, 164–168, 170, 178
- Moonlet, 94, 98, 99

- Mountain, 55  
 MRI, 4  
 MRO, *see* Mars Reconnaissance Orbiter  
 Multibillion, 132, 140  
 Muscles, 63, 83, 100  
 Musk, Elon, 6, 25–29, 35–37, 39, 74, 103  
 MW, 163, 165, 169
- N**
- NanoRacks, 27, 32  
 Nanosat, 49  
 NASA, *see* National Aeronautics and Space Administration  
 National, 14, 22, 23, 30, 32, 37, 44, 45, 64, 77, 108, 109n3, 110n9, 117, 125, 126, 129, 133, 134, 136, 143, 145, 155  
 National Aeronautics and Space Administration (NASA), 3–6, 10, 12, 14, 22, 25–51, 54, 55, 58–66, 64n10, 70–74, 72n2, 76, 79, 83, 89, 93–95, 98, 99, 103, 104, 109n5, 161  
 Nations, 22, 24, 32–34, 82, 92, 108n2, 109, 111, 112, 115n30, 116, 117, 120, 123, 125, 127, 129, 130, 132, 134–136, 176, 178, 179  
 NATO, *see* North Atlantic Treaty Organization  
 Navigation, 44, 71, 97, 98, 155–156  
 Near, 5, 92, 109n5  
 Near Earth Asteroids (NEAs), 39–42, 75, 79, 81–83, 93, 103  
 Necessary, 21, 22, 47, 73, 82, 83, 101, 114, 161, 165–167, 175  
 Neighbour, 33, 36  
 Neptune, 61, 87  
 Net, 11, 85, 104  
 Network, 22, 35, 54, 58, 69, 143, 166  
 Nevada, 27, 29, 109n5  
 Niche, 6, 81  
 Nickel, 39, 57, 63, 82, 84, 87  
 Nitrogen, 164  
 North Atlantic Treaty Organization (NATO), 129, 176  
 November, 1–4, 28, 32, 35, 71, 82, 114  
 Nuclear, 38, 60, 139, 153, 154, 168, 169, 171  
 Nuclear electric propulsion, 168
- O**
- Obama, Barack, 2, 45  
 Objects, 18, 38, 39, 41, 42, 45, 63, 72, 75, 96–99, 109n3, 111, 111n11, 116  
 Observable, 97, 98  
 Observation, 6, 16, 18, 41, 54, 94–97, 99, 102, 138  
 Occasional, 10, 27, 54  
 Ocean, 16, 115, 116, 164  
*Odyssey*, 57, 71, 72  
 Offer, 3, 11, 16, 32, 40, 42, 46, 49, 60, 73, 142, 175  
 Oil, 15, 76, 83, 105  
 Old, 29, 31  
 Onto, 93, 171  
 OPEC, *see* Organization of the Petroleum Exporting Countries  
 Operate/operational, 2, 7, 15, 17, 65, 71, 88, 89, 102, 126, 136, 155, 163  
 Operation/operations, 4, 11, 21–24, 38, 42, 43, 50, 51, 69, 70, 73, 76, 82, 83, 85, 93, 94, 97, 103, 104, 115–117, 117n35, 125–127, 129, 132, 134, 136, 137, 140, 161, 163, 173  
 Optical, 55, 97–99  
 Optical Communications, 55  
 Options, 16–17, 46, 83, 87, 138n58  
 Orbital, 2, 17, 27–29, 31, 33, 37, 42, 62, 75, 94, 98, 104, 128, 153, 155, 159, 179

