Contents

Preface xi

PART I. INTRODUCTION

1. Functions of Memory

Lars-Göran Nilsson

Views on Past and Present 3 Views on the Future 7

PART II. CONCEPTUAL PERSPECTIVES 17

2. Memory Research: What Kind of Progress?

Endel Tulving

Introduction 19
Some Glimpses into the Past 20
Growth in Memory Research 23
Limitations and Shortcomings 26
Steps to the Future 29
A Concluding Comment 32

3. On the Descriptive and Explanatory Functions of Theories of Memory

W. K. Estes

Introduction 35
Three Modes of Theorizing: An Illustration 35
Functions of Theories 41
Routes to Explanation 42
The Descriptive-Explanatory Dimension:
Remarks on the Standing of Current Theories 46
Implications of Memory Models for Strategies of
Theory Construction 57

4. Conscious and Unconscious Cognition: A Computational Metaphor for the Mechanism of Attention and Integration

D. Alan Allport

Introduction 61
Production Systems 67
Preattentive Processes and Conscious Perception 77

PART III. PERCEPTUAL PERSPECTIVES 91

5. Memory Functions in Visual Event Perception

Gunnar Johansson

Background 93
About the Term "Event Perception" 94
Time as a Fundamental Dimension in Visual Motion Perception 95
Event Perception and The Classification of Perception
and Memory 97
Event Perception as "Memory" 97
Perceptual Effects of Liminal Changes in the Stimulus Flow 98

Perceptual Effects of Liminal Changes in the Stimulus Flow 98
Theoretical Consequences for the Perception-Memory Problem 101
Concluding Remarks 101

6. Convolution and Correlation in Perception and Memory

Bennet B. Murdock, Jr.

Introduction 105
Convolution and Correlation 105
Applications to Perception 108
Applications to Memory 110
Discussion 116

7. Perception, Memory, and Mental Processes

Donald A. Norman

Introduction 121 On Cognitive Processing 122

Representation: Schemes and Descriptions 127 Processing: Control Structures and Resources 133 Concluding Remarks 140

8. Elaboration and Distinctiveness in Episodic Memory

Fergus I. M. Craik and Larry L. Jacoby

Introduction 145
Attention 146
Rehearsal 149
Encoding 152
Encoding and Retrieval 156

Episodic and Semantic Memory 161

Memory as "Stage Setting" as Opposed to a Trace System 162

Conclusions 163

9. The Primacy of Perceiving:

An Ecological Reformulation of Perception for Understanding Memory

M. T. Turvey and Robert Shaw

Introduction 167
The Legacy of the Past Five Centuries 168
An Ecological Reformulation 189
Some Implications for the Interpretation of Memory 216

PART IV. BIOLOGICAL PERSPECTIVES 223

10. Learning as Differentiation of Brain Cell Protein

Holger Hyden

General Considerations 225

Some Experimental Considerations 227

Synthesis of Messenger RNA at the Onset of Training 229

Are Enduring Molecular Changes a Result of Learning Mediated by a Transient Specific Problem? 235

Remaining Protein Differentiation of Neurons as a Function of Experience and Learning 238

System Changes in Learning Served by Cell Mechanisms That Modulate the Cell Membrane 241

11. Patterns of Activity in the Cerebral Cortex Related to Memory Functions

David H. Ingvar

Introduction 247
Technical Consideration 248
Discussion 253
Summary 254

12. Neuropsychological Research and the Fractionation of Memory Systems

Tim Shallice

Introduction 257
The Fractionation of Long- and Short-Term Verbal Memory 263
Neuropsychology and the Properties of the Auditory-Verbal,
Short-Term Store 267
General Discussion 273

13. Neuropsychology of Complex Forms of Human Memory

Alexander R. Luria

Introduction 279
Neuropsychological Method 280
Conclusion 288

PART V. REALITY PERSPECTIVES 291

14. Organization and Repetition: Organizational Principles With Special Reference to Rote Learning

George Mandler

Theory and Data 293
The Application of Organizational Principles 315

15. Reading Comprehension and Readability in Educational Practice and Psychological Theory

Walter Kintsch and Douglas Vipond

Introduction 329 New Directions 336 Conclusion 362

16. Applied Cognitive and Cognitive Applied Psychology: The Case of Face Recognition

Alan Baddelev

Introduction 367
Applied Research 367
Face Recognition 369
Conclusions 385

Author Index 389
Subject Index 397