CONTENTS

Preface *vii*
Preface to the First Edition *xi*
List of Technical Abbreviations *xxv*

o n e

LANGUAGE: A PREVIEW **1**

1 Specialization for Language 1
2 A Creative System 2
3 Grammar and Linguistic Competence 5
3.1 Generality: All Languages Have a Grammar 6
3.2 Parity: All Grammars Are Equal 7
3.3 Universality: Grammars Are Alike in Basic Ways 8
3.4 Mutability: Grammars Change over Time 9
3.5 Inaccessibility: Grammatical Knowledge Is Subconscious 10
Summing Up 11
Key Terms 11
Recommended Reading 11
Exercises 12

t w o

PHONETICS: THE SOUNDS OF LANGUAGE **15**

1 Phonetic Transcription 16
1.1 Units of Representation 17
1.2 Segments 17
2 The Sound-Producing System 18
2.1 Glottal States 19
3 Sound Classes 20
3.1 Vowels, Consonants, and Glides (Syllabic and Nonsyllabic Elements) 20
4 Consonant Articulation 21
4.1 The Tongue 22
4.2 Places of Articulation 22
5 Manners of Articulation 24
5.1 Oral versus Nasal Phones 24
5.2 Stops 24
5.3 Fricatives 26
5.4 Affricates 27

5.5 Voice Lag and Aspiration 28
5.6 Liquids 29
5.7 Syllabic Liquids and Nasals 30
5.8 Glides 31
6 Vowels 32
6.1 Simple Vowels and Diphthongs 32
6.2 Basic Parameters for Describing Vowels 33
6.3 Tense and Lax Vowels 34
7 Phonetic Transcription of American English Consonants and Vowels 35
8 Suprasegmentals 37
8.1 Pitch: Tone and Intonation 37
8.2 Length 41
8.3 Stress 42
9 Speech Production 43
9.1 Coarticulation 43
9.2 Articulatory Processes 43
9.3 Some Common Articulatory Processes 44
10 Other Vowels and Consonants 48
Summing Up 49
Key Terms 50
Recommended Reading 52
Exercises 52
For the Student Linguist: "Don't Worry about Spelling" 55

three

PHONOLOGY: THE FUNCTION AND PATTERNING OF SOUNDS **57**
1 Segments in Contrast 59
1.1 Minimal Pairs 59
1.2 Language-Specific Contrasts 61
2 Phonetically Conditioned Variation: Phonemes and Allophones 62
2.1 Complementary Distribution 62
2.2 Phonemes and Allophones 63
2.3 Classes and Generalization in Phonology 64
2.4 Canadian Raising 65
2.5 English Mid Vowels and Glides 67
2.6 Language-Specific Patterns 68
3 Phonetic and Phonemic Transcription 69
3.1 Phonetic and Phonemic Inventories 71
4 Features 72
4.1 Why We Use Features 72
4.2 Feature Representations 76
5 Above the Segment: Syllables 83
5.1 Defining the Syllable 83
5.2 Onset Constraints and Phonotactics 85
5.3 Language-Specific Phonotactics 86

5.4 Setting Up Syllables 87
5.5 Syllabic Phonology 89
6 Derivations and Rules 91
6.1 The Form and Notation of Rules 92
6.2 Derivations 95
6.3 Rule Application 96
6.4 Processes and Rules: A Last Word 97
Summing Up 97
Key Terms 98
Recommended Reading 99
Appendix: Hints for Solving Phonology Problems 99
Exercises 101
For the Student Linguist: "The Feature Presentation" 108

four

MORPHOLOGY: THE ANALYSIS OF WORD STRUCTURE **111**
1 Words and Word Structure 112
1.1 Morphemes 113
1.2 Analyzing Word Structure 114
2 Derivation 118
2.1 Some English Derivational Affixes 119
2.2 Two Classes of Derivational Affixes 122
3 Compounding 123
3.1 Properties of Compounds 124
3.2 Endocentric and Exocentric Compounds 125
3.3 Compounds in Other Languages 125
4 Inflection 127
4.1 Inflection in English 127
4.2 Inflection versus Derivation 128
4.3 How Inflection Is Marked 130
4.4 Other Inflectional Phenomena 133
5 Other Morphological Phenomena 133
5.1 Cliticization 134
5.2 Conversion 134
5.3 Clipping 135
5.4 Blends 135
5.5 Backformation 136
5.6 Acronyms 137
5.7 Onomatopoeia 137
5.8 Other Sources of New Words 137
6 Morphophonemics 138
Summing Up 139
Key Terms 139
Recommended Reading 140
Appendix: How to Identify Morphemes in Unfamiliar Languages 140