- Orbiter/orbiters, 70–72, 97
- Orbiting, 9, 11, 15, 18, 29, 42, 43, 59, 100, 156
- Orbits, 7, 11, 13–18, 29, 33, 35, 37, 38, 41, 43, 44, 46, 59, 62, 64, 70, 71, 75–77, 82, 83, 87, 92, 94, 95, 98, 102, 103, 109n3, 128, 134, 136, 151–155, 167–169, 171, 173, 174
- Orders, 2, 4, 8, 27, 54, 65, 125, 126, 130, 132, 136, 137, 145, 147, 152, 161, 162, 165, 168, 174
- Ore/ores, 64, 85, 87, 139, 164, 166, 167
- Organization of the Petroleum Exporting Countries (OPEC), 129, 130
- Organization/organizations, 5, 22–25, 27–29, 31, 32, 34, 42, 46–48, 50, 56, 74, 77, 78, 89, 116, 129, 131, 132, 139
- Origin/origins, 17, 30–33, 44, 143
- Origins Spectral Interpretation Resource Identification Security (OSIRIS), 42, 43, 89
- Others, 1, 4, 7–9, 11, 12, 14, 17, 24, 29, 32, 33, 35, 38, 40, 41, 43, 44, 47, 48, 56, 57, 60–63, 65, 69, 71–73, 82–84, 88, 97, 98, 104, 108–112, 108n2, 109n4, 110n7, 117, 118, 121n49, 123–125, 128, 129, 132, 133, 135–137, 138n58, 139–146, 151, 156, 159–162, 164–170, 176, 178, 179
- Outcome, 95, 97, 98, 121
- Outgassing, 163, 166
- Ownership, 4, 5, 45, 108n2, 109n6, 110n7, 111, 114, 115, 123, 124
- Oxygen, 8–12, 18, 46, 48, 54, 57, 63, 70, 73, 76, 101, 161–164, 172, 173
- P**
- Palladium, 38, 63, 75, 167
- Papers, 7, 12, 77, 128, 161
- Parachutes, 4, 27, 33, 172
- Parent, 42, 134
- Parking, 5, 6
- Participate, 32, 136, 178
- Particle, 43, 55, 57
- Partnerships, 17, 32, 33, 45, 49, 130, 136
- Parts, 7–10, 22, 24, 26, 28, 31, 41, 48, 49, 54, 56, 58, 59, 66, 69, 75, 94, 99, 103, 104, 108n2, 111, 112, 112n17, 116, 120, 124, 131, 133, 141, 156, 160, 163, 164, 174
- Passengers, 26, 30, 33, 36, 37, 173, 174
- Patent, 176
- Pathfinder, 59, 62
- Pathogens, 148
- Payloads, 9, 11, 18, 29, 32, 46, 72, 76, 78, 97, 98, 139, 168, 169, 173, 174
- Paypal, 25, 74
- PC, 59, 60
- Peace/peaceful, 124, 139, 152, 154, 156
- Peloponnesian War, 153
- Permafrost, 58, 164
- Personal, 103, 109, 113, 115, 173, 175
- Phases, 27, 71, 161–170
- Philae, 44, 136
- Philanthropist, 29, 36
- Phosphorus, 84, 164
- Physicist, 12, 37
- Physics, 153
- Pilot/piloted, 30, 37, 43, 60
- Pioneers, 1, 25, 70, 125, 140
- Pixel, 16
- Plan/planned, 10, 11, 22, 24, 25, 27, 29–31, 33–36, 39, 40, 42, 45–48, 51, 56, 58, 59, 64, 65, 69–71, 73–76, 88, 89, 94, 95, 100, 103, 104

