Contents

Foreword ix
Introduction xi
Preface xiii

Computer Network Attack: The Operational Context

I CNE and CNA in the Network-Centric Battlespace: Challenges for Operators and Lawyers
Arthur K. Cebrowski 1

II Technology and Law: The Evolution of Digital Warfare
David Tubbs, Perry G. Luzwick, Walter Gary Sharp, Sr.. 7

III A Different Kettle of Fish: Computer Network Attack
Roger W. Barnett 21

IV Information Operations, Information Warfare, and Computer Network Attack: Their Relationship to National Security in the Information Age
Daniel T. Kuehl 35

Computer Network Attack: The Legal Context

V International Law, Cybernetics, and Cyberspace
Anthony D'Amato 59

VI Computer Network Attack as a Use of Force under Article 2(4) of the United Nations Charter
Daniel B. Silver. 73

VII Computer Network Attacks and Self-Defense
Yoram Dinstein 99

The opinions shared in this paper are those of the author and do not necessarily reflect the views and opinions of the U.S. Naval War College, the Dept. of the Navy, or Dept. of Defense.

VIII Self-Defense against Computer Network Attack under International Law
Horace B. Robertson, Jr. 121

IX Computer Networks, Proportionality, and Military Operations
James H. Doyle, Jr. 147

X Some Thoughts on Computer Network Attack and the International Law of Armed Conflict
Louise Doswald-Beck 163

XI Wired Warfare: Computer Network Attack and the *Jus in Bello*
Michael N. Schmitt 187

XII Proportionality, Cyberwar, and the Law of War
Ruth G. Wedgwood 219

XIII Neutrality and Information Warfare
George K. Walker 233

XIV Information Operations in the Space Law Arena: Science Fiction Becomes Reality
Douglas S. Anderson and Christopher R. Dooley 265

XV Fourth Dimensional Intelligence: Thoughts on Espionage, Law, and Cyberspace
David M. Crane 311

XVI Computer Network Attacks by Terrorists: Some Legal Dimensions
John F. Murphy 321

XVII Meeting the Challenge of Cyberterrorism: Defining the Military Role in a Democracy
Charles J. Dunlap, Jr. 353

XVIII "Weapons like to Lightning" US Information Operations and US Treaty Obligations
Jeffrey H. Smith and Gordon N. Lederman 375

XIX International Law of Armed Conflict and Computer Network Attack: Developing the Rules of Engagement
Brian T. O'Donnell and James C. Kraska 395

XX Responding to Attacks on Critical Computer Infrastructure: What Targets? What Rules of Engagement?
James P. Terry 421

XXI Is It Time For a Treaty on Information Warfare?
Phillip A. Johnson 439

Appendix
An Assessment of International Legal Issues in Information Operations 459

Contributors 531
Index 541