

DISASTER RESILIENCE

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An Integrated Approach

By

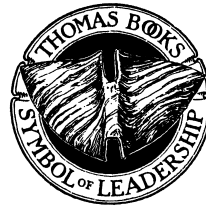
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PREFACE

The Boxing Day 2004 Indian Ocean tsunami and the impact of Hurricane Katrina on New Orleans in 2005 provided unfortunate reminders of the susceptibility of many communities to devastating losses from natural hazards. These events provided graphic illustrations of how extreme hazard events adversely impact on people, affect communities, and disrupt the community and societal mechanisms that serve to organize and sustain community capacities and functions. It would, however, be incorrect to automatically assume that the deficit and loss outcomes that are often the most visible and publicized aspects of these events should be regarded as a *fait accompli* of exposure to disaster. Rather, deficit and loss outcomes co-exist with a capacity to confront challenging circumstances in ways characterized by adaptation and growth. Recognition of the co-existence of these outcomes opens up new opportunities for managing natural hazard risk. This book discusses how risk can be managed by identifying factors that influence a capacity for co-existence with periodically hazardous, but often beneficial, environmental elements. It identifies values, beliefs, competencies, resources and procedures that societies and their members can utilize to proactively develop a capacity to adapt to adverse natural hazard consequences and sustain societal functions in the face of significant perturbations to the fabric of everyday community life. That is, to make societies and their members resilient.

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CONTENTS

<i>Preface</i>	v
<i>Chapter</i>	
1. DISASTER RESILIENCE: BUILDING CAPACITY TO CO-EXIST WITH NATURAL HAZARDS AND THEIR CONSEQUENCES	3
<i>Douglas Paton</i>	
Introduction	3
Co-existing With a Hazardous Environment	5
Resilience and Adaptive Capacity	7
The Nature of Adaptive Capacity	9
References	10
2. IDENTIFYING THE CHARACTERISTICS OF A DISASTER RESILIENT SOCIETY	11
<i>Douglas Paton and David Johnston</i>	
Introduction	11
References	18
3. NATURAL HAZARDS	19
<i>C.E. Gregg and B.F. Houghton</i>	
Introduction	19
Terminology	21
Characteristics of Natural Hazards	22
Frequency	23
Magnitude	25
Intensity	25
Duration	26
Precursory Period and Reaction Time	26

Spatial Distribution .....	.27
Temporal Distribution .....	.30
Secondary Hazards .....	.30
Mitigating Natural Hazards .....	.31
Warning Systems .....	.32
Engineered Mitigation .....	.33
Building Codes .....	.34
Land-Use Planning .....	.34
Public Policy .....	.35
Conclusion .....	.36
References .....	.37
4. LIFELINES AND URBAN RESILIENCE .....	.40
<i>David Johnston, Julia Becker, and Jim Cousins</i>	
Introduction .....	.40
Case Study 1 .....	.41
Impacts of Volcanic Ash Falls From the 1995–1996 Eruptions of Ruapehu .....	.41
Case Study 2 .....	.43
Impacts of Flooding on Gas Supplies in February, 2004 .....	.43
Case Study 3 .....	.45
Impacts of a Moderate Earthquake–1987 Edgecumbe, New Zealand .....	.45
Case Study 4 .....	.50
Impacts of a Major Earthquake–1931 Hawke’s Bay .....	.50
Assessing Lifeline Vulnerability .....	.54
Scope .....	.57
Methodology .....	.58
At Risk Components .....	.58
Analysis Process .....	.61
Mitigation Measures .....	.61
The Contribution of Lifelines Studies to Urban Resilience .....	.64
References .....	.64

