

Contents

	<i>Preface to the second edition</i>	7
	<i>Preface to the first edition</i>	8
	<i>Introduction</i>	10
1	The great automatic grammatizator Need anything be innate?	15
2	Animals that try to talk Is language restricted to humans?	32
3	Grandmama's teeth Is there biological evidence for innate language capacity?	59
4	Predestinate grooves Is there a pre-ordained language 'programme'?	77
5	The blueprint in the brain What grammatical information might conceivably be innate?	100
6	Chattering children Are children following 'rules' when they learn to speak?	115
7	Puzzling it out Exactly how do children learn language?	139
8	Celestial unintelligibility Why propose a transformational grammar?	161
9	The white elephant problem Do we need a transformational grammar in order to speak?	175

10	The case of the missing fingerprint	195
	How do we understand speech?	
11	The Cheshire Cat's grin	230
	How do we plan and produce speech?	
12	Banker's clerk or hippopotamus?	254
	The future of psycholinguistics	
	<i>Notes and suggestions for further reading</i>	263
	<i>References</i>	267
	<i>Index</i>	283

Index

- Abrams, K., 218
acquisition of language: by
 children, 11, 29–31, 77–160,
 254–6; versus emergence, 95
Adam ('Harvard child'), 94–6, 130,
 134, 157, 264
Aitchison, J., 137, 156, 251, 260,
 263
Akmajian, A., 263
Alexander, R. D., 40
ambiguous sentences:
 comprehension of, 222–5
American Sign Language *see* sign
 language
Amis, K., 234
animal communication, 12, 32–58,
 255
anticipations (slips of the tongue),
 241, 244
Antinucci, F., 160
apes: teaching language to, 12,
 42–58, 255
aphasia, 234; *see also* dysphasia
arbitrariness (design feature of
 language), 35–7
arbitrary symbols: use by apes, 48,
 51, 57
archival nature of transformational
 grammar, 188–94, 258
articles: acquisition of, 95, 98, 155
articulation, 73–4
Atkinson, M., 265
auxiliary verbs: acquisition of, 96,
 131, 144–5, 151, 153, 156, 158
Baars, B., 224, 253
babbling, 80, 90–2, 93, 98
Bar-Adon, A., 91–3
Bastian, J., 41
bee communication, 39–41
Bellugi, U., 18, 94, 96, 128, 145
Berko, J., 128
Bernstein, B., 79
Bever, T. G., 22, 24, 32, 149, 187,
 191, 192, 198–203, 214–15, 218,
 224–5, 230, 260, 265–6
biologically controlled behaviour,
 97
bird song, 37–8, 42–3, 58, 83
blends, 239–40
Bloch, B., 35
Bloom, U., 116, 122–5, 155, 160
Blumenthal, A. L., 182–3, 202
Blumstein, S., 266
Boomer, D. S., 232, 243, 248,
 249–50
Bowerman, M., 125
brain: localization of language in,
 62–71
brain-body ratio, 62–3
Braine, M. D. S., 84, 120–1, 124,
 126–7, 265
Branch, C., 67
Bresnan, J., 217
Broca's area, 69–72
Brown, R., 18, 43–4, 81, 94–5,
 121, 124, 132, 151, 230, 250–1,
 263–5
Bruner, J., 264

- Buffery, T., 68
 Butterworth, B., 232, 266

 canonical sentoid strategy, 201
 caretaker language, 150-1; *see also*
 parent-child interaction
 Carey, P. W., 203, 224
 Carrol, L., 43, 161, 175, 195,
 239-40, 254
 Cazden, C., 18, 84, 85, 94
 centre-embedded sentences:
 comprehension of, 201-2,
 218-19
 cerebral dominance, 64-8, 82-3,
 204
 Chiat, S., 159
 child language, 12, 77-99, 115-60
 chimpanzees *see* apes
 Chomsky, C., 97
 Chomsky, N., 15-31, 40, 57-8, 86,
 99-114, 127, 137-47, 158,
 159-61, 172-6, 191, 213, 222,
 242, 255-6, 259, 263-5
 Clark, E. V., 204, 263
 Clark, H. H., 204, 263
 click experiments, 22-3, 182,
 185-7, 218
 Cohen, A., 241
 competence versus performance,
 164, 171, 174
 complexity: linguistic (for
 children), 153-8
 comprehension of language: by
 adults, 11, 195-229, 257-8; by
 children, 97-8, 147, 203-4;
 relationship to production, 195
 Comrie, B., 261
 constraints on rules, 110-12, 140,
 142, 146-7, 259
 'content' approach, 140-7, 159
 content-process controversy,
 140-2
 continuity theories (of language
 origin), 33-4