- Planetary, 40, 41, 57, 58, 61, 66, 72, 75, 78, 99, 144, 149, 165, 176
- Planets, 5, 6, 9, 11, 16, 21, 22, 30, 36, 39, 41, 43, 46, 51, 56, 58, 61, 63–65, 69, 71–75, 77, 87, 95, 101, 105, 108n3, 109n4, 142, 147, 159, 161–164, 168, 178, 179
- Plants, 8, 10, 83, 86, 163–166, 173
- Platforms, 32, 46, 49, 70, 97
- Platinum, 10, 38, 39, 63, 74–76, 78, 82, 84, 167
- Players, 21, 22, 29, 30, 32, 51
- Plentiful, 57, 101, 104
- Plexiglas, 166, 177
- Pluto, 65
- Pod, 29
- Policy, 41, 78, 134, 148
- Political/politically, 3, 96, 107–114, 116, 117, 119n43, 120n46, 129, 130, 135, 137, 145, 151–154, 156
- Politics, 125, 130, 151, 152, 154, 156
- Population, 6, 40, 56, 59, 74, 153, 159, 162, 166, 172–175, 177, 179
- Possession, 111, 115
- Power, 8, 11, 28, 30, 37, 42, 44, 50, 55–57, 59, 60, 71, 73, 83, 87, 103, 108, 125, 128, 131, 133, 138, 145, 150–154, 156, 160, 162–165, 167, 169, 173, 174, 178
- Precious, 38, 39, 63, 74, 76–78, 82, 84, 101, 167
- Predicts, 3, 37, 51, 100
- Premium, 10, 153, 179
- President, 2, 12, 32, 35, 36, 45, 70, 100, 108, 112n17
- Pressure, 6, 130, 145, 159, 163, 166, 177, 179
- Prices, 6, 11, 30, 49, 62, 82, 85, 104, 143, 144, 173, 174, 176
- Primary, 48, 49, 56, 69, 71, 94, 95, 97, 99, 103, 145, 162, 163, 178
- Prime, 50, 130
- Principle, 108, 109, 109n6, 111–116, 111n11, 120n45, 124–126, 129, 130, 132–135, 137
- Print/printing, 17, 39, 49, 75, 148, 150
- Printer, 48, 49, 87
- Privateers, 25, 34, 37, 56, 64
- Privately, 2, 4–7, 17, 18, 21–26, 28, 29, 32, 34, 37–40, 50, 57, 74, 103, 104, 109, 109n4, 109n5, 109n6, 110, 110n8, 110n9, 113–115, 117, 117n35, 119n44, 120n45, 125, 130, 135, 145, 147, 148, 171, 173, 176
- Probes, 33, 38, 43–45, 54–57, 59, 62, 69, 70, 100–104, 176
- Problems, 3, 16–18, 27, 28, 35, 59, 73–76, 83, 86, 104, 116, 123–140, 143–148, 160, 165
- Process/processing, 15, 26, 28, 41, 49, 51, 61, 64, 72, 83–87, 94, 102, 128, 133, 135, 139, 163, 164, 175
- Produce/produced, 4, 7, 8, 39, 42, 48, 64, 73, 75, 95, 98, 101, 134, 147, 148, 162, 163, 165, 167, 169
- Production, 8, 17, 39, 54, 62, 72, 82, 102, 104, 134–136, 139, 163, 167, 177
- Profile, 28, 58, 156
- Profits, 24, 48, 50, 85, 127, 138, 144, 167
- Program, 1, 25, 26, 59, 61, 62, 66, 88, 94, 98, 102, 119n43, 130, 131, 161, 173
- Programme/programs, 14, 29, 31, 32, 34, 41, 43–45, 47, 48, 54, 69, 154, 156
- Progressing, 2, 5, 11, 29, 30, 35, 51, 59, 70, 73, 76, 100, 102, 178, 179
- Project, 3, 24, 33, 35, 36, 44, 45, 55, 62, 70, 72, 73, 76, 88, 96, 102, 160



