

# Contents

<b>List of contributors and website notice</b>	ix
<b>Preface</b>	xiii
<b>Acknowledgments</b>	xvii
<b>PART I: THE LIFE OF COGNITIVE SCIENCE</b>	1
WILLIAM BECHTEL, ADELE ABRAHAMSEN, AND GEORGE GRAHAM	
<b>PART II: AREAS OF STUDY IN COGNITIVE SCIENCE</b>	105
<b>1 Analogy</b>	107
DEDRE GENTNER	
<b>2 Animal cognition</b>	114
HERBERT L. ROITBLAT	
<b>3 Attention</b>	121
A. H. C. VAN DER HEIJDEN	
<b>4 Brain mapping</b>	129
JENNIFER MUNDALE	
<b>5 Cognitive anthropology</b>	140
CHARLES W. NUCKOLLS	
<b>6 Cognitive and linguistic development</b>	146
ADELE ABRAHAMSEN	
<b>7 Conceptual change</b>	157
NANCY J. NERSESSIAN	
<b>8 Conceptual organization</b>	167
DOUGLAS MEDIN AND SANDRA R. WAXMAN	
<b>9 Consciousness</b>	176
OWEN FLANAGAN	
<b>10 Decision making</b>	186
J. FRANK YATES AND PAUL A. ESTIN	
<b>11 Emotions</b>	197
PAUL E. GRIFFITHS	

<b>12</b>	<b>Imagery and spatial representation</b>	204
	RITA E. ANDERSON	
<b>13</b>	<b>Language evolution and neuromechanisms</b>	212
	TERRENCE W. DEACON	
<b>14</b>	<b>Language processing</b>	226
	KATHRYN BOCK AND SUSAN M. GARNSEY	
<b>15</b>	<b>Linguistic theory</b>	235
	D. TERENCE LANGENDOEN	
<b>16</b>	<b>Machine learning</b>	245
	PAUL THAGARD	
<b>17</b>	<b>Memory</b>	250
	HENRY L. ROEDIGER III AND LYN M. GOFF	
<b>18</b>	<b>Perception</b>	265
	CEES VAN LEEUWEN	
<b>19</b>	<b>Perception: color</b>	282
	AUSTEN CLARK	
<b>20</b>	<b>Problem solving</b>	289
	KEVIN DUNBAR	
<b>21</b>	<b>Reasoning</b>	299
	LANCE J. RIPS	
<b>22</b>	<b>Social cognition</b>	306
	ALAN J. LAMBERT AND ALISON L. CHASTEEN	
<b>23</b>	<b>Unconscious intelligence</b>	314
	RHIANON ALLEN AND ARTHUR S. REBER	
<b>24</b>	<b>Understanding texts</b>	324
	ART GRAESSER AND PAM TIPPING	
<b>25</b>	<b>Word meaning</b>	331
	BARBARA C. MALT	
<b>PART III: METHODOLOGIES OF COGNITIVE SCIENCE</b>		339
<b>26</b>	<b>Artificial intelligence</b>	341
	RON SUN	
<b>27</b>	<b>Behavioral experimentation</b>	352
	ALEXANDER POLLATSEK AND KEITH RAYNER	
<b>28</b>	<b>Cognitive ethology</b>	371
	MARC BEKOFF	
<b>29</b>	<b>Deficits and pathologies</b>	380
	CHRISTOPHER D. FRITH	

<b>30 Ethnomethodology</b>	391
BARRY SAFERSTEIN	
<b>31 Functional analysis</b>	402
BRIAN MACWHINNEY	
<b>32 Neuroimaging</b>	413
RANDY L. BUCKNER AND STEVEN E. PETERSEN	
<b>33 Protocol analysis</b>	425
K. ANDERS ERICSSON	
<b>34 Single neuron electrophysiology</b>	433
B. E. STEIN, M. T. WALLACE, AND T. R. STANFORD	
<b>35 Structural analysis</b>	450
ROBERT FRANK	
<b>PART IV: STANCES IN COGNITIVE SCIENCE</b>	463
<b>36 Case-based reasoning</b>	465
DAVID B. LEAKE	
<b>37 Cognitive linguistics</b>	477
MICHAEL TOMASELLO	
<b>38 Connectionism, artificial life, and dynamical systems</b>	488
JEFFREY L. ELMAN	
<b>39 Embodied, situated, and distributed cognition</b>	506
ANDY CLARK	
<b>40 Mediated action</b>	518
JAMES V. WERTSCH	
<b>41 Neurobiological modeling</b>	526
P. READ MONTAGUE AND PETER DAYAN	
<b>42 Production systems</b>	542
CHRISTIAN D. SCHUNN AND DAVID KLAHR	
<b>PART V: CONTROVERSIES IN COGNITIVE SCIENCE</b>	553
<b>43 The binding problem</b>	555
VALERIE GRAY HARDCASTLE	
<b>44 Heuristics and satisficing</b>	566
ROBERT C. RICHARDSON	
<b>45 Innate knowledge</b>	576
BARBARA LANDAU	
<b>46 Innateness and emergentism</b>	590
ELIZABETH BATES, JEFFREY L. ELMAN, MARK H. JOHNSON, ANNETTE KARMILOFF-SMITH, DOMENICO PARISI, AND KIM PLUNKETT	

<b>47</b>	<b>Intentionality</b>	602
	GILBERT HARMAN	
<b>48</b>	<b>Levels of explanation and cognitive architectures</b>	611
	ROBERT N. MCCAULEY	
<b>49</b>	<b>Modularity</b>	625
	IRENE APPELBAUM	
<b>50</b>	<b>Representation and computation</b>	636
	ROBERT S. STUFFLEBEAM	
<b>51</b>	<b>Representations</b>	649
	DORRIT BILLMAN	
<b>52</b>	<b>Rules</b>	660
	TERENCE HORGAN AND JOHN TIENSON	
<b>53</b>	<b>Stage theories refuted</b>	671
	DONALD G. MACKAY	
<b>PART VI: COGNITIVE SCIENCE IN THE REAL WORLD</b>		679
<b>54</b>	<b>Education</b>	681
	JOHN T. BRUER	
<b>55</b>	<b>Ethics</b>	691
	MARK L. JOHNSON	
<b>56</b>	<b>Everyday life environments</b>	702
	ALEX KIRLIK	
<b>57</b>	<b>Institutions and economics</b>	713
	DOUGLASS C. NORTH	
<b>58</b>	<b>Legal reasoning</b>	722
	EDWINA L. RISSLAND	
<b>59</b>	<b>Mental retardation</b>	734
	NORMAN W. BRAY, KEVIN D. REILLY, LISA F. HUFFMAN, LISA A. GRUPE, MARK F. VILLA, KATHRYN L. FLETCHER, AND VIVEK ANUMOLU	
<b>60</b>	<b>Science</b>	744
	WILLIAM F. BREWER AND PUNYASHLOKE MISHRA	
<b>Selective biographies of major contributors to cognitive science</b>		750
	WILLIAM BECHTEL AND TADEUSZ ZAWIDZKI	
<b>Author index</b>		777
<b>Subject index</b>		787