5. HAZARD MITIGATION: A PRIORITY FOR SUSTAINABLE COMMUNITIES .....	.66
<i>Robert O. Schneider</i>	
Introduction .....	.66
Sustainability: A Necessary Linkage .....	.67
From the Old to the New Emergency Management .....	.71
Principles and Techniques of Sustainable Hazard Mitigation .....	.79
Conclusion: A New Challenge to Sustainable Hazard Mitigation .....	.83
References .....	.86
6. ASSESSING SOCIAL RESILIENCE .....	.88
<i>Philip Buckle</i>	
Introduction .....	.88
Definitions .....	.90
Who is Resilient, Who is Vulnerable? .....	.91
Levels of Social Resilience .....	.93
Dimensions of Resilience and Vulnerability .....	.94
Impacts and Needs .....	.94
Elements that Support Resilience at an Individual Level: A functional assessment .....	.95
Elements that Support Resilience at Community Level .....	.97
Resilience is Context Specific .....	.99
Dimensions of Resilience .....	.100
Assessing Resilience .....	.101
Resilience and Vulnerability to What, When, and for Whom .....	.102
References .....	.103
7. NATURAL HAZARD RESILIENCE: THE ROLE OF INDIVIDUAL AND HOUSEHOLD PREPAREDNESS .....	.105
<i>Douglas Paton, John McClure, and Petra T. Bürgel</i>	
Introduction .....	.105
Constructing Reality .....	.106

Stage One: Motivation to Prepare	110
Risk Perception	110
Critical Awareness	112
Stage Two: Forming Intentions to Prepare	114
Fatalism	115
Interpreting the Causes of Loss and Damage	116
Media Influences on Outcome Expectancy	118
Personal Competencies	119
Stage Three: Converting Intention to Preparedness	120
Time Until Next Hazard Event	120
Trust	121
Conclusion	122
References	124
8. WEATHERING THE STORM: WOMEN'S PREPAREDNESS AS A FORM OF RESILIENCE TO WEATHER-RELATED HAZARDS IN NORTHERN AUSTRALIA	128
<i>Alison Cottrell</i>	
Introduction	128
Conducting the Research	129
Culture	129
Social Networks	133
Personal Attributes	136
Implications for Risk Management	139
References	141
9. ENCOURAGING PROTECTIVE BEHAVIORS IN COMMUNITIES	143
<i>Leigh Smith</i>	
Introduction	143
Hazard Perception	145
Risk Assessment	146
Single-Level Component Models	146
The Individual and the Community	147
The Supra-individual Context	149
References	159

10. LINKS BETWEEN COMMUNITY AND INDIVIDUAL RESILIENCE: EVIDENCE FROM CYCLONE AFFECTED COMMUNITIES IN NORTH WEST AUSTRALIA	161
<i>Julie Ann Pooley, Lynne Cohen, and Moira O'Connor</i>	
Introduction	161
Disaster Vulnerability	161
Community Resilience: Beyond Disaster Vulnerability	163
Case Study	168
Context: Cyclone Communities in Northwest Australia	168
Conclusion	170
References	170
11. THE HAKKA SPIRIT AS A PREDICTOR OF RESILIENCE	174
<i>Li-Ju Jang and Walter LaMendola</i>	
Introduction	174
The Taiwan Context	175
The 9/21 Earthquake	175
Resilience in Disaster	176
Qualitative Study Description	177
The Hakka Spirit as a Theme	178
Survivors	180
Service Providers	182
Volunteers	184
Conclusion	185
References	187
12. EXPLORING THE COMPLEXITY OF SOCIAL AND ECOLOGICAL RESILIENCE TO HAZARDS	190
<i>Douglas Paton, Gail Kelly, and Michael Doherty</i>	
Introduction	190
Resilience of Ecological Systems	191
Human Demands on the Ecological System	192
Social-ecological Interaction and Human Adaptive Capacity	194