- Propellant, 11, 24, 35, 39, 42, 46, 47, 72, 85, 100, 168, 169, 173
- Propelled, 44
- Property, 88, 95, 96, 98, 99, 108n2, 109, 109n5, 109n6, 111, 113–118, 118n42, 120, 131, 135, 146, 149, 176
- Proposed, 26, 75, 76, 82, 89, 95, 104, 112, 129, 138, 165
- Propulsion, 8, 27, 42, 45–47, 49, 51, 61, 99, 168, 169, 173, 174
- Prospect/prospecting, 2, 39, 48, 56, 57, 70, 81, 89, 103, 104, 130, 145, 166, 178
- Prospector, 48, 82, 103, 104
- Prototype, 31, 36, 55
- Protracted, 63, 71, 84, 142
- Proved, 42, 54
- Province, 108, 124, 125, 134, 135
- Proving, 30, 45, 109n5
- Provisions, 108, 110, 113, 114, 114n21, 120, 120n45, 129, 130, 134
- Proximity, 81, 94
- Publication, 44, 148
- Purchased/purchasing, 136, 138, 144, 147
- Purposes, 23, 47, 51, 63, 82, 83, 94, 107, 120, 131, 138, 139, 155, 156, 161, 162, 176
- Push, 6, 17, 32, 88, 100, 105, 110n8, 117n35
- Q**
- Quality, 49, 50, 66, 69
- Quantum, 18, 161
- Quarters, 42, 62
- R**
- Race, 2–4, 6, 13–19, 29, 38, 56, 73, 77
- Radar, 34, 54, 58, 72, 97, 98
- Radiation, 8, 34, 46, 57, 59, 63, 72, 101
- Radio, 3, 54, 55, 99, 147
- Radioactive, 24, 139
- Range, 43, 58, 59, 62, 133, 144, 148, 156
- Rare, 9, 10, 38, 63, 82, 84, 96, 101
- Ratifying, 27, 108, 112, 112n19
- Ratio, 168, 169, 173
- Reactors, 60, 87, 164, 166
- Reality, 3, 4, 6, 10, 21, 22, 26, 38–40, 48, 56, 64, 69, 82, 100, 114n21, 118, 154
- Recognizing, 131
- Reconnaissance, 24, 45, 154, 155
- Red, 72, 147
- References, 77, 108n2, 115–116, 119, 120
- Refining, 31
- Reflected, 6, 143
- Refuel/refueling, 9, 11, 46, 48, 70, 133, 134
- Refused, 6, 109n5, 112, 112n17, 113
- Registry, 111, 176
- Regolith, 41, 43, 93, 100, 163, 166
- Regular, 29, 56, 74
- Regulate/regulations, 22, 125, 130, 138
- Relating, 41, 87, 111
- Relations, 116n34, 134, 151–153
- Releasing, 40, 164
- Rendezvous, 43, 46, 174
- Repatriate, 144
- Reportedly, 32, 33, 45, 62, 64, 65, 104, 109n5, 116n34, 118n39, 120n45
- Republic, 112
- Requirements, 2, 27, 39, 46, 72, 88, 134, 161, 165, 169, 174
- Rescue Agreement, 22, 23
- Research, 3, 12, 17, 32, 42, 45, 63, 64, 66, 100, 104, 152, 156, 159, 161
- Researchers, 15, 36, 58, 67, 73, 76
- Resistance, 63, 120, 148

- Resources, 2, 3, 6, 7, 10, 12, 14, 35, 36, 39–41, 45–49, 54, 69–79, 82, 87, 94, 96, 99–102, 104, 105, 107–121, 123, 125–127, 129, 132–137, 139, 140, 152, 153, 159–162, 166, 173, 175, 176, 178, 179
- Results, 7, 8, 30, 48, 66, 93, 95, 101, 104, 105, 115, 116, 119, 120, 153, 164, 169, 172, 173, 178
- Resupply, 11, 28, 29, 35, 134
- Retrieving, 127–129
- Returning, 2, 12, 37, 78, 83
- Reusable, 17, 29, 31, 35, 37, 167, 168
- Revealed, 33, 58, 78
- Rhenium, 63, 167
- Rhodium, 63, 84, 167
- Riches, 16, 28, 47, 75, 76, 81, 104, 117, 134, 156, 164, 167
- Richness, 87
- Rigid, 85, 177
- Risks, 2–4, 23, 24, 27, 38, 63, 70, 86, 88–89, 94, 114n21, 118n42, 128, 132, 140, 147, 148
- Risky, 81, 130, 135
- Robotic, 137
- Robotics, 4, 58, 60, 64, 65, 69, 72, 83, 85, 137–139, 156, 161, 163, 166, 167, 176
- Robots, 17, 45, 54, 56–62, 64, 65, 70, 83, 84, 88, 137–139
- Rockets, 2, 7–9, 11, 12, 14–18, 26–31, 33, 35, 36, 42, 44, 47, 48, 50, 57, 63, 64, 70, 72, 76, 83, 88, 96, 100, 102, 151, 153–155, 161, 171
- Rocks, 31, 41–43, 47, 48, 74–78, 85, 93, 96, 100, 101, 104
- Room, 13, 17, 26
- Roscosmos, 33, 36
- Rosetta, 42, 44, 136
- Rough, 75, 143, 176
- Rovers, 10, 17, 33, 34, 57, 58, 62, 73, 76
- Rules, 65, 129, 131–133
- Ruling, 130, 168
- Russia, 14, 27, 33, 37, 40, 54, 65, 112, 120n46, 148, 152, 155, 156
- Russians, 1, 14, 22, 24, 25, 28, 61, 148
- S
- Safety, 24, 30, 63, 88, 110n9, 128, 135, 137, 165
- Sails, 45, 167, 174, 177
- Sales, 84, 115n29, 144, 146, 147, 159, 179
- Salvage, 111, 111n11, 127–128
- Satellites, 2–4, 6, 7, 10, 11, 14–18, 22, 24, 30, 32, 34, 36, 42, 45, 49–51, 54, 62, 69, 78, 87, 95, 99, 102, 128, 151–156
- Saturn, 171
- Scarce/scarcity, 9, 105, 136
- Scenarios, 3, 11, 77, 85, 109n3, 120n45, 132n47, 138, 152, 153, 155, 160, 163
- Schmidt, Eric, 56, 77
- Scholars, 1, 3, 5, 126, 146
- Sciences, 1, 22, 23, 28, 31, 35, 39, 41, 46, 50, 56, 58, 59, 61–63, 66, 70, 71, 75, 81, 96, 99, 104, 137, 148, 152, 154
- Scientific, 31, 37, 38, 40, 41, 58, 62, 94, 98, 99, 101, 103–105, 108, 130, 152, 154, 155, 161, 166
- Scientists, 1, 9, 12, 39, 40, 63, 65, 82, 88, 146, 153, 156
- Scout, 69
- Seas, 3, 65, 108n2, 116, 152, 164
- Sections, 28, 75, 144, 176
- Sector, 6, 7, 13, 15, 19, 32, 38, 43, 50, 77, 110n9
- Security, 22–25, 30, 110n9, 132, 137, 138, 152, 154, 156
- Seizing, 145, 160
- Sell, 62, 78, 113, 115n29
- Sellers, 144

