

# Index

- access to information 39–41  
accountability 31, 36, 37, 39  
    public accountability frame 65, 67, 68–9  
accuracy  
    journalistic 63, 93  
    scientific 63  
advocacy *see* issue advocate role of  
    scientists; promotional metaphors  
alphabet of life metaphor 189  
animal research 123–4  
antibiotic resistance and apocalypse  
    metaphors 210–14  
ascent and descent metaphors 206–8  
audience research 65–6  
Ausubel, J. et al. 163–4  
autism  
    genetic factors in 139–41, 155–7, 158  
    and MMR vaccine 101–2, 105, 113  
Avisé, J. 137, 138, 158  
  
Bacon, Francis 238, 239  
balanced reporting 101–3, 105  
    and Science Media Centre (SMC) 120  
Ballinger, L. and MacRae, F. 223  
Balmer, A. and Martin, P. 220, 222  
Baltimore, D. 34–5, 158  
barcoding metaphor of DNA (Hebert)  
    158–65, 171–6 *passim*, 179–80  
Barry, P. 157  
‘basic-applied’ distinction 36–7  
Benhabib, S. 83, 84  
biotechnology 34–5  
    genetic modification (GM) debate  
        113–14  
    *see also* stem cell/cloning research;  
        synthetic biology (Craig Venter)  
Bono, J.J. 9, 10, 178, 186  
book of life metaphor 188, 189, 197, 222–3  
Borchelt, R. 25, 27  
Boyd, R. 172  
  
breakthrough metaphors 26–8, 214–15, 239  
    case study 203–10  
    sociology of expectations 201–2  
Brigham Young University 161  
Brock, D. 84–5  
BSE (bovine spongiform encephalopathy)  
    31, 110  
Bubela, T. et al. 2, 10, 11–12  
Bush, George W. 61–2, 68, 193–4  
Bush, V. 32, 33, 34, 238  
  
cancer prevention claim 118  
Cheow, E.-T.C. 205  
Clayton, E. 86  
climate change 59, 60, 102, 228–30  
Clinton, Bill 44, 189–90, 193  
cloning *see* stem cell/cloning research  
code metaphor 188–9, 223–4  
cognitive linguistics perspective 8, 10  
    metaphors as mappings 185, 186, 196,  
        221  
Cole, P. 12  
communication technology 57  
computer/programming metaphor 223–4,  
    225–7, 231  
conceptual metaphors 8, 9  
Condit, C. 132, 135, 189  
‘conduit’ metaphor of communication 1–2  
Conner, S. 223, 229–30  
constitutive metaphors 172, 173, 174, 176  
context-specific science 36–7  
contextualization 38  
credible sources 11–12  
criticism  
    journalistic 98–9  
    *see also* peer review  
cross-cultural perspective *see* public  
    decision-making  
‘cultural fingerprints’ in scientific research  
    87

