

Index

- acetylcholine 31–2
 - acetylcholinesterase 31–2
 - acorn worms 55
 - Adams, Eddie 89–90
 - adaptive programming 70
 - Adrian, Edgar 26–7
 - Afrotheria 47–8
 - After London; or Wild England* 133–6
 - after-life xii, xv–xvi, 147–62
 - and after-persons 147–9, 158–9, 160–2
 - and cognitive science 148
 - hominin achievements 151, 153–4, 155–7
 - hominin brain size 154
 - hominin imagination 149–52
 - human imagination 149
 - metaphors 153
 - signs/symbols 151–2
 - see also theory of mind
 - after-persons 147–9, 158–9, 160–2
 - Aiello, L. 154
 - Akam, Michael xi, xiv, 40–60
 - Aldini, Giovanni 25
 - Alzheimer’s disease 3, 17–18, 20, 22
 - ancient Egyptians 147
 - ancient Greece xv, 96–120
 - eighteenth-century attitudes to 103–8
 - nineteenth-century attitudes to 108–14
 - twentieth-century attitudes to 114–18
 - Acropolis archaeological site 111, 112
 - ancient Olympics 96–8, 117
 - Aphaia temple sculptures 109–10
 - archaeology of 99–103, 108–14, 117–18
 - art of 99–103
 - in cinema/TV 119–20
 - complexity of life in 108
 - in fashion 119–20
 - fashionable interest in 104
 - German Archaeological Institute 111
 - German scholarly interest in 104–6
 - Greek archaeological society 111
 - history to seventeenth century 99–103
 - idealized image of 99–103, 106–8, 113–14
 - morals and art/statues 103, 106
 - Parthenon sculptures 109–10
- animal diversity, genomic basis for 57–60
 - animal segmentation 59–60
 - apocalyptic ruinism see ruinism
 - apoptosis 10
 - apoptosome protein complex 10
 - Arendt, Detlev 53–4
 - artificial life/intelligence xiv, 61–81
 - artificial intelligence 68–75
 - self-organization 63–4
 - synthetic biology xiv, 75–81
 - Ashcroft, Frances xi, xiii–xiv, 24–39
 - ATP 38
 - bacteria, ion channels 29–30
 - Ballard, J. G. 131
 - Baudrillard, Jean 145
 - Becton Dickinson 17
 - behavioural modernity 152

Index

- Bering, J. M. 158–9, 160–1
BGI sequencing centre, China 41
Biobricks 80
biomolecular circuit 80–1
Bishop, Chris xi, xiv, 61–81
Blonde on Blonde 148
‘Body of Phocion Carried Out of Athens’ 101
Book of the Dead 147
Book of Zephaniah 127
Brown, William i
Bryant, Shirley 35–6
- Cambridge, post-human xv, 124–6
 crystallization 130–3
 enjurement 130–3
 human residue 126
 timetable of physical changes 124–6, 130–3
 see also Detroit; ruinism
Camp Bastion, Afghanistan 84–95
cancer 3, 8, 12, 14–17, 22
Capa, Robert 89–90
Cape golden moles 47–8
Carter, Kevin 89–90
CatSper 36–7
cell death 2, 9–10, 21–2
cell division 2, 3, 6–9, 21–2
cell growth factors 13–14
cell population regulation 20–1
cell population sizes 2
cell renewal 9, 12–14
 rates by type 12
cell senescence 10
cell type evolution 53–4
cells xiii–xiv, 18
 and cancer *see* cancer
 and disease 3, 8, 12, 14–17, 18, 22
 electricity in xiii–xiv
 living cells 3–6
 number of 1
 organization in space 54
 programmed cell death 2, 9–10
 stem cells 12–14
Chandler, Richard 104
- Chapman, John 156
chemical messengers 80–1
chemotherapy 16
choanoflagellates 45–7
chromatids 8
CJD (Creutzfeld-Jakob disease) 18, 22
Clarke, Edward 109
compassion fatigue 87
computer limitations 78–9
conflicts 84–95
 Edward Thomas in First World War xv, 139–43
 fly on the wall view of 90–2
 photographers’ view of 89–90
 soldiers’ view of 85–7
 surgeons’ view of 87–9, 93–5
cowardice 86
Cronos compulsion 161
Crystal World, The 131
Cuvier, Baron 57
Cyriac of Ancona 99
cytoplasm 5
cytoskeleton 3
- DARPA (Defense Advanced Research Projects Agency) 72–3
Davidson, Eric 57–9
de Rond, Mark xi, xiv–xv, 84–95
de Verninac Saint-Maur, Capitaine 109
deoxyribonucleic acid *see* DNA
Detroit, and ruinism 133
diabetes 37–8
Dillon, Brian 130–1
disease, and cells 3, 8, 12, 14–17, 18, 22
DNA xiii, 3–9, 16
 in cell nucleus 4
 in genomes 40
 regulatory region 76–7
 in synthetic biology 75–8
DNA coding 49–51
DNA sequencing 40–2, 49–51, 77–8
DNA synthesizing 77–8
DNA topoisomerases 9, 16
Doré, Gustave 127–30
Drowned World, The 131