- Senate, 114, 114n21
- Sensing, 134
- Sensors, 69, 102
- Sets, 12, 16, 18, 29, 36, 59, 65, 71, 73, 76, 82, 83, 129, 133, 155, 172, 178
- Settlements, 26, 29, 36, 38, 136, 142, 160–163, 166, 176, 177
- Settlers, 131, 132, 163, 175, 176
- Shackleton, 9, 11, 18
- Shares/shared, 33, 127, 134, 136, 143
- Shell, 172
- Shelter, 36, 162
- Sheppard, 32, 33
- Shield, 57, 88, 101, 166, 177
- Ships, 2, 3, 7–10, 26, 28, 57, 63, 137
- Shoemaker, 5, 109n5
- Shooting, 1, 152
- Shuttles, 25–27, 29, 38, 46, 48, 61–63, 76, 77, 171
- Side, 41, 101, 112n17, 154, 177
- Sierra Nevada Corporation, 31
- Sign, 112, 121
- Signals, 4, 30, 146, 155, 156
- Silicon, 12, 88
- Silver, 63, 75, 167
- Single, 10, 42, 47, 62, 98, 108n2, 147, 165, 167, 172, 177
- Single stage to orbit (SSTO), 17, 168, 173
- Singularity University, 77, 102
- Size/sized, 2, 7, 15, 16, 18, 29, 74, 76, 85, 94, 96, 103, 159, 164, 166, 174, 179
- Sky, 1, 57
- Skylon, 17
- Sleep, 4, 8, 54
- Social, 146, 150, 159, 175, 179
- Societies, 3, 78n14, 84, 112n17, 143, 146–148, 152, 153, 162, 164, 175, 177–179
- Software, 54, 70, 98, 101, 137, 139, 144
- Soil, 9, 10, 12, 16, 31, 41, 58, 59, 61, 64, 66, 73, 86, 163
- Solar, 8, 12, 22, 36, 38, 40, 42, 44, 45, 58, 65, 72, 75, 86, 87, 99, 100, 104, 109n4, 141, 145, 147, 149, 161, 162, 164–168, 174, 176, 178, 179
- Source/sourcing, 8, 9, 46, 47, 66, 139, 155, 159, 164, 176, 177, 179
- Sovereign/sovereignty, 5, 40, 108, 108n2, 109, 116, 117, 118n42, 120n45, 121n49, 124, 145, 149, 154, 155, 176
- Soviet, 13, 14, 22, 24, 108, 112, 153–155
- Soyuz, 22, 25, 26
- Space, 1–19, 93–105, 107–121, 142
- Spacecraft, 4, 5, 7, 11, 14, 16, 17, 25, 27, 31, 34, 35, 37, 42–44, 46–48, 54, 55, 62, 65, 71, 72, 79, 84, 93, 98, 102–104, 109n5, 115n30, 126, 134, 139, 167, 169, 173
- Spacefaring, 130, 149
- Spaceflight, 14, 25–32, 34, 37, 61, 62, 64, 156
- Spacepower, 152, 155
- Spaceships, 33, 35, 101
- SpaceX, 6, 7, 16, 25–51, 64, 74, 74n4, 103
- SpaceX Falcon, 11
- Sparta, 152, 153
- Species, 1, 3, 9, 36, 63, 75, 142, 146–149, 151
- Spectral, 41, 42
- Spectrum, 55, 64, 84
- Speculation, 33, 60, 140
- Speed/speeds, 18, 54, 65, 66, 98, 142, 147
- Sphere, 10, 35
- Spin, 84, 88
- Spite, 28, 66
- Split, 29, 101, 109