- Davies, N. 120
- Dawkins, R. 66, 68, 132, 133, 138–9
- ‘deficit’ model of knowledge 53–4  
 alternatives to 54–5  
 and ‘conduit’ metaphor of  
 communication 1–2
- descent and ascent metaphors 206–8
- d’Hoop, D. 2, 201
- Dickson, D. 26
- discourse analysis 6, 8
- distribution of technology 43–4
- DNA  
 metaphors 154–6, 158–65, 171–6  
*passim*, 179–80, 189  
*see also* genetics
- Dunn, K. 238
- Dupré, J. 4
- economic competitiveness 61, 63, 69
- embryo research  
 human-animal admix 125, 126–7  
*see also* stem cell/cloning research
- Engineering Media Centre 114–15
- Entman, R.M. 7
- environmentalism  
 ‘invasional meltdown’ metaphor  
 (Simberloff) 171–2, 174–5, 176–8,  
 179  
 vs biotechnology industry 35
- Erosion, Technology and Concentration  
 (ETC) 227, 228, 230, 231
- ethical, legal and social aspects (ELSA)  
 in decision-making 76, 77, 79, 81,  
 82, 86–9
- ethical perspectives 3–6  
 bioethical decisions *see* public  
 decision-making  
 breakthrough metaphors 203–10  
 communication as conflict vs  
 consensus 65–9  
 communication roles 63–5  
 disaster metaphors 210–14  
 frames/metaphors 1–2, 7–8, 9–10  
 guiding principles 52–3  
 policy debates 53–8, 63–4  
 promotional metaphors 175–9  
 Science Media Centre (SMC) 119–24  
 story-telling 10–13  
 synthetic biology 225–6  
 US opposition to embryonic stem cell  
 research 61–2, 193–4  
 values vs inconvenient truths 59–63  
 vs profit motive 230
- European Commission 31, 39
- Euroscience Open Forum (2006) 25, 26
- expectations, sociology of 201–2
- Expelled: No Intelligence Allowed*  
 (documentary) 66–7
- expert advisory committees 36–7
- expertise, journalistic vs scientific 97–8
- Faustino-Sterling, A. 87
- Faye, A. 25–6
- feeling and thinking metaphors 240–3
- financial issues *see* funding; profit motive
- Fox, M. 140
- frames/framing  
 anatomy and typology 57–8  
 devices 7, 57–8  
 and frame analysis 6–8, 9–10, 51  
 metaphors and stories 6–10  
 public accountability 65, 67, 68–9  
 as technology of humility 42–3
- Frankenstein’s monster metaphor 241
- Fraser, N. 77, 78–9, 80
- fraud 34–5  
 stem cell/cloning research (Woo-Suk  
 Hwang) 3, 203–10, 239–40
- Freedom of Information Act, Shelby  
 Amendment 39, 40
- funding  
 and accountability 39  
 and apocalypse discourse 211, 213, 214  
 and barcoding metaphor of DNA 163,  
 171, 178, 179–80  
 and breakthrough discourse 210, 214  
 economic competitiveness 61, 69  
 ethical, legal and social aspects  
 (ELSA) in decision-making 88  
 ‘public media 2.0’ initiatives, US 57  
 and science journalism 27, 96, 99, 104  
 Science Media Centre (SMC) 110–11  
 social contract for science 32–3  
 stem cell research, US 61–2, 193–4  
 synthetic biology 222
- Funtowicz, S.O. and Ravetz, J.R. 36

- Gadamer, H.-G. 86  
 Gamson, W. 56, 57  
   and Modigliani, A. 58  
 'garage biology' 225  
 genetic modification (GM)  
   debate 113–14  
   *see also* synthetic biology (Craig Venter)  
 genetics  
   of autism 139–41, 155–7, 158  
   challenges of writing about 136–9  
   changing meaning of 'gene' 132–6  
   developing new ways of reporting on 139–42  
   metaphors 131–2, 137, 138, 141–2, 155–7, 158  
   DNA 154–6, 158–65, 171–6  
     *passim*, 179–80, 189  
   Human Genome Project (HGP) 188–91  
   synthetic biology 223–4, 225–7, 231  
 Ghosh, P. 4, 109  
 Gibbons, M. et al. 37–8  
 Goede, W.C. 4, 26  
 Gore, Al 59, 60  
 Gottweis, H. 205  
 Greenfield, S. 110, 111, 119  
 greening of genetic modification 228–30  
 Griffiths, P. and Stotz, K. 133, 135, 138  
 Gurevitch, J. 172, 173, 177, 180  
  
 Habermas, J. 77, 78, 79  
 Hebert, P. 159–64, 171, 172–3, 174, 175, 176, 177, 178, 179–80  
 Hellsten, I. 192, 193, 195, 196  
   and Nerlich, B. 63  
 Helm, J.R. 210  
 Henderson, M. 139  
 Herold, E. 203, 205–6, 209  
 Highfield, R. 229, 230  
 honest broker role of scientists 64–5  
 House of Lords Select Committee Inquiry/  
   Report on Science and Technology 31, 109, 110, 112  
 hubris 208–9  
   'technologies of hubris' 41, 42  
 Hulme, M. 213  
  
 Human Fertilisation and Embryology  
   Bill/Act 125, 126–7  
 Human Genome Project 188–91  
 Human Genome Research Institute 190–1  
 human-animal admix embryo research 125, 126–7  
 Hwang, Woo-Suk 3, 203–10, 239–40  
 hype 2, 3–4, 10  
   doom-panic-cynicism cycles 202  
   hope-disillusionment cycles 202  
   journalistic perspective on use of 145–8, 151  
   Science Media Centre (SMC) 'crap busting' service 118  
   stem cell research 209  
   vs humility 5–6  
   *see also* promotional metaphors  
  
 impartiality  
   in decision-making 84  
   journalistic 93  
 inconvenient truths vs values 59–63  
 industrial metaphors 190, 227  
 intellectual property law 226–7  
 'invasional meltdown' metaphor (Simberloff) 171–2, 174–5, 176–8, 179  
 issue advocate role of scientists 64–5  
  
