List of Symbols

Symbol	*Meaning*	*Page*
$b \in A$	b is a member of set A	4
$b \notin A$	b is not a member of set A	4
$\{a,b\}$	(unordered) set with members a and b	5
$\{X\|\ldots\}$	set of all X such that...	6
$A = B$	sets A and B are equal (identical)	9
$\|A\|$	cardinality of set A	9
$\#(A)$	cardinality of set A	9
$\aleph_0$	aleph-zero (cardinality of set of natural numbers)	9
$\emptyset$	empty set	9
$A \subseteq B$	A is a subset of B	9
$A \subset B$	A is a proper subset of B	10
$A \not\subseteq B$	A is not a subset of B	10
$\wp A$	power set of A	11
2^A	power set of A	11
$A \cup B$	union of sets A and B	11
$\cup A$	union of all sets in A	12
$A \cap B$	intersection of sets A and B	12
$\cap A$	intersection of all sets in A	14
A-B	difference of sets A and B	14
A'	complement of set A	16
U	universe of discourse	16
$x+y$	arithmetic addition	20
$x*y$	arithmetic multiplication	20
$A+B$	symmetric difference of sets A and B	25
$<a,b>$	ordered pair	27
$A \times B$	Cartesian product of sets A and B	28
R^{-1}	inverse of relation R	29
$F: A \rightarrow B$	F is a function from A to B	31
$F(a)$	value of F at argument a	31
$G \circ F$	composition of functions F and G	33
id_A	identity function in set A	34
$x > y$	x is greater than y	43
$x \not> y$	x is not greater than y	43
$[[x]]$	equivalence class containing x	45
$A - B$	sets A and B are equivalent	55
$\mathbf{N}$	set of natural numbers	57
A^*	set of all strings on A	58
$\mathbf{Z}$	set of integers	59
$2^{\aleph_0}$	cardinality of $\wp\mathbf{N}$	63
$[0,1]$	set of real numbers between 0 and 1	64
$\alpha \oplus \beta$	cardinal addition	73
$\alpha \otimes \beta$	cardinal multiplication	73
$x \cdot y$	arithmetic multiplication	78

$\lvert x \rvert$	absolute value of x	82
$\sim p$	negation of proposition p	99
$p \,\&\, q$	conjunction of propositions p and q	99
$p \vee q$	disjunction	99
$p \rightarrow q$	conditional	99
$p \leftrightarrow q$	biconditional	101
1	true (truth value)	101
0	false (truth value)	111
$P \Leftrightarrow Q$	P is logically equivalent to Q	111
$P \Rightarrow Q$	P logically implies Q	115
$\therefore$	therefore	138
$\forall$	universal quantifier	138
$\exists$	existential quantifier	143
$[[\alpha]]$	semantic value of α	213
$\alpha^\frown\beta$	concatenation of strings α and β	239
$-p$ or $\neg p$ or $\bar{p}$	negation of proposition p	239
$p \wedge q$ or $p \bullet q$	conjunction of propositions p and q	239
$p \supset q$	conditional	240
$p \downarrow q$	neither p nor q	240
$p \mid q$	Sheffer stroke	241
*	undefined (truth value)	249
$a \circ b$	general algebraic operation	251
e_l	left identity element	251
e_r	right identity element	252
e	(two-sided) identity element	252
a^{-1}	inverse of a	253
0_l	left zero	253
0_r	right zero	278
$\leq$ or $\geq$	generalized ordering relation	278
$a \parallel b$	a and b are incomparable	278
$\vee B$	least upper bound (supremum) of B	278
$\wedge B$	greatest lower bound (infimum) of B	281
$a \wedge b$	meet of a and b	281
$a \vee b$	join of a and b	288
$(X]$	least ideal generated by X	288
$[X)$	least filter generated by X	290
0	bottom or zero of a lattice	290
1	top or unit of a lattice	293
a^*	lattice complement of a	304
$a \Rightarrow b$	pseudo-complement of a relative to b	306
$\mathbf{P}^+$	collection of filters on Kripke-frame $\mathbf{P}$	307
$M \models_p s$	s is true at information state p in model M	326
$[[\alpha]]^{M,g}$	denotation of α relative to model M and assignment g	338
λ	lambda operator	340
D_a	set of denotations of type a	344
ME_a	set of meaningful expressions of type a	346
$D_b D_a$	set of all functions from D_a to D_b	374
D_E	determiner in the set of entities E	378
π	permutation of a set	

Q_E	quantifier on domain E	383
$-Q$	external negation of quantifier Q	383
$Q-$	internal negation of quantifier Q	383
$Q_{\bar{E}}$	dual of quantifier Q_E	384
D_E^X	restriction of D to context set X in E	398
$\Box$	necessity operator	415
$\Diamond$	possibility operator	415
$\mathbf{I}$	set of indices	415
$\mathbf{M}^{\mathbf{I}}$	intensional model with respect to $\mathbf{I}$	415
e or Λ	empty string	434
x^R	reversal of string x	434
a^n	n repetitions of symbol (or string) a	436
$\psi \rightarrow \omega$	rewrite string ψ as string ω	437
$\psi \Rightarrow \omega$	ψ yields ω in one rule application	438
$A \rightarrow \psi \,/\, \alpha\_\_\beta$	rewrite A as ψ in context $\alpha\_\_\beta$	449
Σ	alphabet (for automaton)	458
δ	transition function (for automaton)	458
$\vdash$	produces in one move	459
$\vdash^*$	produces in zero or more moves	460
Δ	transition relation (for automaton)	462
$A \cdot B$ or AB	concatenation of languages A and B	464
A^*	closure (Kleene star) of language A	464
Γ	stack alphabet of a pushdown automaton	488
$\stackrel{*}{\Rightarrow}$	yields in zero or more rule applications	497
#	blank (for Turing machines)	507
L	move left (for Turing machines)	508
R	move right (for Turing machines)	508
$E(M)$	encoding of Turing machine M	521
$E(x)$	encoding of string x	521
U	the universal Turing machine	521
L^+	positive closure of language L	533
$n!$	n factorial	535
$A\,[i,j,k]$	nonterminal A with index sequence $[i,j,k]$	536
$w_1 \uparrow w_2$	"split string" (in head grammar)	548
A/B or $A\backslash B$	complex category (in categorial grammar)	550
#	boundary symbol (in transformational grammar)	556