Index

- Dunbar, R. 154, 159
Durkheim, Emile 157
Dylan, Bob 148
- ECG 33
E-chromi 80
effervescence 157
electricity
 animal electricity 24–6
 in cells xiii–xiv, 24–39
 and the heart 32–4
 heart arrhythmias 24, 33–4
 and human senses 37
 ion channels xiii–xiv, 28–31
 nerve impulses 26–8
 nerve–muscle junctions 31–2
 single-channel currents 28–30
electrocardiogram 33
Elementary Forms of the Religious Life, The 157
elephant genes 47–8
Elgin, Lord 109–10
emotions 159–60
EPO (erythropoietin) 13
Ernst, Max 130–1
eukaryote genomes 41–2, 44
‘Europe after the Rain’ 130–1
European moles 47–8
Evans, Martin 49
expert system 69–70
extended mind, FACEs of 155–7
external agency, recognition of 158–9
- Fabian, Andrew i
FACEs (Fragmentation, Accumulation, Consumption and Enchainment) 155–7, 162
ferrofluid 63–4
First World War, Edward Thomas in xv, 139–43
Fromm, Erich 94
fruit fly 51
Furlong, Eileen 59
futurology 143
- Galvani, Luigi 24–6
Gamble, Clive xii, xv–xvi, 147–62
Gaydarska, Biserka 156
GEC (genetic engineering of cells) software 80–1
Gell, Alfred 151
gene duplication 52
gene expression 76–7
gene loss 52
gene sequencing 40–8
generalization 70
genes
 and cancer 14–15
 elephant genes 47–8
 interactions and animal diversity 57–9
 as microprocessors 57–9
 number in genome 48–51
 selfish genes 48
 sequence divergence 52
 Wnt genes 51–2
genetic engineering 77
genome complexity 51–2
genome evolution 51–2
genome sequencing 40–4
genomes xiv, 40
 and animal diversity 57–60
 contents of 48–51
 eukaryote genomes 41–2
 number of genes in 49–50
 tree of life 42–8
German Archaeological Institute 111
GFP protein 80–1
Giddens, Tony 150
Gilbert, Walter 40–1
Gloyn, Anna 38
Go-Between, The 108
going beyond *see* after-life
Grand Challenge (DARPA) 72–3
Great Ideas of Biology 75
Greece *see* ancient Greece
Greek archaeological society 111
Greek War of Independence 110–11
grog (Pottery) 156–7
Guillet de Saint-George 101, 102
Guys, Pierre Augustin 106–8

Index

- Haeckel, Ernst 42
Hales, Nick 38
halting problem 78
Hartley, Leslie 108
Hattersley, Andrew 38
Haydon, Denis 30
heart, and electricity 32–4
heart arrhythmias 24, 33–4
Hiorns, Roger 131–2
Hladky, Steve 30
Hodgkin, Alan 27–8
Homer 103–4
hominins
 achievements 151, 153–4, 155–7
 archaeology 155–7
 brain size 154
 imagination 149–52
Homo heidelbergensis 155
hospitals, military xiv–xv
human destruction *see* ruinism
human imagination 149
human social cognition 150
Huntington’s disease 17–18, 20, 22
Huxley, Andrew 27–8
Huyssen, Andreas 143

iGEM (international Genetically Engineered Machine) 80
imaginary geography 148
imagination 149–51
immortal cancer cells 14–16
inference engine 69–70
Infusoria 42, 44
insulin secretion 37–8
ion channels xiii–xiv, 28–30, 36–7
 and drugs/toxins 30–1, 32
 and the heart 33
 myotonia congenita 34–6

Jefferies, Richard 133–6, 137, 143
Jeopardy! quiz programme 73–5
Jerrold, Blanchard 127–30
Johnson, Mark 148, 153
Junger, Sebastian 88

Keasling, Jay 80
Kerouac, Jack 162
killing xiv–xv, 85–7
Kinect full-body tracking system 70–2
Knight, Richard 110
Knight, Tom 80
knowledge base 69–70
knowledge elicitation 69–70
Kraus, Martin 101

Lakoff, George 148, 153
language, and theory of mind 158
Laskey, Ron xii, xiii, 18
Leake, William Martin 109
Legacy of Greece, The 114–15
life in ruins *see* ruinism
Livingstone, Richard 114–15, 118
LMB (Laboratory of Molecular Biology) 40–1
London: A Pilgrimage 127–30
Long QT syndrome 33–4
Lowe, Chris 55
Loyd, Anthony 86