 James, R. 210, 211–12, 213  
 Jardine, L. 203  
 Jasanoff, S. 5, 6, 36, 82  
 Jia, H. 3, 4  
 journalistic perspectives 25–7, 93–107, 145–52  
   *see also* media; story-telling  
  
 Kerry, J. 68  
 knowledge production, new modes of 37–8  
  
 Lakoff, G. and Johnson, M. 8, 186, 190, 221  
 Larson, B.M.H. 176, 177, 178  
 Lawrence, P. 214  
 Le Doeuff, M. 238  
 Leake, J. 229  
 learning, as technology of humility 44  
 Leiss, W. 8  
 Lichtenberg, G.C. 8

- Macauley, D. 204
- McGuckin, C. 203–4
- ‘mad scientist’ rhetoric 228
- mapping
- human genome 189–91
  - metaphors as 185, 186, 196, 221
- Martin, P. and Morrison, M. 215
- mass production metaphor 190, 197
- media
- hype *see* hype
  - journalistic perspectives 25–7, 93–107, 145–52
  - press briefings/releases, Science Media Centre (SMC) 116–18, 119–20
  - roles in public decision-making 81
  - vs scientific perspectives 11, 63–5, 96–8, 112, 178–9, 195–6
  - see also* story-telling
- Merton, R.K. 75, 169
- metaphors
- frames and stories 6–10
  - as mappings 185, 186, 196, 221
  - and metaphor analysis 6, 8–10, 12–13
  - in science and technology 4–5, 187–8
  - of scientific progress 196, 238–40
  - thinking and feeling 240–3
  - use in journalism 147, 148–9, 151–2
  - see also* breakthrough metaphors; promotional metaphors; temporal aspects of metaphors; *specific subjects, e.g.* genetic
- ‘microbesoft’ 227, 228
- militaristic/war metaphors 212, 240
- MMR (measles, mumps and rubella) vaccine 101–2, 105, 113
- ‘Mode 2’ science 31, 37–8
- Monsanto–Rural Advancement Foundation International (RAFI) case 40–1, 44
- Morrison, R. 3–4
- Moss, L. 138
- Murdoch, A. 204
- National Academies report 65–6
- National Science Foundation (NSF) 32–3, 35
- Nelkin, D. 170, 173, 177, 178, 202
- and Lindee, S. 131–2
- Nerlich, B. 26, 27, 133, 211
- and Halliday, C. 214
  - and Hellsten, I. 133
- news vs specialist reporting 125
- Noble, D. 137
- Nordenson, B. 12
- ‘normal accidents’ 29
- Nowotny, H. et al. 38
- Obama, Barack 61–2
- Ogborn, J. et al. 136
- opinion vs scientific method 96–7
- Ostwald, K. 213
- ‘participatory digital media infrastructures’ 57
- patenting, genome 226–7
- Pearson, S. 112
- peer review 33–4, 35, 36, 97, 99–101, 104
- referees’ comments 100, 106
- Perrow, C. 29
- Pielke, R. 59, 63, 64, 175, 178
- Pilkington, E. 228
- ‘playing God’ rhetoric 228
- policy debates 53–8, 63–4
- political perspectives 30–1
- promotional metaphors 203–14
- Powell, M. 62–3
- power of journalism 93–7
- predictive technologies 41–2
- press briefings/releases, Science Media Centre (SMC) 116–18, 119–20
- priesthood, notion of 104, 106
- profit motive 34–5, 228
- vs ethical standpoint 230
- programming/computer metaphor 223–4, 225–7, 231
- promotional metaphors 172–5
- case studies 170–2
  - barcoding metaphor of DNA (Hebert) 171–6 *passim*, 179–80
  - ‘invasional meltdown’ 171–2, 174–5, 176–8, 179
  - ethics of 175–9
- public accountability frame 65, 67, 68–9
- public decision-making
- ethical, legal and social aspects (ELSA) 76, 77, 79, 81, 82, 86–9
  - practical challenges in 80–2

