adaptation, 2, 4 by culture, 61 for language, 5, 11 to multimodality, 7 address forms, 117, 131–132, 135 polite pronouns, 134–137 adjacency pairs, 23–24, 26, 46–47 expansions of, 47 insertions in, 48 aggression, 147, 159 in chimpanzees vs. humans, 147 in humans, 92 alloparenting, 70, 91, 152 in humans vs. apes, 85 and shared communication system, 85 altruism, 31, 83, 86 animism, 165–166 antiquity of language, 64 apes, 19 and empathy, 84 gestures of, 77 in mother–infant dyads, 91 limited cooperation among, 31 and theory of mind, 81	Bickerton, D., 105 biology, and language, 5, 10 bipedalism, and bodily signals, 161 Birdwhistell, R., xi blinking, in interaction, 21 bonobos, 59, 155 Bougainville, 4 brain. See also encephalization and intent recognition, 15 and language, 5, 11, 62, 160 oscillations, 66 and reading, 76 reorganization in H.ergaster, 62 brain imaging and intent recognition, 15 and turn-taking, 38–39 breathing and evolution of language, 61–62, 160 and speech, 63 and turn-taking, 40 and vertebral column, 61 Broca's area, 5, 11, 62, 160 Brown, P., 119
vocalizations, 59	Brown, R., 135–136
apologies, 117 arcuate fasciculus, 5, 11	Campbell's monkeys, 58
articulators, involved in	carrying capacity, for culture, 6, 8, 151
communication, 17 ASD. See autism	child development, 68, 149 children
assertions, 51	care of, xii, 55. See also parenting
autism, 29, 93, 160	deaf, 12
symtoms of, 157	development of, 68, 79 chimpanzees, 2, 59–60, 72, 107, 147
bad news, ameliorating, 118 biases in cognition, 103 interactional, 165 in language evolution, 2 in reasoning, 166	aggression in, 147 facial expressions, 162 fission/fusion groups, 113, 154 gestures of, 19, 59, 153 infant care, 85 vocalizations, 61

Cl. 1 N 2 05 405 455	D : C 04 00 02 120 141
Chomsky, N., 2, 95, 105, 155	Darwin, C., 84, 90, 92, 128, 141
communication	Denisovans, 62
bridging human vs. animal,	design features, of human
104, 149	communicative interaction, 26
broadcast system of, 111	diversity
continuities across primates, 55	vs. human commonality, 4
Gricean, 14	of language and culture, 2, 4, 9
origin of human, xii	of languages vs. fixed
systems of animal, 10, 54	physiology, 149
without language, 1, 3, 11-13, 149	of linguistic structure vs. use, 11
communicative signals vs. instrumental	domestication, 92
actions, 81	self- or auto-, 92
consciousness, prominence of	Down syndrome, 29, 159
interaction in, 167	duetting, in animal
constructions, linguistic, 103, 156	communication, 56
content analysis, of conversation, 113	Dunbar, R., 110, 112-113
contingency between utterances, 7, 23	Durkheim, E., 119
conventions, 1, 15, 155	,,,
conversation	embedding. See recursion
analysis, 38, 45, 47, 96, 132	empathy
and double tasking, 38	cognitive and affective, 82
micro-politics of, 117	and communication, 104
self-correcting character, 26	and culture, 82
solves theory of mind	generalized in humans, 86
imponderables, 112	and oxytocin, 84
conversational inference, 33, 165	encephalization, group size and, 110
and logical error, 166	epistemics, 118
conversational structure, 46-51	ethology
strongly universal, 50	human, 5, 55
conversational topics	primate, 71
among Ju/'hoansi (!Kung), 114	Evans, N., xiv
in English, 114	evolution
in Tenejapa vs. Rossel Island, 116	of infrastructure for language, 5
cooperation, 31, 108	of language, 149, 151
and communication, 25, 32	puzzle of diversity, 5
vs. competition, 113	exchange. See also grooming
and empathy, 94	delineates hierarchy, 138
and evolutionary theory, 84, 109	of food, 138–139
in language use, 32, 54	intimate stuff vs. tribute, 134
and oxytocin, 93	laws of, 134
cooperative parenting, 60. See also	patterns as atoms of social
alloparenting	systems, 139
cooperative principle, 33	symmetrical vs. asymmetrical, 133
coordination in interaction, 25	of T vs. V pronouns, 136
cuteness, 70, 86	valuation of, 133–142
Japanese cult of, 86	, , , , , , , , , , , , , , , , , , , ,
releasers, 86	face
and selection, 89, 150	challenges to, 102
as runaway process, 90	as evolved for signalling, 162
and theory of mind, 91	hiding of, 124
, ,	<i>,</i>