- Sputnik, 14, 153  
 SSTO, *see* Single stage to orbit  
 Stake, 6, 23, 152  
 Staking, 6, 129, 132  
 Standards, 7, 18, 40, 70, 75, 97, 129,  
     131, 167, 179  
 Stargazer, 66  
 Starliners, 26–28  
 Stars, 1–3, 19, 43, 54, 105, 108n3,  
     142, 147  
 States, 1, 5, 6, 23, 24, 34, 36, 39, 40,  
     42, 43, 48, 50, 74, 76, 77, 87,  
     94, 105, 108, 108n1, 108n2,  
     109n4, 110–114, 110n8, 110n9,  
     111n12, 112n19, 115n29,  
     115n30, 117, 118n39, 118n42,  
     119, 119n43, 119n44, 120,  
     120n46, 121n49, 124–126,  
     128–130, 132–136, 138, 139,  
     149, 152, 154, 155, 177, 178  
 Stations, 3, 7–11, 14, 18, 26–29, 35,  
     36, 42, 46, 54, 57, 62, 79, 82,  
     84, 124, 126, 134, 135, 139  
 Steady, 32, 61  
 Stellar, 22, 34, 47, 100  
 Stephen, 149  
 Steppingstone, 26, 36  
 Stockpiling, 127, 134  
 Storage, 5, 135  
 Stored, 2, 11  
 Strategy/strategic, 41, 77, 78, 95, 152,  
     153, 155  
 Structures, 29, 38, 39, 43, 45, 58, 76,  
     79, 84, 95, 96, 98, 99, 101,  
     162, 163  
 STS-95, 62  
 Study, 34, 39, 44, 58, 95–97, 99, 136  
 Suborbital, 17, 30, 33  
 Subsequently, 40, 41, 109n5, 114  
 Substance, 24, 40, 57, 66  
 Subsurface, 46, 48, 58, 73, 98, 135  
 Successful, 10, 11, 18, 35, 44, 56,  
     59–61, 71–73, 76, 127, 128, 174  
 Sugar, 160, 170, 178  
 Suitable, 31, 64, 70  
 Sun, 34, 43, 47, 56, 59, 75–77, 87,  
     101, 142, 147, 151  
 Sunlight, 164, 165  
 Superheated, 46, 48  
 Superpowers, 127, 136, 155  
 Supplies, 11, 23, 26, 28, 35, 39, 42,  
     45, 51, 61, 64, 166, 167, 173  
 Surface, 4, 6, 7, 10, 12, 14, 17, 26, 31,  
     33, 34, 41, 43, 44, 46, 54, 58, 61,  
     62, 65, 69, 71, 72, 75, 85–87, 95,  
     99, 102, 108n3, 109n5, 135, 142,  
     160–163, 165–169, 173, 176  
 Surveys, 41, 43, 63, 103, 105, 161, 176  
 Survive/survival, 10, 37, 37n15, 63, 75,  
     117n37, 134, 178  
 Sustainable, 8, 35, 54, 57, 71, 74, 82,  
     133–135  
 Systems, 8, 10, 16, 22, 43, 48, 54, 61,  
     65, 69, 75, 88, 95, 96, 98, 99,  
     103, 105, 129, 151–153, 156,  
     164, 167, 169, 173, 174
- T
- Tank, 40, 101  
 Targets, 17, 28, 41, 43, 46, 47, 69, 71,  
     81, 85, 89–92, 95, 96, 98, 101,  
     102, 104, 147, 152, 166, 178  
 Taxation, 134, 135, 138  
 Taxes, 24, 125, 134, 136–138,  
     138n58, 140  
 Technological, 3, 4, 13, 21–51, 53, 69,  
     78, 81, 84, 93, 100, 105, 153,  
     154, 156, 160, 161, 163, 167,  
     171, 175, 179  
 Technologies, 2–4, 6, 9, 11, 14, 16, 18,  
     21, 22, 32–34, 38, 44, 45, 47,  
     49, 50, 53, 55–57, 61, 63, 64,  
     70, 73, 76, 82, 83, 88, 94, 95,  
     97, 101–104, 117n38, 121, 125,  
     134, 135, 139, 148, 149,  
     152–154, 156, 161, 169,  
     170, 172