 cooing, 90-1, 98
 copula: acquisition of, 95-6
 correction (of children by parents),
 83-4, 151
 correspondence hypothesis,
 176-82
 creativity (design feature of
 language), 27-9, 40-1, 101; in
 animal communication, 46-7,
 51-2, 54, 57
 critical period (for language
 acquisition), 68, 78, 80-3, 98
 Cromer, R., 76, 98, 133, 134, 147,
 153
 Cross, T., 152
 crying, 90
 cultural transmission, 35, 37-8, 47
 Curtiss, S., 81-2, 149-50
 Cutler, A., 213, 251, 266

 Dahl, R., 15, 29
 Dale, P. S., 265
 Darwin, C., 91
 Darwin, C. J., 213
 Dax, M., 65
 decoding *see* comprehension
 deep structure, 26-7, 107-10, 140,
 169-70; lacking in child
 language, 142-6, 159; role in
 comprehension, 182-8, 256; *see*
 also transformational grammar;
 transformational rules
 Dell, G. S., 259
 Demers, R. A., 263
 derivational theory of complexity,
 176-82
 Derwing, B. L., 140, 265
 Descartes, R., 113
 descriptive adequacy, 167, 171
 design features of language, 35-40
 Desnos, R., 32
 developmental milestones, 78,
 89-98
 De Villiers, J. G., 14, 151, 265

- De Villiers, P. A., 14, 151, 265
dichotic listening, 66
discontinuity theories (of language origin), 33-4
discrimination (of speech sounds), 93, 197-8
displacement, 36, 38-9, 46-7, 51-2, 54, 57
dolphins, 41-2
Donaldson, M., 264
double articulation *see* duality
Down's syndrome, 82
Drach, E., 87
duality, 36, 38
Duncan, W., 59
dyslexia, 72
dysphasia, 12, 231, 234-6, 242, 245, 251
- Eimas, P., 93
electrodiagnosis, 66
Elliott, A., 265
emergence versus acquisition, 95
encoding *see* production
Epstein, W., 205
Ervin (-Tripp), S., 87, 88, 121, 129
Evans, W. E., 41
Eve ('Harvard child'), 94-6, 130, 157
expansions, 83-6
- Fay, D., 251
Ferguson, C. A., 265
Fillenbaum, S., 185, 187
fine-tuning hypothesis, 152
finite state model, 172
Fletcher, P., 135, 145, 158
fluctuation in child language, 132
Fodor, J. A., 22, 24, 32, 102, 149, 180-2, 198, 201, 214-15, 218, 225, 230, 265-6
Fodor, J. D., 211-13, 217, 259, 266
foot (rhythmic unit), 249-50
formal universals, 104
- Foss, D., 224
Fourcin, A., 93
Franklin, B., 139
Fraser, C., 121
Frazier, L., 213
frequency of use, 151
Freud, S., 233
Frisch, *see* Von Frisch
Fromkin, V., 246, 263, 266
Fry, D., 198
- Gage, P., 69
gap-filling models (of comprehension), 208-14, 257
garden path theory (of ambiguity), 223-5
Gardner, B. T., 44-5, 47
Gardner, R. A., 44-5, 47
Garman, M., 265
Garrett, M., 22, 32, 149, 180-2, 198, 201, 214-15, 218, 223, 225, 230, 244, 265
Gazzaniga, M. A., 67
generalization (by children), 45-6, 51, 54
Genie, 81-2, 102, 150
Geschwind, N., 71
Gleitman, H., 152, 192-3
Gleitman, L. R., 152, 192-3
Goldman-Eisler, F., 232
Goodglass, H., 237, 266
Gough, P. B., 207, 216
grammar: definition of, 12-13; organization of, 104; *see also* transformational grammar
grammatical relations (in child language), 122-6
Grosu, A., 221
Gruber, J., 123
Gua (chimp), 44
- Hafitz, J., 160
Hakes, D. T., 215-25
Halliday, M., 118, 259

