Contents

1.	Have We the Knowledge, Willpower, and Determination	
	to Survive?	-1
2.	Technology and Survival—Are They Compatible?	4
	Disaster movie scenarios	4
	Who will be vulnerable?	5
	The villain	6
	Satellite loss and air traffic	9
	What will happen in the modest sunspot scenario?	10
	A ground-based view of this modest event	11
	History of auroras and sunspot activity	12
	Vulnerability of modern interconnected power grid networks	13
	Consequences of power grid failures	14
	The real disaster situation	16
	When will it happen?	17
	How bad could it be?	19
	Wider area consequences of grid failures	20
	Which areas of the globe are at risk?	21
	Is there any good news?	21
	Knowledge is power and absolutely essential for survival	22
	How should we view technology?	23
3.	Natural Disasters and Civilization	26
	A fascination with danger	26
	Events that happen only on geological timescales	28
	Earthquakes and volcanoes	30
	Future eruptions	34
	European effects from Icelandic volcanoes	36
	Tsunamis and floods	37
	Rain storms	38
	Ice ages	39
	Attempts at climate prediction	41
	Disease and plagues	44
	How bleak are our prospects?	45
	Weapons of mass destruction	48
	The good news	50
4	. Good Technologies with Bad Side Effects	51
	Technological changes within our control	51

viii Contents

	Beauty, style, and fashion	52
	Progress no matter what	55
	Acceptance of new ideas	56
	Historic examples of unfortunate technology	57
	Victorian kitchens	61
~	Hindsight so far	63
5.	From Trains to Transistors	64
	Industrial revolutions	64
	Food—small changes and big effects	66
	The dark side of the Industrial Revolution	68
	Understanding pollutants in our own time	71
	Pollutants and climate change	74
	- Arithmetic for sceptics	80
	Other greenhouse gases	81
	Why are we reluctant to solve the problem of greenhouse gases?	82
	Ozone—our shield against ultraviolet light	84
	Twenty-first century technology control of trace contaminants	85
	Biological sensitivity to chemicals at levels of parts	0.5
	per billion	87
	Potential future difficulties	88
	How do we take control?	89
6.	Food, Survival, and Resources	90
	Our caveman conditioning	90
	Can we produce enough food?	91
	How much food do we actually need?	92
	Technology and obesity	94
	More examples of our sensitivity to trace contaminants	98
	Catalysis, enzymes, diet, and health	99
	How can we recognize when there are delayed side effects?	102
	How pure is our food?	103
	Conclusion	105
7.	The 'Silent Spring' Revisited	106
	Food, survival, and technology	106
	From hunting to farming	108
	Early hunter gathering	109
	Growth of cities and long-range food transport—early Rome	113
(9)	Repeated patterns from later European nations	114
	Twentieth-century agricultural technology	116
	The bombshell of 1962	118

	Contents	IX
	Genetic time bombs	120
	How successful is a monoculture with pesticides?	122
	Farming attitudes and black grass	124
	A return to a diversity of breeds	125
	Fishing	126
	Technology of mutations	126
	Water	
	Optimism or pessimism?	131
8.	Medicine—Expectations and Reality	133
	Medicine—the scale of the problem	133
	Attitudes and expectations from experts and the public	135
	Understanding side effects and drug testing	138
	Do we need such an immense medical system?	141
	Personal contacts between patients and doctors	143
	Gullibility and marketing	144
	Self-destruction	146
	The financial and health costs of our own failings and	
	weaknesses	152
	Do we understand statistics?	152
	The dilemma of improving medical diagnosis	155
	Where next?	158
9.	Knowledge Loss from Changing Language	160
	Language and why are humans so successful	160
	Decay of language and understanding	161
	Information survival	163
	Lost languages	165
	Language and technology	166
1	Language evolution	168
e è	Reading and understanding past languages	170
	The challenge of translation	172
	Language and context	175
	Information loss in art images and pictures	176
	Music and technology	177
10.	Decay of Materials and Information Loss from Technology	180
	Information and knowledge	180
	Input technology and data loss	182
	Information loss from technology of materials	183
	Writing information to computers	187
	Successes and replacements of media for musical recordings	189
	CD storage	190

x Contents

	Domesday Book—parchment success and electronic failure	191
	Text, graphics, and photographic storage	193
	A 'law' of the speed of written information loss	193
	Pictorial information loss	195
	Images, photography, and electronics	196
	Survival of electronic image storage	199
	Computer power and information loss	200
	Patterns in data storage	201
	A broader canvas of the half-life concept	203
	What are the possible solutions for data retention?	204
	The final question—will we be remembered?	207
11.	Technology, the New Frontier for Crime and Terror	208
10	How to succeed in crime with minimal risk	208
	Smaller-scale computer crimes	210
-	The UK scale of cybercrime	211
	Hacking and security	212
	Effective anti-hacking	214
	Espionage and security *	215
	Mobile phones, cars, and homes	218
	Medical records	221
	Distortions of existing data	223
	Technology and terrorism	226
	The future	227
12.	Technology-Driven Social Isolation	229
	Isolation driven by technology	229
	Isolating technologies and the young	230
	Isolating technologies for adults	236
	Job hunting	237
	Access to fast communications—who really has it?	239
	Electronic access for older people	241
	Inflation and self-isolation	242
	Physical problems of computers and smartphones	243
	Age and mobile phones	244
	Predictive text	246
	Age-related changes to sound and light	246
	Technology, colour vision, and ageing	247
	Will designers adjust their electronics for the elderly?	250
	Advanced medical centres	250
	Can we improve?	251

	Contents	xi
13.	Consumerism and Obsolescence	252
	Obsolescence and marketing	252
	Social status and image	252
	Acceptable or commercially driven obsolescence	253
	Replacements before obsolescence	255
	Armaments and warfare	256
14.	Rejection of Knowledge and Information	261
	How eager are we to learn?	261
	Rejection from distrust, religion, and culture	266
	Excessive reliance on initial opinions	266
	Information loss from an excess of data	269
	An example of plate tectonics	270
	Difficulties for Copernicus	271
	Whom should we believe?	272
	Information rejection from geographic isolation, xenophobia,	
	religion, and prejudice	275
	News coverage	279
	Failure to exploit resources	281
	Parliamentary representation and practice	281
	The way forward	283
15.	Hindsight, Foresight, Radical Suggestions, and a Grain	
	of Hope	285
	Civilization and our dependence on technology	285
	Hindsight on solar emissions and modern technology	287
	Topics where we can control the relevant technologies	289
	Foresight, resources, and food	291
	The health industry	293
	Benefits of a smaller world population	295
	Ideas to produce a revolution in human attitudes	297
	Technology and political seating plans	298
	The benefits of full equality for women	299
	The educational disaster of war	302
	The two faces of technology	303

305

Further Reading