

# Index

- #-boolean valuation ( $\# = \wedge, \vee, \neg$ , etc.), 65–71
- #-classical ( $\# = \wedge, \vee, \neg$ , etc.), *see* classicality
- $\#_b$  (truth-function associated with  $\# = \wedge, \neg$ , etc., on boolean valuations), 387, 403, 620
- & (special conjunction-like notions), 346, 662, 669, 702, 906
- $\diamond$  (modal operator), 276
- $\perp$ , *see* Church negation
- $\Lambda$ , 1182–1185
- $\Omega$ 
  - Porte’s constant for the  $\mathbb{L}$ -modal system, 484
  - temporary use as a 1-ary connective, 1080
- $\Vdash$ 
  - closure relation in the semantics of orthologic, 919
  - gcr (for a contrast with consequence relations), 392, 844
  - propositional entailment in Gärdenfors semantics, 643
  - structural completion of a consequence relation, 163, 179
  - supervenience determined consequence relation, 1142
- $\|A\|$  (set of valuations, or set of points in a model, verifying  $A$ ), 138, 279, 643, 811, 895
- $\succ$  (sequent separator), 103, 188
- “ $\langle \rangle$ ” notation, 355
- $\bar{\wedge}$  (IL *nand*), 1241
- $\boxtimes$ 
  - component switching operation on formulas, 716, 736
  - tuple splicing operation, 40
- $\circ$ 
  - composition of functions, 9
- fusion (or multiplicative conjunction), 147, 345, 347
- hybrid connective (conjunction and disjunction), 469
- relative product, 501, 732
- various other connectives, 256, 479, 1148
- $\Upsilon$  (deductive disjunction), 50, 420, 555, 892
- $\dashv$  notation, 63
- $\ddot{\vee}$  (Church disjunction), 235
- $\ddot{\vee}$  (pseudo-disjunction, *q.v.*), 235, 555, 1320
- $\delta$ 
  - Lukasiewicz’s variable functor notation, 1157
  - Blok–Pigozzi  $\delta(t), \varepsilon(t)$  notation, 258
  - superscripted to denote the dual of a truth function, 405
- $\dot{\cup}$  (closure of union), 10
- $\kappa$ , 1112–1114
  - connective to form contraries, 850
  - converse-forming connective in *BCIA* logic, 1112
- $\lambda$ , *see* lambda notation, *see* lambda
- $\wedge_b, \vee_b$ , etc. ( $\#_b$  for boolean  $\#$ ), 403
- $\leftrightarrow$ , 83
  - biconditional connective (*see* biconditional, equivalence), 48
- $\leftrightarrow_m$  (multiplicative biconditional), 1130
- $\leq$ 
  - $\leq$ -based algebraic semantics, 246–250
  - arbitrary partial order (with converse  $\geq$ ), 2
  - ordering of truth-values, 621
  - partial ordering of valuations, 138, 436, 750, 914, 1173