- handedness, 66
 Hare, M. E., 77
 Harnish, R., 263
 'Harvard children', 94-6, 130-2,
 157; *see also* Adam; Eve; Sarah
 Hayes, C., 44
 Hayes, J. R., 176
 Henderson, A., 231
 heredity, 72
 hesitation pauses, 231-2
 hierarchical structure, 49-50, 52,
 76, 106, 129, 139, 147, 168, 171,
 256
 Hill, J. H., 68
 Hockett, C. F., 35
 holophrase, 117
 Hood, L., 125
 Hotopf, N., 244
 Hughlings Jackson, J., 66, 231
 Hungarian: acquisition of, 153-4
 Hurford J., 145
 hypothesis-making device, 103-14,
 137-8, 141
 hypothesis testing, 187-8

 imperatives, 25-7
 imitation: role in child language,
 83-6, 88
 inflections: development of, 87, 90,
 95-6, 124
 innate language capacity:
 biological evidence for, 59-99;
 child language evidence, 138-60;
 Chomsky's views on, 29-32,
 100-14; possibility of, 11-12, 16,
 29-32, 58
 intonation, 90, 93, 245
 intuitions (about language), 173,
 192-4
 irregular past tense: acquisition of,
 87, 128-9
 Isabelle (child), 81
 Jakobson, R., 91
 Johnson, S., 14
 Johnson-Laird, P., 185, 187
 Karmiloff-Smith, A., 98, 155
 Kellogg, L. A., 44
 Kellogg, W. N., 44
 Kimball, J., 219
 Kimura, D., 66
 Kinsbourne, M., 67
 Kirk, R., 185
 Klima, E., 96, 130, 145
 'knowing that' versus 'knowing
 how', 165, 191-2
 knowledge of language versus
 usage, 11, 172-4, 175-94, 256,
 258
 Koko (gorilla), 50, 53-4
 Krashen, S., 68
 Kuczaj, S., 160
 Kuhl, P., 93

 Lackner, J. R., 185
 LAD *see* language acquisition
 device
 Lana (chimp) 50-3
 Langendoen, D. T., 260
 language acquisition *see* acquisition
 language acquisition device, 112,
 256
 language as biologically controlled
 behaviour, 77-97
 language change, 137, 206, 259
 language: definition of, 35, 53;
 developmental milestones of, 78,
 89-98
 language knowledge versus usage,
 11, 172-4, 175-94, 256, 258
 language origin, 33-4
 language universals, 104
 Lashley, K. S., 72
 lateralization, 64-8, 82-3, 204
 Laver, J. D. M., 243, 249-50
 left hemisphere: role in speech,
 64-8, 82-3, 204

- left-to-right model (of speech comprehension), 208–14
- Lenneberg, E., 59–60, 62, 68, 75–83, 264
- Leopold, W. F., 91–3
- Lesser, R., 266
- Levy, J., 67
- lexical diffusion, 137
- lexical information: role in comprehension, 214–17
- Lieberman, A. M., 197–8
- Lieberman, P., 60–1
- Lifter, K., 160
- Lightbown, P., 125
- limited scope formulae (in language acquisition), 126–7
- linguistic complexity *see* complexity
- Livesley, B., 240
- Lloyd, A. L., 262
- localization of speech (in brain), 62–71
- logic, 48
- lying, 14
- Lyons, J., 263
- Mackay, D. G., 225
- McKean, K., 177
- Macklay, H., 11
- McNeill, D., 40, 115, 117, 125, 250–1
- McShane, J., 118–19
- McWhinney, B., 155, 265
- malapropisms, 238–9, 245–6, 251
- Maratsos, M., 146, 209–11, 259, 266
- Marks, L., 205
- Marshall, J., 37, 262
- Marslen-Wilson, W. D., 213
- Marta (child), 149–50
- Matthei, E., 146, 213, 266
- maturationally controlled behaviour *see* biologically controlled behaviour
- mean length of utterance, 94
- Mehler, J., 179, 203, 224
- memorization experiments, 179, 182–5
- memory limitations, 185, 218
- milestones in language development, 78, 89–98
- Miller, G. A., 177–9, 205, 222
- Miller, R., 160
- Miller, W., 67
- Milner, B., 67
- MLU *see* mean length of utterance
- modals: acquisition of, 158
- monitoring device (in production), 250–2
- Moore, T. E., 40
- Morse, P. A., 93
- Morton, J., 42
- motherese, 86–7, 150–3
- Nabokov, V., 235
- naming: development of, 118–19
- naming by split-brain patients, 68
- Nash, O., 43, 115
- nature versus nurture controversy, 16, 99, 254
- negatives: acquisition of, 90, 96, 130–2, 151; difficulty of comprehending, 226; Genie's use of, 81–2; transformational rule, 177–80
- Nelson, Katherine, 84, 127
- Nelson, Keith, 264
- Newmayer, F., 108, 142, 263, 265
- Newport, E., 152
- Nim Chimpsky (chimp), 50, 53–7
- Nooteboom, S. G., 241, 244, 246
- Nottebohm, F., 43
- noun-auxiliary inversion: development of, 144–5
- observational adequacy, 167, 171
- one-word utterances, 90, 93, 98, 115–19

