

# Index

- A-crisis 30, 35–37, 81, 83–87  
academic freedom 114–116, 124, 129, 132  
accountability 81, 85, 133  
adversarial collaboration 118  
AI (artificial intelligence) 7, 53, 147–149  
anchoring bias 57  
applicability 27  
applicability crisis 4–5, 24, 27, 101, 114  
arXiv 83, 134–135
- B-crisis 30–31, 35–37, 81–85, 87  
Bacon, Francis 59–62, 64, 151  
Bargh, John 12, 22–24  
Bayh-Dole Act 71, 73  
Bem, Daryl 11–12, 22–23  
big team science 6, 108–110, 112–113, 116, 118, 120, 127, 129–130, 135–136, 138  
biology 16–18, 27, 31, 75, 87, 90, 97, 109, 111, 141  
bottom-up (coordination) 6, 25, 70, 107, 110, 125, 128  
Boutroux, Pierre 63–64  
Brunschvicg, Léon 63–64  
bullshit jobs 54  
Bush, Vannevar 68–69
- Candolle, Alphonse de 63  
capitalization of knowledge 51, 69–70  
CERN (Conseil Européen pour la Recherche Nucléaire, the European Organization for Nuclear Research) 109, 131  
chemistry 18, 27, 31, 59  
citation 38, 40, 73, 120, 139–141  
community-level coordination 6, 108, 112–113  
confirmation bias 57  
consensus 6, 24, 102, 110, 112–113, 115–116, 119, 125, 128–129, 132, 135–137, 139, 142  
consensus conference 6, 112, 125, 128–129, 132, 135–137  
conservatism 42, 45, 75, 95, 98, 105, 118–119, 129, 131  
consortium 14, 16, 24, 26–27, 108–113, 116, 126–127, 129–132, 135–136, 138–141, 143  
coordination 4, 6, 64, 94–95, 103–104, 106–110, 112–121, 123, 125, 127, 129, 132, 136–137, 139–144, 148–150, 153  
coordination costs 119–120, 127, 129  
Covid 103, 109–110, 120  
credibility 4–5, 13, 149  
CRedit 135–136  
cultural factors 41, 46, 57, 76, 88, 139, 142
- Daston, Lorraine 106–107  
data reuse 92, 95  
data-dredging 34, 148  
degrowth (economic) 48, 52, 103  
Descartes, René 62  
Diamond Open Access 137, 139, 153  
diversity 14, 111–112, 116–118, 129, 142  
DORA (Declaration on Research Assessment) 141  
Doyen, Stéphane 12, 22  
DRAGNet 111, 116–117  
Duhem, Pierre 63–64
- economic progress 65–66  
economics 5, 16–17, 25–26, 31, 75  
education 17, 49, 51, 53, 63–64, 67–68, 140, 144, 149–150  
effect size 14, 16–17  
engineering 5, 18, 28–29, 31, 59, 68, 75, 77  
entrepreneurial university 39, 51, 70–71  
ERC (European Research Council) 43–44, 124, 132  
ESPP (European Strategy for Particle Physics) 112–113  
Etzkowitz, Henry 39, 51, 70–71  
European Commission 49, 76–77, 93–94, 125, 136  
ex-novation 48  
external validity 23–24, 95
- fabrication 34, 37, 147  
FAIR data 93  
falsification 96, 98  
Fitoussi, Jean-Paul 52  
Freilich, Janet 18, 73–74