loss of, 128	grammatical relations, and spatial
rituals of, 119, 130	concepts, 74
strategies to preserve, 120	grammaticalization, 74, 103
facial expressions, 17	grandmothers, 85
facial recognition vs. voice	greetings, 7, 22, 28, 143
recognition, 162	Grice, H. P., 14, 16, 32–33, 121
false-belief understanding, 82	grooming, 107, 110, 140
first contact, 11	vs. gossip, 111
Fisher, R. A., 89–90	group selection, 32, 84
fission/fusion social structure, 112,	group size
132, 151–152	cost of servicing, 108
fitness, 90, 94, 105, 109	predicted by encephalization, 110
and parenting strategy, 85	Guugu Yimithirr, 73, 75, 77
footing, 144	
free riders, 94, 108	Haeckel, E., 67
and evolutionary theory, 109	Haillom, 75
Frith, U., 157	hand
	degrees of freedom of, 17
games	as possibly evolved for sign, 161
prisoner's dilemma, 109	hearing sensitivity, and language,
zero-sum vs. coordination, 25	62, 160
gaps in interaction. See also silence	heterochrony, 68. See also neoteny
sensitivity to, 40, 56, 161	Hick's Law, 36
gaze, 19, 22, 81	hippocampus, 73-74, 80
in apes, 60	and language, 75, 77
and multimodality, 21	and social maps, 80
mutual, 86, 108	home sign, 12, 15, 82, 95
genes	Homo erectus, 61–62, 94
ancient DNA, 62, 66	Homo ergaster, 61
and language, 62, 64, 160	Homo habilis, 55
gesture, 19, 152	Homo heidelbergensis, 64
of apes, 52, 59–60, 104	honorifics, 118, 135, 155. See also
early human protolanguage, 19,	address forms
60–61, 64, 71, 94, 105	in patterns of exchange, 137
in infancy, 71	SE Asian levels, 137
and spatial cognition, 77, 150	Hrdy, S. B., 91–92, 147
Gilman, A., 136	human
gods, 4	early. See under Homo
Goffman, E., xi, 117, 121, 143	variation, 2
gorillas, 59	Hurford, J., 105
gossip, 109, 154	Huxley, T. H., 3–4, 11
Gould, S. J., 86	
grammar	imagined dialogue, 159, 163
and alternative phrasings, 101	imperatives, 51, 98, 100
as frozen conversational	India, caste system, 138
strategies, 103	indirection, 121, 155
and innateness, 103	Inhelder, B., 79
and interaction, 96–104	inner speech, 164
interactional construction of, 97	institutions, constructing, 142–147
and interactional sources, 95	intent recognition, 8, 25, 81

interaction	design space of, 10
antagonistic vs. cooperative, 25	diversity. See diversity
deprivation of, 163	evolution, 10, 104
design features of human, 26-29	as symbolic code, 105
driven by imbalances, 119	uniquely diverse communication
enables language, xii	system, 4
face-to-face character, 17, 26	usage universals, 31
factors motivating intensity,	language production, 36
107–113	vs. comprehension, 36
human adaptations for, 160	and comprehension in parallel, 38
impairments of, 29, 159	laughter, 128
niche for language use and	lemur, 56
acquisition, 156	Levelt, W., 36
of other animals, xii	Lévi-Strauss, C., 122
and psychiatric conditions, 163	lexicon, size of, 36
structure of, 24	localism, 74, 76
with supernatural beings, 164	Lorenz, K., 86–87, 90
and synchronization, 160	Estelle, Iti, 60 67, 76
time spent in, 107–108	Machiavellian intelligence
under researched, xii, 167	hypothesis, 112
interaction engine, 149	magic and witchcraft, 164
antiquity of, 106	marmosets, 56
bootstrapping into language, 55	maxims of conversation, 33
coherence of parts, 29, 156	meaning
components of, 6–8, 54	by convention vs. inference, 12, 15
layered evolution of, 151, 157	Grice's theory of, 14
as layered system, 5	mind reading, 8
interaction social, caution in, 117	Mithin, S., 105
interactional abilities, 149	monkeys, xii, 56, 58, 162
interbreeding, of ancient hominins, 66	Moser, M. B. & E., 73
interpretating, of ancient nonlinins, of interrogatives, 51	motherese, 86
interrogatives, 31	mother-infant relation, 59, 70, 85–86,
Inffaron C vi	
Jefferson, G., xi	92, 152
joint attention, 16	multimodality, 6, 17, 60
joking, 115, 122	binding problem, 19
in matrilineal vs. patrilineal	and gaze, 21
societies, 23, 122	in language evolution, 105
Joyce, J., 163	vs. vocal channel, 152
Ju/'hoansi (!Kung), 114	Ni. i. 1 1 (f :1) . 61
V 1 A :	Nariokotome boy (fossil), 61
Kendon, A., xi	Neanderthal, 62
Keynes, J. M., 165	audition, 66
kin, and natural selection, 31, 84	brain size, 92
kinship, 3–4	language capacities, 62, 64,
atom, 122, 132	153, 156
I 1 W 442	language characteristics, 153
Labov, W., 113	technology, 63, 66
language	neoteny, 87–89
acquisition, 16, 149, 156	in the brain, 89
dating of origin, 153	vs. heterochrony, 87