- onset of language, 77, 80
- operant conditioning, 17
- operating principles: in language acquisition, 154–9, 256
- order of acquisition, 90, 95; *see also* developmental milestones
- origin of language, 33
- Osherson, D. N., 31
- over-generalization by children, 87, 116, 129, 135–6, 155
- Pačesová, J., 156
- parent–child interaction, 19, 83–9, 150–3
- passive: children's use of, 97, 203; comprehension of, 203; transformational rule, 106–7, 169–70, 177–81
- past tense: acquisition of, 87, 95–6, 128–9, 135–6
- Patterson, F. G., 50, 53–4, 58
- pauses: breathing, 231; hesitation, 231–2
- Penfield, W., 69, 71
- perceptual strategies, 191, 201–7, 257
- Perchonock, E., 177–80
- perseveration, 241–2
- Pettito, L. A., 57
- phoneme monitoring, 214–15, 224
- phonemic clause, 243
- phrase structure model, 172
- physiological adaptations (of body to language), 60–1
- picture verification experiments, 203
- pivot grammar, 120–1
- planning of speech, 73–6, 232, 242–50, 257
- Plato, 16
- plural: acquisition of, 95–6
- Postal, P., 25
- practice: role of, 78, 83, 87–9
- pragmatics, 261
- Premack, A. J., 44, 50
- Premack, D., 44, 48, 50
- probable world strategy, 147
- process approach (to language acquisition), 140–2, 147–58, 159
- production (of speech), 11, 181, 230–53, 257
- productivity *see* creativity
- programming errors, 237–42
- progressive construction: acquisition of, 95–6, 132–3, 156–7, 193
- pronouns: acquisition of, 134, 159
- Psammetichus, 100
- psychological reality: assessment of in transformational grammar, 175–94, 256, 258
- questions: formation of, 20–2, 111; in ape communication, 49, 52; in child language, 90, 96, 143–5, 148; in Genie's speech, 82; *see also wh*-questions
- Radford, A., 108, 194, 213, 263, 265
- Rasmussen, T., 67
- rate of speech, 17
- rationalist approach, 113
- rats: training of, 16–20, 48
- recall experiments, 179, 182–5; *see also* memorization experiments
- recursiveness, 163
- reduction (of adult utterances by children), 88
- reflexives, 25, 26
- Reich, P., 259
- reinforcement, 18
- relative clauses: comprehension of, 209–11, 260–1; in child language, 153, 157
- rhythmic principle (underlying speech), 76, 249, 257–8

- Ricks, D. M., 90
 right hemisphere: role in speech,
 65–8
 Roberts, L., 69, 71
 Rodman, R., 263
 Roeper, T., 213, 266
 Romaine, S., 260
 rule-governedness, 54, 124,
 128–39, 256; *see also*
 structure-dependence
 Rumbaugh, D.; 50–3, 58