- French neopositivism 64
- funding 5–7, 38–39, 42–45, 69, 89, 112, 123–133, 135–137, 139, 142, 145, 149
- Galison, Peter 106–107
- GDP (Gross Domestic Product) 48–49, 52–53, 56
- GDPR (General Data Protection Regulation) 88
- generalizability 4–6, 24, 26–27, 30–31, 34–36, 75, 90, 109–110, 112, 134
- generalizability crisis 4–5, 26–27, 30, 109
- Godin, Benoît 45–48, 59, 61–64, 66–67
- Gollum effect 87
- Gradmessung, Internationale 106–108, 110, 115, 120, 127, 129
- grants 1–3, 39, 42–44, 61, 69, 72, 92, 124, 129–130, 137, 147
- h-index 139, 141
- HARKing (Hypothesizing After the Results are Known) 84
- Henrich, Joe 23, 26
- hiring 7, 39, 54, 72, 93, 138–140, 143–145
- Horizon 2020 76–77
- Horizon Europe 77–78, 123, 125, 137, 142
- Human Genome Project 109
- humanities 74–78, 90
- humility 38, 151
- idiosyncrasies 106–107, 120
- imitation 47–48
- inclusivity 47, 75–76, 93, 117, 123, 136
- industry 23, 40, 46–47, 50–51, 55, 64–66, 68–69, 71–72, 74, 76–78, 100–102, 114, 123, 131
- inequality 50, 55–56, 117
- innovation fatigue 2–3, 5, 151, 153
- innovation science 17, 48, 55
- innovation-speak 49–51
- integrity (scientific) 94, 149, 151
- interdisciplinary fields 40
- internal validity 22–24, 95
- invisible hand 104, 108
- Ioannidis, John 12–13, 15, 28
- journals 5–7, 13–14, 16, 18–19, 27–29, 33–36, 38–39, 41, 74, 83–86, 94, 117, 123, 133–137, 139, 141–142, 145
- Kuhn, Thomas 97–99, 105
- Lakatos, Imre 99, 121
- linear model (of innovation) 50–51, 67, 70–72, 75
- low-income countries 88
- Luddism 57
- maintenance 31, 48–49, 94, 139
- Many Labs 14
- Many Primates 117
- many-analyst studies 25
- ManyBabies 110–111, 116–117
- mega-mistakes 119, 130–131, 136, 145
- Merton, Robert K. 37–39, 73
- meta-science 139, 143
- methodology 3–5, 12, 21–22, 24–26, 29–31, 35, 57, 59, 62, 74, 82, 94, 113, 125–126, 129–130, 133–134, 136–138
- methodology and measurement crisis 24
- metrics 53, 107, 135, 137, 139, 141–142
- misconduct 85
- narrative CV 141, 144
- NIH (National Institutes of Health) 124, 133, 150
- normal science 97–99
- Nosek, Brian 16, 35, 81–82, 84–85, 134
- novelty bias 43–44
- NSF (National Science Foundation) 18, 43, 66–69, 75, 92, 129, 132, 150
- NutNet (Nutrient Network) 111
- NWO (Dutch Research Council) 43, 126, 132
- observer bias 57
- OECD (Organization for Economic and Cultural Development) 46–47, 65, 67
- OMERACT (Outcome Measures in Rheumatology) 112–114, 125–127
- open access publishing 5, 7, 83, 87, 90, 92, 94, 137, 153
- open peer review 137