New Guinea, 11–12	expecting affirmation, 102
island of, 3	as repair initiators, 99
languages of, 4	unmarked, 51
Newton, I., 165	
	Radcliffe-Brown, A., 122
O'Keefe, J., 73	radical translation. See communication,
ontogeny, recapitulating	without language
phylogeny, 67	rationality, of language use, 33
opioides, upregulated in humans, 107	reaction time, and turn-taking, 35
orangutans, 60	recursion, 24, 95, 98, 155
oratory, 145	in action sequences, 49
and political leadership, 145	deeper than in grammar, 50
other minds. See theory of mind	relative clauses, interactionally
oxytocin, 93, 152, 157–158	constructed, 97
	repair
pandemic, xi, 163	and chunking of utterances, 99
parenting, 85-86. See also	in conversation, 45–46
alloparenting	and grammar, 100, 155
pauses, and negative inferences, 41	response, planning, 38
phoneme inventories, 4	ritual constraints. See politeness;
Piaget, J., 79, 86, 166	rituals
Planer, R., 105	ritualization, of communicative acts,
plans, reconstructing in	25, 60, 155
comprehension, 24	rituals
pointing, 19, 71, 79	interactional, 151
politeness, 107, 119–121, 147	positive and negative, 119
formula for computing, 120	Rossel Island, 3-4, 12, 22,
motivated rationally vs. by	82, 85, 94, 116, 124,
convention, 121	144–145, 151
negative, 131	Rotokas, 4
and plural pronouns, 136	
positive, 130	Sacks, H., xi
Prader Willi syndrome, 93	Sapir-Whorf hypothesis, 164
prediction	Schegloff, E., 47, 132
in conversation, 38	Schelling, T., 15–16
in turn-taking, 38	sclera, 19
preference organization, 102	selection
pre-sequences, 48	for cuteness, 89
primates, 54, 56	sexual, 89
and alloparenting, 85	semantic concepts, and spatial
exchange and social structure, 139	cognition, 75, 94, 100
social structure, 135	sentence types, 51–52
projection. See prediction	sequence structure, 46–51
pronouns. See address forms	sequences of utterances, 47
propositions, 52, 80, 95–96, 100	universal syntax of, 50
concept of, 51	sign language, 44, 105
proto-conversation, 68	Kata Kolok, 79
	and turn-taking, 44
questions, 22, 47, 51, 101, 142	silence, 41–42
early detection of, 98	as signal of problem, 102

skull shape	as computationally explosive, 111
and neoteny, 88	in human development, 82
and self-domestication, 92	origin of, 82
social distance, 120	and propositional attitudes, 154
horizontal vs. vertical, 135	timing
social media, xiii	of gaps between turns, 40
social relationships	of turn-taking, 7, 35, 38, 40
constructed through language,	Tok Pisin, 97
119, 131	Tomasello, M., 16, 31, 52, 105, 113, 147
managing, 131, 150	truth telling, 33–34
as rights and duties, 132	turns
three types, 133	1500 per day, 17, 108
social structure	average length, 17
computing hierarchy from	collaboratively constructed, 98
exchange, 141	ending signals of, 40
constructed vs. inherited, 132	front-loading of, 98
and spatial concepts, 135	informationally compressed,
sorcery, 12, 83, 94, 144, 165	70–71, 157
spatial cognition, 149	interactionally constructed, 96
and frames of reference, 75	turn-taking, 17, 34–45
· · · · · · · · · · · · · · · · · · ·	
and gesture, 80	across the primate order, 60
and hippocampus, 73	cognitive complexity of, 40
human poor abilities, 72	conserved nature of, 56–60
perspective taking, 79, 150	constraints in institutions, 142
and propositional structure, 100	faster than thought, 38
as source of language structure, 74	and grammar, 96, 98
spatial language, cardinal directions,	and human evolution, 60
73, 154	in infancy, 68, 70
speech, slow compared to	institutional, 142
comprehension, 36	and intersubjectivity, 34
speech acts, 46	of monkeys, 56
culture specific, 22, 52	multimodal nature of, 42
and imperatives, 51	and overlaps, 40
linguistic packaging of, 100-101	as primate heritage, 71
no fixed form-meaning	phylogeny of, 55
mapping, 51	rules for, 35, 40
performatives, 144	in sign languages, 44
universals of, 22, 51	stable across populations, 42
speech events, 143	timing as ancient, 152
Sterelny, K., 105	vocalizations without, 35, 68
symbolism, 63	Tylor, E. B., 166
of exchange, 134, 136, 147	Tzeltal, 116
syntax. See grammar	Mayan language, 17
.,	,
teasing, 121–128	universals
function of, 128	concept of, 30
structure of, 122	of conversational repair, 45
target of, 122	and exceptions, 3
Tenejapa, 116, 124	of grammar, 2, 9, 30
theory of mind, 81, 104–105, 108	of language, 2, 30, 52
01, 101 103, 100	51 minguage, 2, 50, 52

exceptions to, 9 use, 30, 33 of patterns of address, 136 of sequence organization, 50 and shared descent, 3 of turn-taking, 42, 146

vocal apparatus, human, 5

way-finding, 72 Weber, M., 113 Wiessner, P., 114 Wernicke's area, 5, 11 Wrangham, R., 93 writing, 77

Yélî Dnye, 4, 22, 116