 Sachs, J., 185
 Sampson, G., 30, 141, 264
 Sarah (chimp), 43, 47–50, 102
 Sarah ('Harvard child'), 94–6, 130,
 132–3, 157
 Savage-Rumbaugh, S., 50
 Savin, H., 177, 180
 Schaerlaekens, A. M. 125
 Schlesinger, I. M., 125, 146
 Sebeok, T., 264
 Seidenberg, M. S., 57
 selection errors, 236–40
 semanticity (design feature of
 language), 35, 37; in chimp
 communication, 45, 47, 51–2, 57
 sentence-matching experiments,
 178
 Serbo-Croatian: acquisition of,
 124, 153–4
 Shakespeare, W., 36
 Shelley, P. B., 14
 Sheridan, R., 238
 Shipley, E. F., 192–3
 sign language, 36, 44–7, 53–7
 similar meaning errors (slips of the
 tongue), 237–9
 similar sound errors (slips of the
 tongue), 238–9
 Sinclair-de-Zwart, H., 149
 single-word utterances *see*
 one-word utterances
 Skinner, B. F., 16–20, 254
 slips of the tongue, 12, 72, 231,
 233–4, 236–54
 Slobin, D., 86, 124, 129, 140,
 153–7, 159–60, 203, 205, 263,
 265
 slot-filling, 24–5, 48–9, 52, 57, 106,
 129, 139
 Smith, C. S., 160
 Smith, N. V., 156, 263
 Snow, C., 265
 sodium amytal test, 65, 67
 spatio-temporal intelligence, 72
 speech comprehension *see*
 comprehension
 speech discrimination *see*
 discrimination
 speech errors *see* slips of the tongue
 speech organs, 60–1
 speech planning *see* planning
 speech processing *see*
 comprehension; production
 speech production *see* production
 speech sounds, 60–1, 105–6
 Sperber, D., 261
 'split brain' patients, 67
 spontaneous usage (design feature
 of language), 36, 38
 Spooner, W. A., 240–1
 spoonerisms, 240–1
 Stahlke, H. F. W., 52
 Stevenson, R., 185
 Straf, M., 156, 251
 'strong' versus 'weak' linguistic
 universals, 142
 structural adaptations (of humans
 to language), 60–72
 structure-dependence (design
 feature of language), 20, 36, 106;
 in child language, 139–40, 256;
 lacking in animal
 communication, 39–40, 47–57
 Struhsaker, T. T., 33, 40
 subject-auxiliary inversion, 144–5,
 156

- substantive universals, 104
- suppression of meaning theory (of ambiguity), 223–5
- surface structure, 25–7, 107, 140, 142–6, 158–9, 169, 256
- syllable, 76, 249
- syntax: development of, 94–8, 114–60
- tag questions, 26–7
- Taine, H., 91
- teaching: role of in language acquisition, 78, 83–7
- telegraphic speech, 95
- Terrace, H., 50, 54–7
- Thorpe, W. H., 37, 58, 83
- Tiedemann, D., 93
- 'tip of the tongue' phenomenon, 230, 250–1
- tone group, 243, 249
- tongue slip 'laws', 243–4, 258; *see also* slips of the tongue
- Toynbee, P., 161
- Trager, G., 35
- transformational grammar: reasons for, 24–7, 108, 161–72; role in speech processing, 172–94, 213, 256–8; *see also* deep structure; transformational rules
- transformational rules: lacking in early child speech, 142–6, 158
- transpositions (slips of the tongue), 240–1, 244, 248–9
- Turkish: acquisition of, 124
- turn-taking, 36, 38, 57
- two-word stage: in child language, 81, 90, 94, 119–27; in speech of Genie, 81
- Tyler, L., 213
- typology, 261
- 142, 146–7, 259; *see also* language universals
- universal grammar, 104
- usage *see* knowledge of language versus usage
- Valian, V., 140
- verbal complexity hypothesis 214–16
- verbs: acquisition of, 160; *see also* auxiliary verbs; past tense; progressive construction
- 'versatile' verbs, 214–16
- vervet monkey, 33, 40
- Victor of Aveyron, 100
- Villiers, J. G. *see* De Villiers
- Villiers, P. A. *see* De Villiers
- Viki (chimp), 44
- vocabulary development: in ape communication, 45, 48, 51, 54; in Genie, 82; in normal children, 93, 102; in right hemisphere, 68
- vocal-auditory channel: use of, 35–6
- vocal tract, 60–1
- Von Frisch, K., 39, 41
- Vygotsky, L. S., 116–17
- Wada, J., 65
- Wanner, E., 182–5, 209–11, 259
- Washoe (chimp), 43–4
- Wason, P., 226
- Wasow, T., 31
- Watt, W. C., 188, 190, 216
- Weir, R., 89, 92
- Weksel, W., 24
- Wells, G., 151, 259
- Welsh, C. A., 157
- Wernicke's area, 70–2
- wh*-questions: in Genie's speech, 82; in normal children, 96, 111, 143–5, 148
- Wilde, O., 253
- Wilson, D., 261, 263

Umiker-Sebeok, J., 264

universal constraints, 110–12, 140,

Wodehouse, P. G., 36

word order (in child language),
123-4, 155-6

word retrieval *see* word selection

word selection, 250-3, 257

word storage, 250-3

'wug' experiment, 128

Yngve, V., 222

Zangwill, O., 68, 71-2

Zurif, E. B., 266