Exercises 142
For the Student Linguist: "Bambification" 147

five

SYNTAX: THE ANALYSIS OF SENTENCE STRUCTURE **151**
1 Categories and Structure 152
1.1 Categories of Words 152
1.2 Phrase Structure 155
1.3 Sentences 160
1.4 Tests for Phrase Structure 161
2 Complement Options 162
2.1 Complement Options for Verbs 163
2.2 Complement Options for Other Categories 164
2.3 Complement Clauses 165
3 Move 167
3.1 *Yes-No* Questions 167
3.2 Deep Structure and Surface Structure 171
3.3 *Do* Insertion 172
3.4 *Wh* Movement 173
4 Universal Grammar and Parametric Variation 177
4.1 Verb Raising 178
5 Some Additional Structures 182
5.1 Coordination 182
5.2 Relative Clauses 184
5.3 Passives 186
Summing Up 188
Key Terms 188
Recommended Reading 190
Appendix: How to Build Tree Structures 190
Exercises 195
For the Student Linguist: "Backwards" 198

six

SEMANTICS: THE ANALYSIS OF MEANING **201**
1 The Nature of Meaning 202
1.1 Semantic Relations among Words 202
1.2 Semantic Relations Involving Sentences 204
1.3 What Is Meaning? 206
2 The Conceptual System 209
2.1 Fuzzy Concepts 210
2.2 Metaphor 211
2.3 The Lexicalization of Concepts 212

2.4 Grammaticization 216
3 Syntax and Sentence Interpretation 217
3.1 Constructional Meaning 217
3.2 Structural Ambiguity 219
3.3 Thematic Roles 221
3.4 The Interpretation of Pronouns 225
4 Other Factors in Sentence Interpretation 228
4.1 The Role of Beliefs and Attitudes 228
4.2 Setting 229
4.3 Discourse 230
4.4 Conversational Maxims 232
Summing Up 234
Key Terms 235
Recommended Reading 236
Exercises 236
For the Student Linguist: "Elvis's Biggest Fan Cleans Out Bank—Accomplice Launders the Dough" 241

seven

HISTORICAL LINGUISTICS: THE STUDY OF LANGUAGE CHANGE 245
1 The Nature of Language Change 246
1.1 Systematicity of Language Change 247
1.2 Causes of Language Change 247
2 Sound Change 249
2.1 Sequential Change 249
2.2 Segmental Change 256
2.3 Auditorily Based Change 257
2.4 Phonetic versus Phonological Change 257
3 Morphological Change 260
3.1 Addition of Affixes 260
3.2 Loss of Affixes 261
3.3 From Synthetic to Analytic to Synthetic 263
3.4 Analogy 263
3.5 Reanalysis 264
4 Syntactic Change 265
4.1 Word Order 265
4.2 Inversion in the History of English 267
5 Lexical and Semantic Change 268
5.1 Addition of Lexical Items 268
5.2 Loss of Lexical Items 272
6 Language Reconstruction 272
6.1 Comparative Reconstruction 273
6.2 Techniques of Reconstruction 274
6.3 The Discovery of Indo-European 279

Summing Up 282
Key Terms 283
Recommended Reading 284
Exercises 284

eight

THE CLASSIFICATION OF LANGUAGES **291**
1 Some Preliminaries 291
1.1 Dialect and Language 292
1.2 Types of Classification 294
2 Typological Classification 295
2.1 Phonology 296
2.2 Morphology 303
2.3 Syntax 306
2.4 Explaining Universals 310
3 Genetic Classification 313
3.1 The Indo-European Family 314
3.2 Some Other Families 318
3.3 Language Phyla 321
Summing Up 321
Key Terms 321
Recommended Reading 322
Exercises 322

