

TABLE OF CONTENTS

Preface	xv
Editor Biographies	xix
Author Biographies	xxv

UNIT I. **METHODOLOGICAL ISSUES IN TERRORISM RESEARCH**

Chapter 1. Domain Mapping of Contemporary Terrorism Research

Edna Reid and Hsinchun Chen

Chapter Overview	3
1. Introduction.....	4
2. Related Work	4
3. Research Design.....	8
4. Results	11
5. Conclusion	20
6. Acknowledgements	21
References	21
Appendix: List of 42 Influential Terrorism Researchers	23
Suggested Readings	26
Online Resources	26
Discussion Questions	26

Chapter 2. Research on Terrorism: A Review of the Impact of 9/11 and the Global War on Terrorism

Andrew Silke

Chapter Overview	27
1. Introduction.....	28
2. The Nature of This Review.....	32
3. Trends in Data-Gathering and Analysis.....	33
4. Research on Terrorist Groups	38
5. Research on Terrorist Tactics.....	41
6. Some Conceptual Issues	44
7. Conclusions.....	46
References	48
Suggested Readings	49
Discussion Questions	49

Chapter 3. Who Are the Key Figures in “Terrorism Studies”?

Sam Raphael

Chapter Overview	51
1. Introduction.....	52
2. Constructing the Framework: The Multiplicity of “Terrorism Studies,” the Role of the Audience, and the Importance of Methodological Rigor.....	53
3. Employing the Framework: Selecting the Time Period; Constructing the Research Community	56
4. Constructing the Audience.....	59
5. Measuring the Opinions of the Relevant Audience: What Does the Peer Research Community Think?.....	60
6. Establishing the Threshold: Exactly <i>What Determines an Expert as Key?</i>	62
7. Conclusion.....	67
References and Footnotes	69
Suggested Readings	72
Discussion Questions	72

Chapter 4. Interviewing Terrorists: A Case for Primary Research

John Horgan

Chapter Overview	73
1. Introduction.....	74
2. Procuring Interviews	75
3. A Case Illustration: Interviews with the IRA.....	79
4. Finding and “Collecting” Participants	80
5. A Case Example: Interviewing a Terrorist.....	85
6. Interview Considerations	89
7. Issues of Validity and Reliability	94
8. Conclusions.....	96
Post-Script	97
References	97
Suggested Readings	99
Discussion Questions	99

Chapter 5. Resolving a Terrorist Insurgency by Addressing Its Root Causes

Joshua Sinai

Chapter Overview	101
1. Introduction.....	102
2. Why Root Causes Are Significant.....	103
3. How to Resolve a Conflict’s Root Causes	106
4. Conclusion	111

References and Footnotes	112
Suggested Readings	114
Online Resources	114
Discussion Questions	114

Chapter 6. A Quantitative Analysis of “Root Causes of Conflict”

Mihaela Bobeica, Jean-Paul Jéral, Teofilo Garcia, Clive Best

Chapter Overview	115
1. Introduction.....	116
2. Conflict Indicators and Automatic Data Analysis for Early Warning	117
3. LSA Applied to English Articles in EMM.....	120
4. Results and Discussion	124
5. Conclusions and Future Work.....	131
References	132
Suggested Readings	133
Online Resources	133
Discussion Questions	133
Appendix 1: Tables	134
Appendix 2: Conflict Indicators.....	136
Appendix 3: Figures.....	137
Appendix 4: Word Lists	139

Chapter 7. Countering Terrorism with Knowledge

James O. Ellis III

Chapter Overview	141
1. Introduction.....	142
2. Problems in Researching Terrorism	142
3. Problems in Terrorism Research	144
4. Problems in Terrorism Databases.....	145
5. MIPT as an Information Clearinghouse.....	147
6. MIPT-Funded Terrorism Databases	149
7. MIPT Terrorism Knowledge Base	150
8. Better Knowing What We Know about Terrorism.....	151
9. Acknowledgements	153
References	153
Suggested Readings	154
Online Resources	154
Discussion Questions	155

Chapter 8. Toward a Target-specific Method of Threat Assessment

Yael Shahar

Chapter Overview	157
------------------------	-----

1. Introduction.....	158
2. Methodology.....	158
3. Organization-specific Indicators.....	160
4. Synthesis.....	169
5. Summary: Scenarios Most Likely to Be Carried out by Relevant Terrorist Groups.....	171
6. Conclusion.....	172
Suggested Readings.....	173
Online Resources.....	174
Discussion Questions.....	174