	Social and Psychological Influences on Social- Ecological Interaction	199
	Natural Environment as a Source of Adaptive Capacity	202
	Conclusion	207
	References	207
13.	THE MEDIA, BUSHFIRES AND COMMUNITY RESILIENCE	213
	<i>W. Peter Hughes and Peter B. White</i>	
	Introduction	213
	Media Construction of Bushfires and Bushfire Risk	214
	Media Reports Perpetuate Myths	214
	Differences Between the Media	216
	Building More Productive Media Relationships With Fire Authorities	218
	Need for a Disaster Media Plan	218
	Training Issues	221
	A Phased Role for the Media	222
	Conclusion	223
	References	223
14.	ECONOMIC RESILIENCE TO DISASTERS: TOWARDS A CONSISTENT AND COMPREHENSIVE FORMULATION	226
	<i>Adam Rose</i>	
	Introduction	226
	Defining Economic Resilience	228
	Comparison with Related Concepts of Resilience	230
	Ecological Origins	230
	Engineering-Based Definitions	233
	Organizational Behavior	235
	Quantifying Resilience	236
	Measuring Resilience	238
	Conclusion	243
	Endnotes	244
	References	245

15. MANAGING COMPANY RISK AND RESILIENCE THROUGH BUSINESS CONTINUITY MANAGEMENT .....	.249
<i>Douglas Paton and Rosemary Hill</i>	
Introduction .....	.249
Business Continuity and Disaster .....	.250
Business Resilience and Continuity .....	.250
Business Continuity Planning .....	.252
Business Continuity Planning: What it Means in Practice .....	.253
Establishing Business Continuity Capability .....	.255
A Capability for Change: Planning for Success and Planning for Failure .....	.256
Business Continuity: Selection and Training .....	.259
Staff Selection .....	.259
Training for BCM Roles .....	.260
Crisis Management Systems and Procedures .....	.263
Conclusion .....	.264
References .....	.264
16. RESILIENCE IN EMERGENCY MANAGEMENT: MANAGING THE FLOOD .....	.267
<i>Douglas Paton and Trevor Auld</i>	
Introduction .....	.267
Warning, Alarm and Mobilization .....	.268
Response Management and Well-Being .....	.270
Information and Decision Management .....	.272
Team Performance .....	.274
Adaptive Capacity: The Characteristics of Emergency Managers .....	.278
Organizational Factors .....	.281
Recovery and Reintegration .....	.282
References .....	.285
17. PLANNING FOR HAZARD RESILIENT COMMUNITIES .....	.288
<i>David King</i>	
Introduction .....	.288

Planning and Community: Concepts and Meanings	289
Mitigation, Response and Recovery	296
Mitigation	297
Response	299
Recovery	300
Conclusion	302
References	303
18. DISASTER RESILIENCE: INTEGRATING INDIVIDUAL, COMMUNITY, INSTITUTIONAL AND ENVIRONMENTAL PERSPECTIVES	305
<i>Douglas Paton</i>	
Introduction	305
Vulnerability	307
Resilience	309
Modeling Comprehensive Adaptive Capacity	309
Changes in Adaptive Resource Availability	311
Resilience and Community Development	313
Conclusion	315
References	316
<i>Index</i>	319

DISASTER RESILIENCE

Chapter 1

DISASTER RESILIENCE: BUILDING CAPACITY TO CO-EXIST WITH NATURAL HAZARDS AND THEIR CONSEQUENCES

DOUGLAS PATON

*Keep my words positive, because my words become behaviors.
Keep my behaviors positive, because my behaviors become habits.
Keep my habits positive, because my habits become my values.
Keep my values positive, because they become my destiny.*

Mahatma Gandhi

INTRODUCTION

A long history of development in locations which has resulted in increased societal susceptibility to experiencing adverse impacts from interaction with natural processes, such as volcanic, wildfire, storm, flooding, tsunami and seismic events, has stimulated interest in understanding how to manage the associated risk. This is no easy task. Objectively, societal risk from natural hazards is constantly increasing. Even if the probability and intensity of hazard activity remain constant, continuing population growth and economic and infrastructure development results in a concomitant increase in the potential magnitude and significance of loss and disruption associated with hazard activity, and consequently, risk. In this book, the focus is on managing risk through influencing the consequences of hazard exposure. It does

so by identifying factors that influence a capacity for co-existence with periodically hazardous, but often beneficial, environmental elements. This involves developing a capability to sustain societal processes should disaster occur through the proactive development of a capacity to adapt or adjust to the consequences of hazard activity.

