Preface	xi
List of contributors	xiv
CHAPTER ONE	
Introduction	1
David Jones & Christopher Hood	
The meanings of "risk" and "hazard"	2
The risk archipelago	3
So, what is risk management?	6
Dimensions of the risk management debate	8
CHAPTER TWO	
Anticipation in risk management: a stitch in time?	10
ANTICIPATIONISM VERSUS RESILIENCE	10
ANTICIPATING THE RISKS POSED BY NATURAL PERILS	14
David K.C Jones	
Introduction	14
Changing views of natural perils	14
Anticipating natural perils	15
The International Decade for Natural Disaster Reduction	22
Problems for progress	23
Conclusion	29
	31
Introduction	31
Technical and human factors	31
The halloon model of hazard	34
Hazard engineering	36
Conclusions	38
RESILIENCE, FLEXIBILITY, AND DIVERSITY IN MANAGING	
	40
Davia Collingriage	40
	10

Flexibility and resilience Flexible and inflexible technologies Promoting resilience Conclusions	40 41 43 45
CHAPTER THREE Liability and blame: pointing the finger or nobody's fault	46
ABSOLUTIONISM VERSUS BLAME	46
CRIMINAL LAW, BLAME AND RISK: CORPORATE MANSLAUGHTER Celia Wells	50
Introduction	50
Blaming corporations	50
Legally constructing death	52
Socially constructing death	54
Comparete manaleurahten	57
	57
Conclusion	39
THE PROBLEM OF BLAME Tom Horlick-Jones	61
Introduction	61
Targeting and the danger of systemic nets	62
Organizations and failures	63
The social and institutional environment	66
The politics of blame: the Durley roll crash	68
Conclusions	70
Conclusions	/0
BLAME, PUNISHMENT AND RISK MANAGEMENT A.Neil Johnston	72
Introduction	72
Blame and responsibility	73
Blaming the victim	74
Diamon guilt and vindication	77
Diame: guint and vindication	70
Blame: retribution and deterrence	//
Learning from our mistakes	/8
Conclusion	82
CHAPTER FOUR	
Quantitative risk assessment and risk management: risk policy by numbers	84
THE EXTENT TO WHICH "STATISTICS ARE SIGNS FROM GOD"	84

QUANTITATIVE RISK ASSESSMENT AND DECISIONS ABOUT RISK An essential input into the decision process	87
A.V.Cohen	07
Introduction The network of rich quantification and its uncontaintics	8/
How is risk quantification used in decision making?	00 02
The decision process: a discussion	92
Are expert estimates useful even with their qualifications?	94
Do technocratic standards apply in effect although not intention?	95
What forums can most effectively discuss risk estimates?	96
Should the QRA itself be produced from a broader perspective?	96
Conclusions	98
LIMITS TO THE MATHEMATICAL MODELLING OF DISASTERS	99
Introduction	99
Implicit assumptions about risks	101
The open systems paradox	105
Examples of failures	105
The future	107
Conclusion	110
CHAPTER FIVE	
Designing institutions: a house of cards?	111
THE FEASIBILITY OF INSTITUTIONAL DESIGN IN RISK MANAGEMENT	111
RISK AND DISASTER: THE ROLE OF COMMUNICATIONS	
BREAKDOWN IN PLANE CRASHES AND BUSINESS FAILURE	114
Systems, failure and guilt	114
Communication failures in catastrophe	118
Hierarchy and frame of reference	119
Instrument failure and on-board social systems	120
Communication factors in business failure	123
Promising opportunities for research	125
CRITERIA FOR THE DESIGN OF HAZARD MITIGATION INSTITUTIONS	127
Edmund Penning-Rowsell	4.25
Natural hazards and human expectations	127
Institutional design problems for risk and impact reduction	128
Assessment	132
11000001110110	157

CHAPTER SIX	
Counting the cost	141
RISK REDUCTION, BUT AT WHAT PRICE?	141
IS SAFETY A BY-PRODUCT OF QUALITY MANAGEMENT? Tom Horlick-lones	144
Introduction	144
The dialectics of safety management	145
What is an acceptable level of safety?	146
The quality management approach	150
Travelling hopefully—rail transport safety in the UK	152
Conclusions	154
RISK MANAGEMENT: AN ECONOMIST'S APPROACH Sir Christopher Foster	155
Introduction	155
Safety economics	156
The value of life	158
Conclusion	160
CHAPTER SEVEN	
Participation in risk management decisions	161
TO WHAT EXTENT IS RISK MANAGEMENT BEST LEFT TO EXPERTS?	161
TECHNOCRACY, DEMOCRACY, SECRECY AND ERROR	164
Introduction: a scentic's view?	164
Three strands of debate: normative instrumental and substantive	165
Concluding comments	171
RISK MANAGEMENT, POST-NORMAL SCIENCE,	
AND EXTENDED PEER COMMUNITIES	
Silvio O.Funtowicz & Jerome R.Ravetz	172
Introduction	172
Post-normal science	173
Extended peer communities	177
Conclusion	180

EXPLORING THE ROLE OF CIVIC SCIENCE IN RISK MANAGEMENT	182
Science in flux	182
The rise of civic science	183
The incorporation of civic science in risk management	186
Civic science and emerging trends in risk management	188
Conclusion	192
CHAPTER EIGHT	
The regulatory target: products and structures—	
or people and organizations?	193
SHOULD REGULATION BE TARGETED ON	
PHYSICAL PRODUCTS OR INSTITUTIONAL PROCESSES?	193
RISK AND EMERGING TECHNOLOGY:	
	105
Simon Shohet	193
Introduction	195
Background	196
Contentions in the risk-regulation debate	197
Product regulation	198
Background to current process regulation	
of biotechnology in Europe	199
The debate on product versus process legislation	200
Which regulatory policy is the right one?	201
Conclusion	204
CHAPTER NINE	• • •
Conclusion: learning from your desk lamp	205
HOMEOSTATIC VERSUS COLLIBRATIONIST APPROACHES	
TO RISK MANAGEMENT	205
WHERE EXTREMES MEET: "SPRAT" VERSUS "SHARK"	
IN PUBLIC RISK MANAGEMENT	208
Christopher Hood	
"No workable alternative" to conventional risk engineering?	208
The conventional "SPKA1" approach to risk management	209
An alternative "SHAKK" approach to risk management	210
Strengths and weaknesses of SPKA1-type management systems	211

Strengths and weaknesses of SHARK-type management systems Three general operational implications of SHARK as an institutional	214
model of risk management	216
Five specific conditions for the SHARK strategy	220
Conclusion	225
Bibliography	229
Index	245