Chapter 9. Identifying and Exploiting Group Learning Patterns for Counterterrorism

Horacio R. Trujillo and Brian A. Jackson

Chapter Overview.....	175
1. Introduction.....	176
2. Organizational Learning.....	177
3. A Four Stage Model of Organizational Learning.....	178
4. Paths of Organizational Learning.....	182
5. Determinants of Organizational Learning.....	183
6. How an Organizational Learning Model Can Inform the Design of Terrorism Informatics Systems.....	186
7. Conclusions and Discussion.....	190
8. Acknowledgements.....	191
Notes.....	192
References.....	194
Suggested Readings.....	195
Online Resources.....	195
Discussion Questions.....	195

Chapter 10. Homeland Insecurity: Data Mining, Privacy, Disclosure Limitation, and the Hunt for Terrorists

Stephen E. Fienberg

Chapter Overview.....	197
1. Introduction.....	198
2. Homeland Security and the Search for Terrorists.....	200
3. Matching and Record Linkage Methods.....	203
4. Encryption, Multi-party Computation, and Privacy- preserving Datamining.....	205
5. Selective Revelation, Risk-utility Tradeoff, and Disclosure Limitation Assessment.....	207
6. Analyzing Network Data Based on Transactions.....	210

7. Conclusions	212
8. Acknowledgments	214
Notes	214
References	215
Suggested Readings	217
Discussion Questions	218

UNIT II. TERRORISM INFORMATICS TO SUPPORT PREVENTION, DETECTION, AND RESPONSE

Chapter 11. Case Study of Jihad on the Web: A Web Mining Approach

Hsinchun Chen, Jialun Qin, Edna Reid, Yilu Zhou, and Marc Sageman

Chapter Overview	221
1. Introduction.....	222
2. Previous Research	222
3. Proposed Approach	225
4. Analysis Results.....	228
5. Discussion and Future Work.....	233
References	234
Suggested Readings	235
Online Resources	235
Discussion Questions	235

Chapter 12. Studying Global Extremist Organizations’ Internet Presence Using the Dark Web Attribute System: A Three Region Comparison Study

Jialun Qin, Yilu Zhou, Edna Reid, and Hsinchun Chen

Chapter Overview	237
1. Introduction.....	238
2. Literature Review.....	239
3. Studying Global Extremist Organizations’ Internet Usage: A Three-Region Empirical Study.....	243
4. Conclusions and Future Directions.....	261
References	263
Suggested Readings	265
Online Resources	265
Discussion Questions	266

Chapter 13. Content Analysis of Jihadi Extremist Groups' Videos

Arab Salem, Edna Reid, and Hsinchun Chen

Chapter Overview	267
1. Introduction	268
2. Related Work.....	269
3. Methodology	272
4. Results.....	276
5. Conclusion	280
6. Acknowledgements.....	281
References	281
Suggested Readings	283
Online Resources	283
Discussion Questions	284

Chapter 14. Analysis of Affect Intensities in Extremist Group Forums

Ahmed Abbasi and Hsinchun Chen

Chapter Overview	285
1. Introduction	286
2. Related Work.....	287
3. Research Gaps and Questions.....	292
4. Research Questions.....	293
5. Research Design	294
6. System Design.....	294
7. Evaluation	297
8. Results.....	300
9. Conclusions	303
References	304
Suggested Readings	306
Online Resources	306
Discussion Questions	307

Chapter 15. Document Selection for Extracting Entity and Relationship Instances of Terrorist Events

Zhen Sun, Ee-Peng Lim, Kuiyu Chang, Maggy Anastasia Suryanto, and Rohan Kumar Gunaratna

Chapter Overview	309
1. Introduction	310
2. Literature Review	313
3. Domain Specific Event Entity Relation Extraction Task with Document Ranking	317
4. Case Studies	325
5. Conclusions and Discussion	343
6. Acknowledgements.....	344

References	344
Suggested Readings	346
Online Resources	346
Discussion Questions	346

Chapter 16. Data Distortion Methods and Metrics in a Terrorist Analysis System

Shuting Xu and Jun Zhang

Chapter Overview	347
1. Introduction	348
2. Terrorist Analysis System	350
3. Data Distortion	350
4. Data Distortion Measures	354
5. Utility Measure	357
6. Experiments and Results	358
7. Conclusions and Discussions	361
References	362
Suggested Readings	364
Online Resources	364
Discussion Questions	364