The most effective strategy for achieving this outcome is planning to avoid development in areas susceptible to hazard impacts (Burby, Deyle, Godschalk, & Olshansky, 2000). While this approach must retain a prominent position in the battery of hazard mitigation strategies, particularly with regard to decisions about future development in areas susceptible to hazard activity and post-disaster rebuilding, it does not cater for all circumstances.

Much economic, infrastructure and social development has already occurred in areas susceptible to disruption and loss from hazard activity. For example, in her review of research from United States Geological Survey and Smithsonian Institute sources, Mayell (2002) describes how there are some 457 volcanoes with cities that house one million or more people within 100km of them. Depending on prevailing meteorological conditions, whose distribution cannot be planned for, hazards such as volcanic ash may find them. The city of Auckland, New Zealand is built on a volcanic field, the location of whose future eruptions cannot be predicted. It is difficult to plan where future development should occur if the location and distribution of future hazard activity cannot be specified in advance. While many of these cities have, so far, been spared a need to confront significant hazard events, others have. Experience of hazard activity is not, however, necessarily a disincentive for societal development.

For example, some 3.75 million people live in Naples, which has a history of experiencing adverse consequences over several millennia as a result of its proximity (within 30km) to Vesuvius. Popocatepetal, which has erupted 15 times in the past 400 years, is located 60km from Mexico City and its 20 million inhabitants (Mayell, 2002). The cities of San Francisco (U.S.) and Wellington (New Zealand), to name but a few, are built on active fault lines that have been active in historical times. These cities thus remain susceptible to experiencing considerable devastation from future seismic activity. Even if a decision to halt future development was made, a need to develop a capability to confront the consequences of hazard activity is an important component in any plan designed to facilitate a societal capacity to co-exist with the

potentially hazardous elements of its environment.

Co-existing With a Hazardous Environment

As the opening quote alludes, this starts from hazard issues being the subject of community discourse that supports choosing to develop adaptive capacity. It also involves ensuring that the choices that reflect the substance of this discourse are translated into beliefs and behaviors that, over time, become established within the fabric of society. When such values are established, societies and their members lay the foundation for a destiny that includes a capacity for their sustained co-existence with a hazardous environment.

That developing a capacity for co-existence with natural hazards is feasible, is evident from observation of communities that face regular exposure to hazard activity. For example, because it receives ashfall and ballistic debris on some 113 days/year from its proximity to Sakurajima volcano, the town of Kagoshima in Japan has developed building codes, ash removal practices and community attitudes and preparedness to facilitate continuity of societal functions during periodic volcanic episodes (Johnston, 2004). That is, when a need to confront hazard consequences prevails, adaptive mechanisms can be established within the fabric of a society.

In locations characterized by less frequent hazard activity, however, a more challenging risk management environment faces the emergency planner. If they are to rise to this challenge, emergency management planners need knowledge of the characteristics and processes that underpin a capacity to adapt to hazard consequences and they need to develop strategies to instill these into the fabric of communities at risk. Furthermore, they have to do so in the context of evolving hazard-scapes.

The hazards that communities will face will change over time. For example, growth of residential development in the peri-urban environment has increased risk from wildfire hazards. Changes in land use patterns (e.g., farming, land clearance, industrial development) have increased environmental degradation. Change is also emanating from factors such as global warming. This may result in areas which have previously enjoyed relatively benign relationships with their environment experiencing risk from new sources. Clearly, understanding the hazards that represent the source of adaptive pressures is an important