- $\vee^*$  (theorem disjunction or upper bound for theorems), 573
- $\models$ 
  - $\models_{\mathbf{M}}$  with  $\mathbf{M}$  a matrix, 203
  - “ $\models$ ” used for semantic consequence relations, 57
  - truth relation for equational logic, 32
  - truth relation for first order logic, 36
  - truth relation in Kripke semantics for IL, 307
  - truth relation in Kripke semantics for modal logic, 279
  - truth relation in Urquhart semantics for relevant logic, 337
- $\mu$ 
  - $\mu BCI$  (monothetic  $BCI$ ), 1108
  - multiplicity function, 373
  - temporary use in connection with probability, 657
- $\multimap$  (linear implication), 345, 349, 669
- $\neg_c, \neg_i$  (cohabiting intuitionistic and classical negation), 585
- $\neg$ 
  - complementation, 21
  - negation connective (*see* negation), xvi, 48
- $\neg_d$  (dual intuitionistic negation), 92, 1222
- $\omega$ , xv
- $\oplus$  (temporary notation for a variant disjunction), 835
- $\otimes$ 
  - combined matrix evaluations, 216
  - direct products of algebras or matrices, 28, 212
  - Girard’s notion for multiplicative conjunction, 345
- $\pi$  (binary connective for IL), 1068, 1076
- $\succsim$  (pre-order), 2
- $\succsim_L$ , 14, 15
- $\succsim_R$ , 14
- $\sigma$ 
  - connective to form subcontraries, 850
  - variable over sequents, 120
- $\sqcup$  (weak disjunction), 887
- $\square$  and  $\Box$ , xiv, 275
- $\rightarrow$ , 276
- $\supset$ 
  - additive implication in linear logic, 349
  - enthymematic implication defined in relevant logic, 1098
  - material implication as a new primitive in relevant logic, 1260
  - material implication defined in relevant logic, 327
  - Meredith’s simulation of classical implication in terms of intuitionistic implication, 335, 1079, 1272
  - Sasaki hook, 302, 1192
- $\bullet$  (ternary connective for IL), 1068
- $\rightarrow$ , 83
  - Gentzen’s use of, as a sequent separator, 103
  - implication connective (*see* conditionals, implication), xvi, 48
  - relative pseudocomplement in Heyting algebras, 22
- $\rightarrow$ -intuitionistic (consequence relations), *see* intuitionistic logic
- $\rightarrow_d$  (dual intuitionistic implication), 546
- $\nabla_L$  (disjunctive combination on the left), 12
- $\nabla_R$  (disjunction combination on the right), 12
- $\Delta_L$  (conjunctive combination on the left), 12
- $\Delta_R$  (conjunctive combination on the right), 12
- $\vdash$ 
  - consequence relation, 55
  - generalized consequence relation, 73
- $\vdash^*$  (special consequence relation defined in 5.34), 744
- $\vdash_{DD}$  (Double Disjunction), 64, 600
- $\vdash_{IL}, \vdash_{CL}$ , etc., *see* intuitionistic logic, classical logic, etc.
- $\vdash_{PP}$  (probability-preserving consequence relation), 652
- $\vdash_{PV}$  (pair-validity consequence), 747

- $\vdash_{SCI}$ , *see* *SCI*  
 $\vdash_{\mathbf{KK}}$  (minimal bimodal inferential consequence relation), 744  
 $\vdash_{\mathbf{K}}, \vdash_{\mathbf{S4}}$ , etc. (inferential consequence relations associated with  $\mathbf{K}$ ,  $\mathbf{S4}$ , etc.), 294  
 $\vdash_{\text{Suszko}}$  (Suszko consequence relation), 204, 208  
 $\vee$   
     disjunction connective (*see* disjunction), xvi, 48  
     lattice join, 7  
 $\vee_{\mathbf{Kr}}, \vee_{\mathbf{Be}}$  (cohabiting Kripke and Beth disjunction), 897  
 $\vee_{\mathbf{c}}, \vee_{\mathbf{q}}$  (cohabiting classical and quantum disjunction), 587  
 $\wedge$   
     conjunction connective (*see* conjunction), xvi, 48  
     lattice meet, 7  
 $\wedge\vee, \vee\wedge$ , etc. (product connectives), 464–468  
 $\wp, \wp$   
 $\underline{\vee}$  (exclusive disjunction), 398, 780  
 $(\wedge \text{ Left}), (\neg \text{ Right}), (\rightarrow \text{E})$  etc., *see* rules,  $(\wedge \text{ Left})$  etc.  
 $\mathbf{.2}$  (modal principle), 277, 298  
 $\mathbf{.3}$  (modal principle), 277  
 $\Box \rightarrow$  (*would* counterfactual), 1008  
 $\Diamond \rightarrow$  (*might* counterfactual), 1008  
 “!” notation (modal logic), *see also* exponentials, 278  
 $\S$  (demi-negation), 536, 576  
 $\mathbf{1, 2}$  (two constants for pair validity), 760  
 $\mathbf{4}$  (modal principle), 277, 284  
 $\mathbf{5}$  (modal principle), 277, 298  
 A (alternator), 890  
 $\mathbf{a}$  (anticipation connective), 625  
 AAL, *see* abstract algebraic logic  
 Abbott, J. C., 237, 238, 241, 274, 275  
 Abelian  
     groups, *see* groups, Abelian  
     logic (*see also* BCIA logic), 335, 1098, 1101  
 Abell, C., 635  
 Abraham, W., 675  
 Abramsky, S., 371  
 absolutely free (algebras), 30, 49, 219, 419, 497, 681  
 absorption  
     — laws, 7, 469, 1050, 1125, 1296  
     ‘absorption’ (unfortunate word for contraction), 1125  
 abstract  
     — *vs.* concrete conception of languages, 48  
     — algebraic logic (AAL), 97, 257, 273, 275, 874, 1158, 1311  
     — completeness theorem, *see* completeness (semantic)  
     — conception of rules, 628  
     — logics, 218, 268  
 accessibility relations, 279  
 Ackermann constants, *see*  $t, f$   
 Ackermann, R., 271  
 Ackermann, W., 342, 345, 371, 1110  
 “actually”, 489, 930, 1289, 1301  
     Jackson’s “actually” argument, 931, 932, 936–937, 1040–1043  
     rhetorical use, 931, 1041  
 Aczel, P., 103, 180, 181, 1162  
 Adams, E. W., 655, 928, 931, 938, 1056  
 Adams, M. E., 1301  
 Adams, M. M., 829  
 Adams, M. P., 970  
 additive and multiplicative rules or connectives, 143, 147, 342, 346–355, 475, 664, 667  
 Adjunction (rule), 171, 340  
 adjunctive *vs.* connective interpretation of truth tables (Reichenbach), 633  
 admissible (rules), *see* rules, admissible  
 ‘affine’ (logic), 372  
 agrees  
     consequence relation agreeing with a gcr, 844  
     consequence relation agreeing with a set of formulas, 158  
 Ajdukiewicz, K., 676  
 Akama, S., 1251  
 Akatsuka, N., 969, 1054

