



# TABLE OF CONTENTS

INTRODUCTION .....	1
CHAPTER 1. ENDS AND MEANS IN PATTERN ANALYSIS	4
1. The Aims of Pattern Analysis .....	4
2. Properties of Image Operators .....	11
3. Performance Criteria for Image Operators .....	18
4. Choosing Image Operators .....	23
5. Pattern Analysis Algorithms .....	28
CHAPTER 2. ANALYSIS OF ABSTRACT PATTERNS	35
1. Paradigmatic Deformations .....	35
2. Syntactic Deformations .....	47
3. Measuring Syntactic Style .....	56
4. Relation Image Algebras and Their Transduction .....	65
5. Abstract Networks and Their Symmetries .....	87
CHAPTER 3. ANALYSIS OF CERTAIN TEMPORAL PATTERNS	115
1. Images on the Time Axis .....	115
2. Some Numerical Sequence Patterns .....	139
3. Segmentation Theory for Time Patterns .....	146
4. Image Analysis for Other Regime Patterns .....	171
5. Neural Firing Patterns .....	216
CHAPTER 4. POINT PATTERNS	226
1. Lattice Point Patterns .....	226
2. X-ray Analysis of Crystal Patterns .....	253
3. Distinguished Points .....	269

CHAPTER 5. SET PATTERNS AND STATISTICAL GEOMETRY	280
1. Single Generators .....	280
2. Convex Sets - Order One Feature Logic .....	299
3. Order Two Feature Logic .....	323
4. Infinite Order Feature Logic .....	337
5. A Result on Image Approximation .....	349
6. Probing Boundaries .....	352
7. Some Stereology .....	370
8. Biological Shape .....	377
CHAPTER 6. NETWORK PATTERN PROCESSORS	385
1. The Image Algebra of a Microworld .....	385
2. The Observables .....	403
3. The Initial Network .....	438
4. The Functioning Network .....	462
5. The Learning Network .....	471
6. Inference of the Image Algebra .....	486
7. The Malfunctioning Network .....	510
CHAPTER 7. PATTERN PROCESSORS FOR LANGUAGE ABDUCTION	519
1. Abduction of Regular Structures .....	519
2. Abduction of Some Language Patterns .....	526
3. Word Class Partitioning .....	536
4. Network Partitioning into Word Class .....	549
5. Discovering Syntactic Variables .....	558
NOTES .....	565
BIBLIOGRAPHY .....	580
INDEX .....	592