nine

INDIGENOUS LANGUAGES OF NORTH AMERICA **325**
1 Origin and Classification 326
1.1 Ultimate Origins 326
1.2 Historical Relationships in North America 327
2 Phonetics and Phonology 329
2.1 Velar, Uvular, and Pharyngeal Articulations 329
2.2 Lateral Fricatives 329
2.3 Glottalized Stops and Affricates (Ejectives) 330
2.4 Vowels and Suprasegmental Features 330
2.5 Sounds Not Frequently Found 331
3 Morphology and Syntax 331
3.1 The Structure of Words 331
3.2 Grammatical Categories 334
3.3 Noun Classification 337
4 The Future of Indigenous North American Languages 340
Summing Up 341
Key Terms 341
Recommended Reading 342

ten

NATURAL SIGN LANGUAGES **343**
1 Phonology 344
1.1 Formational Elements 345
1.2 Combining Formational Elements 346
1.3 Prosody 346
2 Morphology 348
2.1 Word Formation 348
2.2 Verb Agreement 349
2.3 Classified Constructions 350
3 Syntax 353
3.1 Recursion 353
3.2 Word Order 356
3.3 Sign Language and Universal Grammar 357
4 Language as an Art Form: Sign Language Poetry 358
Summing Up 359
Key Terms 359
Recommended Reading 360

eleven

FIRST LANGUAGE ACQUISITION **361**
1 The Study of Language Acquisition 362
1.1 Methods 362
2 Phonological Development 364
2.1 Babbling 365
2.2 The Developmental Order 365
2.3 Early Phonetic Processes 366
3 Vocabulary Development 369
3.1 Strategies for Acquiring Word Meaning 370
3.2 Meaning Errors 371
4 Morphological Development 375
4.1 Overgeneralization 375
4.2 A Developmental Sequence 376
4.3 Word-Formation Processes 377
5 Syntactic Development 378
5.1 The One-Word Stage 378
5.2 The Two-Word Stage 379
5.3 The Telegraphic Stage 380
5.4 Later Development 381
5.5 The Interpretation of Sentence Structure 383
6 What Makes Language Acquisition Possible? 385
6.1 The Role of Adult Speech 386
6.2 The Role of Feedback 387
6.3 The Role of Cognitive Development 389

6.4 The Role of Inborn Knowledge 390
6.5 Is There a Critical Period? 392
Summing Up 393
Key Terms 393
Recommended Reading 394
Exercises 394

twelve

SECOND LANGUAGE ACQUISITION **399**
1 The Study of Second Language Acquisition 400
1.1 The Role of the First Language 400
1.2 The Nature of an Interlanguage 401
1.3 The Final State 402
1.4 Variation in Performance 404
2 Interlanguage Grammars 405
2.1 L2 Phonology 406
2.2 L2 Syntax 412
2.3 L2 Morphology 415
2.4 Morphology and Syntax 418
3 Factors Affecting SLA 420
3.1 Age 420
3.2 Individual Differences 421
4 The L2 Classroom 424
4.1 Modified Input 425
4.2 Modified Interaction 425
4.3 Focus on Form 425
4.4 Education in a Bilingual Environment 427
Summing Up 431
Key Terms 431
Recommended Reading 432
Exercises 433

thirteen

PSYCHOLINGUISTICS: THE STUDY OF LANGUAGE PROCESSING **435**
1 Methods of Psycholinguistic Research 436
1.1 Slips of the Tongue 436
1.2 Experimental Methods: Words in the Mind 438
1.3 Experimental Methods: Sentence Processing 441
1.4 Brain Activity: Event-Related Potentials 443
2 Language Processing and Linguistics 445
2.1 Phonetics and Phonology 445
2.2 Morphological Processing 448