Macaulay, Thomas Babington 128–9
McCarthy, Cormac 143–5
McCullin, Don 89–90
Macfarlane, Robert xii, xv, 124–45
machine learning 70–5
mad honey 31
March, Jim 94
marine worms 53
Marinovich, Greg 89–90
Marlantes, Karl 85
Mazarin, Duc de 103
MCM proteins 17
medical diagnosis 70
Mellor, Leo 132–3
Mendel, Gregor 48–9
messenger RNA 76–7
microtubules 7–8
military hospitals 87–9
Mill, John Stuart 111, 118
Mitchell, Alex 24, 33–4
mitochondria 3, 10

Index

- Miyazaki, Hayao 130–1
Moore's Law 41
morphogenesis 62–8
multicellular animals 42–8, 53–4
Mycoplasma mycoides 77–8
myotonia congenita 34–6
myotonic goats 35
- Nariokotome boy 155
Neher, Erwin 30
nematode worm 51
nerve gas 32
nerve impulses 26–8
neural networks xiv, 70
neurodegenerative disease 3, 17–18, 20, 22
neurofibrillary tangles 18
neurotoxins 30–1
'New Zealander, The' 128–30
nucleated cells 41–2
Nurse, Sir Paul 75
- Olympics, ancient Greece 96–8
On the Road 162
oncogenes 14–15
Origin 130–1
- Palladas 150–1
Papanicolaou smear test 16–17
Parker, Becky 158–9
Parkinson's disease 3, 17–18, 20, 22
Pettitt, P. B. 161
photographers, war 89–90
Phylogeny of the Animal Kingdom, The 42–4
Poussin, Nicolas 101
ProExC 17
programmed cell death 2, 9–10
protein aggregates 18–19
protein degradation 19–20
protein destruction 3
- random forests of decision trees 72
Raphael 99
reaction-diffusion system 64–6
Reading the Ruins 132
- release from proximity 150
Renfrew, Colin 152
Revett, Nicholas 104
ribosomes 5
RNA 6, 7, 44, 51, 76–7
 messenger RNA 76–7
Road, The 143–5
Robotics Challenge (DARPA) 73
'Ruin, The' 127
ruinism xv, 126–39
 and Detroit 133
 Edward Thomas on First World War 139–43
 ethics of futurology 143
 green future 133–43
 late-modern 132–3
 modern 143
 see also Cambridge, post-human
ruinist art 127–30
ruin-porn 133
- Said, Edward 148, 149
Saint Hilaire, Geoffroy 56–7
Sakmann, Bert 30
Sanger, Fred 40–1
Saville-Kent, William 45–6
'School of Athens' 99
Scott, Michael xii, xv, 96–120
sea anemone 51
sea squirts 52
'Seizure' 131–2
self-organization 63–4
semiotics 153
Shanks, Michael 118
Simmel, Georg 127
single-cell animals 42–8, 53–4
single-channel currents 28–30
Skloot, Rebecca 15
Slim, Field Marshal William 86
smear tests 16–17
Smith, Adam 150, 158
Smith, Lillian 95
social brain model 159
social emotions 159–60
Society of the Dilettanti 104

Index

- sodium channels 30–1
- soldiers xiv–xv, 85–7
- South Country, The* 137
- spark of life *see* electricity
- sperm movement 36–7
- sponges 45–7
- stem cells 12–14
- Stuart, James ‘Athenian’ 104
- Sugiyama, Keiichi 130–1
- surgeons 87–9
- synthetic biology xiv, 75–81
- Synthia organism 77–8

- ‘Tale, A’ 138–9
- telomeres 10
- theory of mind 150, 158, 159
 - and emotions 159–60
 - and language 158
- Theory of Moral Sentiments, The* 150
- things, power of 151
- Thomas, Edward xv, 136, 143
- Thompson, Jack 85–6
- Topo inhibiting drugs 16
- topoisomerases 9, 16
- toxic insoluble protein 3
- toxins xiii–xiv
 - and ion channels 30–1
- training set 70
- transcription 76–7
- translations 76–7
- tree of life 42–8

- truly nucleated cells 41–2
- tumour suppressor genes 14–15
- tumours *see* cancer
- Turing, Alan xiv, 61, 62–8, 75, 78–9
- Turing patterns 66–8, 80–1
- Turing test 68–9, 75
- Turing universality 78–9

- Urban Challenge (DARPA) 73

- ‘Value of Greece to the Future of the World, The’ 115
- Venter, Craig 77–8
- vertebrate/invertebrate comparison 54
- Virchow, Rudolph 6
- Volta, Alessandro 25

- war *see* conflicts
- Watson computer system (IBM) 73–5
- Weil, Thierry 94
- Weisman, Alan 124, 143
- Wellcome Collection 5
- Whistler, Rex 142
- Winckelmann, Johann 104–6
- Wnt genes 51–2
- Woodward, Christopher 130, 133

- Xbox 70–2

- Ypsilantis, Alexandros 110