- open research data 90
- Open Research Europe 136–137, 142
- open science 4–6, 14, 78, 81–83, 86–90, 92–95, 111, 134, 145
- openness 6, 133
- p-hacking 84
- p-values 12
- P5 (Particle Physics Project Prioritization Panel) 112–113
- patents 18, 27–28, 40, 45, 55, 70–75
- pay-walls 83
- peer review 25, 43, 83, 86, 94, 132, 134–135, 137–138, 153
- Pearce, Charles S. 95, 104, 106–110, 112–121, 123, 125, 129, 132, 142, 149
- Pearce-style coordination 95, 104, 106–110, 112–121, 123, 125, 129, 132, 149
- Pearce-style coordination 2.0 114
- physics 5, 11, 18, 27, 31, 50, 59, 85, 102, 108, 112, 125
- Picard, Jacques 63–64
- Polanyi, Michael 104–108, 114–115, 117–118, 120–121, 124
- poly-crisis 4–5, 11, 31, 33, 78, 82, 94–95, 127, 132, 143, 145, 147–149, 151
- Popper, Karl 19, 95–99, 105
- pre-printing 83–84, 87, 94, 131, 134, 137
- preregistration 24–25, 86–87, 93–94
- prioritization (of research) 112, 117, 125–126, 149
- progress 5, 46, 48, 60–62, 65–67, 78, 85, 95–96, 98, 105, 119, 143, 145, 149
- PSA (Psychological Science Accelerator) 109–110, 116–117, 120
- psychological factors 11, 13, 23, 28, 57, 66, 125, 144
- psychology 5, 11, 13–14, 16–17, 20–22, 24–31, 64, 75, 81, 125, 144
- public trust in science 21, 31
- public-private partnerships 101
- publication bias 13, 15, 33–35, 37, 57, 84, 141
- publish or perish 33–35, 37
- QRPs (questionable research practices) 34, 37, 73, 148–149
- rankings (of universities) 40
- Red area 30–31, 35, 57, 81–83, 87, 90, 94–95, 102, 119, 121, 126, 134, 136, 143, 149, 151
- red teams 131–132, 141
- reform 4, 58, 63–64, 81, 145, 150–151
- Reformation 62
- registered reports 7, 134–135, 137–138
- reliability 19–22, 24, 30, 88, 95, 130
- replicability 14, 17, 26–27, 35, 74
- replication 4–7, 12, 14, 16–22, 24, 26–27, 30–31, 34–36, 43, 74, 82–84, 86–87, 90, 94, 109, 111, 126, 134, 142, 147–149, 151
- replication crisis 4–5, 16–18, 21–22, 24, 26–27, 30, 147
- reproducibility 14, 16, 20–22, 26, 30, 34, 36, 43, 81–82, 92, 111–112, 149
- Reproducibility Project: Cancer Biology 16, 111
- Reproducibility Project: Psychology 14, 20, 22, 30, 81
- research programmes 6, 63, 121, 123, 125–139, 143–145
- reuse (of data)
- revolutionary science 97–98
- rewards 36–40, 45, 64, 74, 86, 92, 132, 140, 142, 148, 151
- Russell, Andrew L. 49–50, 52, 65
- Sarewitz, Daniel 101–103
- Schumpeter, Joseph 52, 65
- SDGs (Sustainable Development Goals) 47–48
- self-coordination 104, 107, 114
- self-denial 107, 110, 114
- Sen, Amartya 52
- sensationalism 41–42
- slow science 45, 103
- social sciences 17, 25, 50, 74–78
- Solow, Robert 65
- SSH (social sciences and humanities) 76–77
- standardization 52–53, 68, 75, 88–89, 108, 113, 117, 125, 133, 136, 149
- state interference 132, 145
- statistical power 13, 34, 86
- STEM (Science, Technology, Engineering, and Mathematics) 49–50, 76
- Stengers, Isabelle 99–102, 114

- Stiglitz, Joseph 52, 56  
structural factors 31, 44, 57, 92, 133
- tacit knowledge 106
- team science 6, 108–110, 112–113, 116, 118,  
120, 127, 129–130, 135–136, 138, 144, 151
- theory crisis 4–5, 24, 29–30
- theory development 5, 24, 29–30, 35–36, 90, 95
- trans-disciplinary research 114
- transparency 82, 141, 148–149
- triple helix (model of innovation) 51, 67, 69–72,  
76, 78
- Type 1 error 15, 20
- Type 2 error 20
- unemployment 53, 56
- UNESCO (United Nations Educational,  
Scientific and Cultural Organization) 93–94
- universities 5, 33, 38–40, 43, 51, 66, 68–69,  
71–73, 101, 123, 140, 142, 145, 150
- Vinsel, Lee 49–50, 52, 65
- WCRP (World Climate Research Program)  
112–113
- Weinberg, Alvin 103
- WEIRD (Western, Educated, Industrialized,  
Rich, and Democratic) 23, 26, 116
- well-being 3, 45, 52–53, 55–56, 110, 113
- Wellcome Open Research 136–137, 142
- Wisnioski, Matthew 46, 65–66, 151
- Zuiderwijk, Anneke 89–90, 92