- and public sphere 77–9, 80
  - vs individual decision-making 82–5
- ‘public media 2.0’ initiatives, US 57
- public participation 56–7
  - and access to information 39–41
- public sphere 77–9, 80
- public trust 5–6
- ‘public understanding of science’, critique
  - of 1–2
- puzzle metaphor 155–7
- quality control 37, 38
- race metaphors 203–10, 212
- Radford, T. 114
- Randerson, J. 229
- Rayner, S. 95
- religious perspectives
  - on climate change 60
  - on evolution 65–8
  - journalism and notion of priesthood
    - 104, 106
  - on stem cell research 61–2
- Research Defence Society (RDS) 123
- Rheinberger, H.J. 135
- Richards, I.A. 8
- Richardson, D.M. et al. 174–5
- Rines, T.S. 154–5, 158
- Rip, A. 201–2
- risk/risk assessment 29–30, 36–7, 43
- Roslin Institute 192–3
- Roston, E. 201
- Rural Advancement Foundation
  - International (RAFI)–Monsanto
    - case 40–1, 44
- Saguy, A.C. and Almeling, R. 214
- Sample, I. 229
- saviour of humanity rhetoric 228–30
- Schiele, B. 201
- Schön, D.A. and Rein, M. 9, 42–3
- ‘science arbiter’ role of scientists 64
- ‘science as journey’ metaphor 196, 238–40
- Science Media Centre (SMC) 13
  - achievements 124–7
  - and balanced reporting 120
  - choice of topics 119–20
  - ‘crap busting’ service 118
  - database of experts 115–16
  - directorship and consultation process
    - 111–13
  - engineering at 114–15, 118
  - founding 109, 110
  - funding and governance 110–11
  - and genetic modification (GM) debate
    - 113–14
  - human cloning 121–2
  - human-animal admix embryo research
    - 125, 126–7
  - as international model 115
  - open engagement at 120–1
  - openness on animal research 123–4
  - philosophy and ethics of 119–24
  - press briefings 117–18, 119–20
  - pro–science stance 119
  - Rapid Reaction service 116
  - Round-Up press releases 116–17
  - supporting scientists 118–19
- science–state relationship
  - new assessments 34–8
  - social contract for science 32–4
  - ‘technologies of humility’ 41–5
- ‘scientific connoisseurs’ 95
- scientific progress (‘science as journey’)
  - metaphor 196, 238–40
- scientific vs media perspectives 11, 63–5,
  - 96–8, 112, 178–9, 195–6
- Scott, C. 26, 27
- Simberloff, D. 171–2, 173, 174, 176–7,
  - 178, 179, 180
- social contract for science 32–4
- social progress 61, 63, 65–6, 69
- ‘socially robust knowledge’ 38
- sociology of expectations 201–2
- ‘speaking truth to power’ model 30–1
- Sperling, F. 160
- States, B.O. 5
- stem cell/cloning research
  - fraud (Woo-Suk Hwang) 3, 203–10,
    - 239–40
  - journalistic perspective 148–50
  - metaphors 190–4
  - moral status of embryo 84–5
  - Science Media Centre (SMC) 121–2
  - US opposition to 61–2, 193–4
- Stokes, D. 36

- story-telling 2, 8  
     problems, challenges and opportunities 10–13  
     *see also* media  
 Stotz, K. 135–6  
     and Griffiths, P. 133  
 Strauss, S. 11, 154, 155  
 superbugs and antibiotic resistance 210–14  
 synthetic biology (Craig Venter) 219–20, 230–1  
     backdrop to media staging 221–2  
     greening of, and saviour of humanity rhetoric 228–30  
     industrial rhetoric 227  
     intellectual property law/patenting 226–7  
     ‘mad scientist’ rhetoric 228  
     metaphors and regulatory problems 222–6  
     methods and corpus 220–1  
 systems biology approach to genetics 137  
 Szatmari, P. 156–7  
  
 Tankard, J.W. et al. 6  
     ‘technologies of hubris’ 41, 42  
     ‘technologies of humility’ 32, 41–5  
 temporal aspects of metaphors 186–7  
     discrepancies in science and technology 188–94, 197  
     scientific *vs* media cycles 195–6  
 thinking and feeling metaphors 240–3  
  
 Thomas, L. 180  
 Thomas, S. 5  
 top-down and bottom-up framing 56–7  
 transparency 39–41  
 trust 5–6  
  
 US Environmental Protection Agency 39  
  
 values *vs* inconvenient truths 59–63  
 van Dijck, J. 7, 131, 195, 197  
 Venter, Craig *see* synthetic biology (Craig Venter)  
 vulnerability 43  
  
 Wakefield, Dr Andrew 101–2, 105  
     ‘war on science’, US 68–9  
     war/militaristic metaphors 212, 240  
 Watts, S. 204  
     web that spins the spider metaphor of DNA 154–6, 158  
 Weinberg, R. 239  
 Weingart, P. 210  
 Williamson, B. 3  
 Winston, R. 148, 209  
 Wolf, C. 161  
 World Conference on Science Journalism 3–4  
  
 Zavos, P. 121, 122  
 Zimmer, C. 141\\