- Technology Readiness Level (TRL), 55  
 Telecommunications, 14, 71  
 Teleoperated, 137  
 Telescopes, 55, 62, 98, 99, 103  
 Temperatures, 16, 87, 163, 165  
 Terra, 153  
 Terraformed/terraforming, 73, 159–170, 176  
 Terrain, 21, 73, 176  
 Terrestrial, 4, 40, 41, 43, 64, 82, 88, 117n38, 125, 133, 140, 152, 160, 165, 167, 175, 177, 179  
 Territorial, 119, 120, 120n45, 121n49  
 Territories, 3, 4, 26–27, 70, 118n42, 155  
 Test/tests, 10, 16–18, 26–28, 30, 33, 36, 37, 43, 45, 47, 55, 59, 66, 69, 94, 97, 102, 103  
 Texas, 27  
 Theoretical, 37, 82, 95  
 Threat, 88, 96, 111, 137–140, 145, 148  
 Thrust, 46, 48, 167, 174  
 Thucydides, 151, 153, 156  
 Time, 1, 2, 4, 6, 10, 12–14, 18, 22, 24, 27, 29–31, 33, 35, 36, 38, 39, 43, 45, 46, 48, 54, 55, 57, 62–65, 70–73, 78, 97, 102, 103, 105, 108, 114, 140–143, 146, 147, 149, 152, 155, 161, 166, 168, 169, 173, 175, 177  
 Timeline, 34, 86, 98–100  
 Titanium, 12, 63, 88  
 Today, 14, 19, 57, 64, 70, 126, 135, 145, 153, 155, 160, 171, 175, 176  
 Tonne, 14, 35, 163, 165, 166, 169, 171, 177  
 Tons, 10  
 Totally, 43, 67  
 Touchdown, 33, 46, 70  
 Touched, 30, 33, 43, 58, 62  
 Tourism, 21, 22, 30, 32, 34, 38, 81  
 Tourist, 10, 17, 22, 23, 45, 63  
 Trade/traded/trading, 2, 51, 83, 117n38, 131, 136, 139, 141–150, 160, 167, 168, 170, 178  
 Trajectory, 73, 75, 76, 93, 94, 171  
 Transceiver, 55  
 Transmissions, 146, 147  
 Transmit/transmitting, 54, 55, 87, 144, 146–148  
 Transport/transporting, 2, 25, 28, 30, 31, 84, 86, 115n29, 132, 134, 139, 143, 166–168, 171–174  
 Transportation, 28, 64, 142, 159, 167, 168, 173–175, 179  
 Travelers/travellers, 23, 26–30, 59, 70, 74  
 Travels, 1, 3, 17, 19, 28, 30, 31, 34, 36, 37, 39, 53, 58–59, 83, 99, 103, 142, 161, 171  
 Treaty/treaties, 108, 110n9, 112n15, 116n33, 118, 119n43, 119n44, 121, 124, 126, 128–130, 132  
 Trillion, 15, 47, 76, 176  
 Trips, 26, 30, 35, 37, 57, 64, 85, 171, 173, 175  
 TRL, *see* Technology Readiness Level  
 Trump, Donald, 12, 32, 35, 36, 45, 70  
 Tunnels, 124, 140, 166
- U**  
 UAE, *see* United Arab Emirates  
 UK, *see* United Kingdom  
 ULA, *see* United Launch Alliance  
 UN, *see* United Nations  
 Union, 149  
 Union of Soviet State Republic (USSR), 13, 14, 153, 154  
 United Arab Emirates (UAE), 7, 118n39, 123  
 United Kingdom (UK), 16, 17, 32, 149, 170, 178  
 United Launch Alliance (ULA), 17, 26, 28, 30, 32, 36