Chapter 17. Content-Based Detection of Terrorists Browsing the Web Using an Advanced Terror Detection System (ATDS)

Yuval Elovici, Bracha Shapira, Mark Last, Omer Zaafrany, Menahem Friedman, Moti Schneider, and Abraham Kandel

Chapter Overview	365
1. Introduction	366
2. Related Work	367
3. Advanced Terrorist Detection System	368
4. Evaluation	374
5. Conclusions and Discussion	381
6. Acknowledgements	382
References	382
Suggested Readings	384
Online Resources	384
Discussion Questions	384

Chapter 18. Text Mining the Biomedical Literature for Identification of Potential Virus/Bacterium as Bio-terrorism Weapons

Xiaohua Hu, Xiaodan Zhang, Daniel Wu, Xiaohua Zhou, and Peter Rumm

Chapter Overview	385
1. Introduction	386

2. Related Works	387
3. Background of Virus and Bacterium.....	387
4. Method.....	389
5. Experimental Results	394
6. Potential Significance for Public Health and Homeland Security.....	404
7. Acknowledgements.....	404
References	404
Suggested Readings	405
Online Resources	405
Discussion Questions	405

Chapter 19. Leveraging One-Class SVM and Semantic Analysis to Detect Anomalous Content

Ozgur Yilmazel, Svetlana Symonenko, Niranjan Balasubramanian, and Elizabeth D. Liddy

Chapter Overview	407
1. Introduction.....	408
2. Overview of Related Work.....	409
3. Case Study: One-class Categorization Approach to the Problem of Identifying Anomalous Content	411
4. Conclusions and Discussion	420
References	421
Acknowledgements	423
Suggested Readings	423
Online Resources	423
Discussion Questions	423

Chapter 20. Individual and Collective Analysis of Anomalies in Message Traffic

D.B. Skillicorn

Chapter Overview	425
1. Introduction.....	426
2. Analysis of Single Messages	428
3. Analysis of Multiple Messages.....	435
4. Conclusions.....	447
5. Acknowledgements.....	448
References	448
Suggested Readings	449
Discussion Questions	449

Chapter 21. Addressing Insider Threat through Cost-Sensitive Document Classification

Young-Woo Seo and Katia Sycara

Chapter Overview	451
1. Introduction	452
2. Related Work.....	454
3. Overview	455
4. Classification for Confidential Authorization.....	457
5. Experiments.....	461
6. Conclusion	468
7. Acknowledgments	470
References	470
Suggested Readings	471
Online Resources	472
Discussion Questions	472

Chapter 22. Using Web Mining and Social Network Analysis to Study the Emergence of Cyber Communities in Blogs

Michael Chau and Jennifer Xu

Chapter Overview	473
1. Introduction	474
2. Research Background	475
3. Research Questions.....	479
4. A Framework for Blog Collection and Analysis.....	480
5. A Case Study on Xanga	483
6. Conclusion and Future Directions.....	488
7. Acknowledgements.....	489
References	489
Appendix	492
Suggested Readings	493
Online Resources	493
Discussion Questions	493

Chapter 23. Automatic Extraction of Deceptive Behavioral Cues from Video

Thomas O. Meservy, Matthew L. Jensen, W. John Kruse, Judee K. Burgoon, and Jay F. Nunamaker Jr.

Chapter Overview	495
1. Introduction	496
2. Literature Review	496
3. Research Method and Examples.....	501

4. Experiments and Results	510
5. Conclusion	512
6. Acknowledgements.....	513
References	513
Suggested Readings	515
Online Resources	515
Discussion Questions	516

Chapter 24. Situational Awareness Technologies for Disaster Response

*Naveen Ashish, Ronald Eguchi, Rajesh Hegde, Charles Huyck,
Dmitri Kalashnikov, Sharad Mehrotra, Padhraic Smyth,
and Nalini Venkatasubramanian*

Chapter Overview	517
1. Introduction	518
2. Situational Awareness.....	523
3. Event Extraction	527
4. Event Data Management	531
5. Event Analysis and Visualization	534
6. Artifacts	539
7. Conclusion	541
8. Acknowledgements.....	542
References	543
Online Resources	544
Questions for Discussion.....	544
Author Index	545
Subject Index	547