

Contents

| | |
|---|------|
| <i>Introduction to the MIT Press Edition</i> | ix |
| <i>Acknowledgments</i> | liii |
| <i>Introduction to the Revised Edition (1979)</i> | 1 |
| <i>Introduction</i> | 67 |

Part I. Ten Years of Research in Artificial Intelligence (1957–1967)

| | |
|---|-----|
| 1. Phase I (1957–1962) Cognitive Simulation | 91 |
| I. Analysis of Work in Language Translation, Problem Solving, and Pattern Recognition | |
| II. The Underlying Significance of Failure to Achieve Predicted Results | |
| 2. Phase II (1962–1967) Semantic Information Processing | 130 |
| I. Analysis of Semantic Information Processing Programs | |
| II. Significance of Current Difficulties | |
| Conclusion | 149 |

Part II. Assumptions Underlying Persistent Optimism

| | |
|---------------------------------|-----|
| Introduction | 155 |
| 3. The Biological Assumption | 159 |
| 4. The Psychological Assumption | 163 |

| | |
|--|-----|
| I. Empirical Evidence for the Psychological Assumption: Critique of the Scientific Methodology of Cognitive Simulation | |
| II. <i>A Priori</i> Arguments for the Psychological Assumption | |
| 5. The Epistemological Assumption | 189 |
| I. A Mistaken Argument from the Success of Physics | |
| II. A Mistaken Argument from the Success of Modern Linguistics | |
| 6. The Ontological Assumption | 206 |
| Conclusion | 225 |

Part III. Alternatives to the Traditional Assumptions

| | |
|---|-----|
| Introduction | 231 |
| 7. The Role of the Body in Intelligent Behavior | 235 |
| 8. The Situation: Orderly Behavior Without Recourse to Rules | 256 |
| 9. The Situation as a Function of Human Needs | 272 |
| Conclusion | 281 |

CONCLUSION: The Scope and Limits of Artificial Reason

| | |
|---------------------------------------|-----|
| The Limits of Artificial Intelligence | 285 |
| The Future of Artificial Intelligence | |
| Notes | 307 |
| Index | 346 |