2.3 Syntax 451
3 Putting It All Together: Psycholinguistic Modeling 454
3.1 The Use of Metaphors in Psycholinguistic Modeling 456
3.2 Which Model Is Right? 459
Summing Up 460
Key Terms 460
Recommended Reading 461
Exercises 461

fourteen

BRAIN AND LANGUAGE **463**
1 The Human Brain 464
1.1 The Cerebral Cortex 464
1.2 The Cerebral Hemispheres 464
1.3 The Lobes of the Cortex 467
2 Investigating the Brain 468
2.1 Autopsy Studies 468
2.2 Images of the Living Brain 469
2.3 Learning from Hemispheric Connections and Disconnections 471
3 Aphasia 472
3.1 Nonfluent Aphasia 473
3.2 Fluent Aphasia 475
4 Acquired Dyslexia and Dysgraphia 476
4.1 Reading and Writing Disturbances in Aphasia 476
4.2 Acquired Dyslexia as the Dominant Language Deficit 477
5 Linguistic Theory and Aphasia 478
5.1 Features, Rules, and Underlying Forms 478
5.2 Agrammatism 479
5.3 Function Words 479
5.4 The Loss of Syntactic Competence 480
5.5 Agrammatism in Other Languages 480
5.6 Where Is Language? 481
Summing Up 481
Key Terms 482
Recommended Reading 483
Exercises 483

fifteen

LANGUAGE IN SOCIAL CONTEXTS **485**
1 Sociolinguistics of Language 486
1.1 Discourse Analysis 486
1.2 Solidarity and Power 492
2 Sociolinguistics of Society 499

2.1 Sociolinguistic Norms 499
2.2 Social Influence on Variation 505
2.3 Languages in Contact 518
Summing Up 524
Key Terms 525
Recommended Reading 526
Exercises 527
For the Student Linguist: "When Language Goes Bad" 527

sixteen

WRITING AND LANGUAGE **531**
1 Types of Writing 532
1.1 Logographic Writing 532
1.2 Phonographic Writing 532
2 The Early History of Writing 533
2.1 Prewriting 533
2.2 Pictograms 534
3 The Development of Writing 535
3.1 Rebuses 536
3.2 Toward Syllabic Writing 536
3.3 Another Middle Eastern Writing System: Hieroglyphs 537
3.4 The Emergence of Alphabets 538
4 Some Non-European Writing Systems 541
4.1 Chinese Writing 541
4.2 Japanese Writing 543
4.3 Korean Writing 545
4.4 Cherokee Writing 546
5 English Orthography 546
5.1 Irregularities 547
5.2 Obstacles to Reform 549
6 Writing and Reading 550
Summing Up 551
Key Terms 551
Recommended Reading 552
Exercises 552

seventeen

ANIMAL COMMUNICATION **555**
1 Nonvocal Communication 556
2 Communication Structure: The Study of Signs 556
2.1 Signs 557
2.2 Types of Signs 558
2.3 Sign Structure 559

2.4 A View of Animal Communication 559
3 The Bees 560
3.1 The System 561
3.2 Bees and Humans 562
4 The Birds 563
4.1 Bird Vocalization 563
4.2 Birds and Humans 565
5 Nonhuman Primates 567
5.1 Some Functions of Nonhuman Primate Communication 568
5.2 Prosimian Communication 568
5.3 Monkeys 569
5.4 Gibbons, Orangutans, and Chimpanzees 571
6 Testing Nonhuman Primates for Linguistic Ability 573
6.1 Some Experiments 573
6.2 Nonsigning Experiments 574
6.3 The Clever Hans Controversy 575
6.4 The Great Ape Debate 576
6.5 Implications 579
7 Comparing Communication Systems: Design Features 580
7.1 The Features 580
Summing Up 583
Key Terms 584
Recommended Reading 585
Exercises 585

eighteen

COMPUTATIONAL LINGUISTICS **587**
1 Computational Phonetics and Phonology 589
1.1 The Talking Machine: Speech Synthesis 589
1.2 Speech Recognition 593
2 Computational Morphology 594
2.1 Morphological Processes 594
2.2 Some Problems in Computational Morphology 597
3 Computational Syntax 598
3.1 Natural Language Analysis 598
3.2 Natural Language Generation 604
4 Computational Lexicography 606
5 Computational Semantics 610
6 Pragmatics 613
6.1 Reference Resolution 613
6.2 Discourse Markers 614
6.3 Spoken Dialogue 615
7 Applications of Computational Linguistics 615
7.1 Indexing and Concordances 616
7.2 Information Accessing and Retrieval 617

7.3 Automatic Summarization 619
7.4 Machine Translation 619
7.5 Spoken-Dialogue Systems 621
Summing Up 622
Key Terms 623
Recommended Web Sites 624
Recommended Reading 624
Exercises 625

Glossary 627
Language Index 665
Index 671