United Nations (UN), 22, 23,  
126–133, 135, 176  
United Nations Office for Outer Space  
Affairs (UNOOSA), 15  
United States of America (USA), 4, 5,  
7, 13, 14, 17, 108, 110–113,  
110n8, 110n9, 112n19, 115n29,  
115n30, 117, 118n39, 118n42,  
119, 119n43, 120, 120n46,  
121n49, 125, 128, 154–156,  
160, 171, 176–178  
Unity, 37  
Universe, 57, 146, 176  
University, 10, 15  
Unknown, 3, 57, 96  
Unmanned, 62, 63, 65, 77, 142  
UNOOSA, *see* United Nations Office  
for Outer Space Affairs  
Update, 2, 4, 22n2, 54  
USA, *see* United States of America  
Useful, 6, 8, 63, 69, 85, 119n43, 142,  
146, 147, 149, 153, 156, 161,  
162, 164, 165, 168, 173, 178  
USSR, *see* Union of Soviet State  
Republic  
Usual, 66, 82  
Utilize, 42, 47–49, 51, 55–57, 59, 60,  
70–72, 79, 82, 98, 113

V

Vacuum, 57, 60, 109n6, 133  
Valuable, 3, 8, 10, 11, 45, 48, 58, 61,  
75, 78, 82, 84, 100, 102, 105,  
143, 175–177  
Vapor/vapour, 73, 76  
Vehicles, 17, 24, 27, 28, 30, 32, 33, 36,  
44, 46, 51, 58, 65, 69, 70, 85, 87,  
93, 94, 98–101, 103, 169, 171  
Ventures, 3, 15, 26, 30, 38, 50, 56, 58,  
63, 75, 81–83, 89, 104, 130  
Verification, 147  
Viability, 9, 71, 83, 159–179

Viable, 24, 38, 42, 47, 50, 81, 105,  
162, 178  
Vicinity, 71, 77, 135  
Video, 34  
Viking, 4, 59, 66  
Virgin, 6, 17, 23, 29, 30, 32–34, 36,  
37, 45  
Virginia, 27, 28  
Vision, 31, 48  
Voyager, 54, 54n2, 61, 66n13  
Voyages, 11, 38, 142  
VSS, 36, 37

W

Warfare, 151, 152, 156  
Wars, 1, 4, 13, 14, 38, 74, 77, 78, 133,  
148, 151–153, 155, 177  
Washington, 56, 69, 72, 100,  
116n33, 154  
Waste, 8, 175  
Watching, 1, 2  
Waters, 2–4, 7–12, 18, 36, 40, 42,  
45–48, 50, 57, 58, 63, 64,  
69–76, 78, 81, 82, 84, 100–102,  
121n49, 134, 135, 149,  
162–164, 173, 177  
Wave, 32, 54, 55, 102, 105, 167, 177  
Wealth, 39, 43, 44, 46, 48, 51, 63, 70,  
77, 78, 95, 128, 130, 160, 164,  
178, 179  
Weapons, 138, 139, 152,  
154, 156  
Weather, 3, 73–76  
Weightlessness, 37, 63  
Wells, H.G., 1  
Wikipedia, 74n6  
Wind, 38  
Windows, 33, 98, 99, 128  
Work, 2, 3, 5, 14, 16, 17, 27, 31, 33,  
55, 65, 73, 76, 83, 85, 113,  
120n46, 126, 129, 130, 133,  
137, 138, 147, 148, 154

- Workplace, 22, 94  
Worlds, 1–3, 7, 10, 14, 17,  
37–39, 46, 53, 56n4, 57,  
59n8, 60, 65, 76, 87, 98,  
100, 102, 103, 105, 115,  
125, 132, 135, 136,  
141–145, 148, 151, 153,  
159, 160, 163, 167, 171,  
173, 175, 177–179
- Worldwide, 15, 24, 32, 42, 49, 54, 56,  
76, 96  
Worse, 3, 154, 156  
Wrote, 1, 19
- x  
Xe, 90, 91  
Xprize, 17, 34, 37