- Alessi, F., 673  
alethic (modal logic), 276, 471  
algebraic  
  functions, *see* derived operations,  
  algebraically derived  
  semantics, 195, 219–268, 273–  
  275  
  *vs.* model-theoretic semantics  
  with models whose frames  
  are algebras, 336  
algebraizable (logics), 257, 261, 1309–  
1312  
algebras, 8, 17  
Allen, W., 193, 631  
Allwein, G., 373  
Almeida, J., 43  
Almukdad, A., 1251  
Alonso-Ovalle, L., 1022  
alterjection, 1179  
‘alternative denial’ (*see also* nand,  
  Sheffer stroke), 607  
alternator, 890  
amalgamating  
  conditionals  
  ‘would’ and ‘might’ counter-  
  factuals, 1009  
  consequential and nonconse-  
  quential, 943  
  helping and otherwise, 947  
  implicit conditionals  
  subjunctive and indicative, 1010  
  matrix evaluations, 204, 1330  
ambi-assertion, 1179  
ambi-medial (law), 1133, 1148–1149,  
1161  
ambiguity  
  claimed as a response to differ-  
  ences between logics, 585,  
  592  
  of ‘and’, 667  
  of ‘but’, 675  
  of ‘or’, 769, 780, 789, 798  
  structural *vs.* lexical, 667, 803,  
  805, 1017  
Amis, K., 676  
analogous (in the sense of Zolin),  
463  
analogue  
  intuitionistic analogues of clas-  
  sical connectives, 405, 617  
analytic implication, 772, 925  
“*And*” (*see also* conjunction), 631–  
677  
*and*-like ( $\wedge$ -like) connectives, 708–  
714, 716–720  
*and*-representable, *see* representable,  
 $\wedge$ -representable  
Anderson, A. R. (*see also* Anderson–  
  Belnap), 930, 1251  
Anderson, C. A., 501, 1162  
Anderson, L., 816  
Anderson–Belnap (A. R. and N. D.),  
126, 158, 335, 342, 345, 371,  
475, 659, 992, 1053, 1056,  
1091, 1092, 1095, 1098, 1115,  
1119, 1121, 1195, 1200, 1217,  
1295–1297, 1303  
‘fallacy of equivocation’ response  
  to deriving (EFQ) using dis-  
  junction, 789, 790  
**RM0**, **RM** and relevance, 334,  
368, 369  
different versions of matrix va-  
  lidity, 249  
on first degree entailments, 341  
on modal relevant logic, 296  
on natural deduction, 190  
on Smiley’s four element ma-  
  trix for relevant logic, 431  
on Sugihara, 566  
on ticket entailment, 229  
terminology of consecutions, 190  
the prefix ‘co-’, 546  
variations on the Deduction The-  
  orem, 193  
Andreoli, J.-M., 147, 188, 352, 371  
Angell, R. B., 1056  
Anisfeld, M., 1301  
*Anna Karenina*, 767  
Anscombe, G. E. M., 675, 948, 1034  
Anscombe, J. C., 675  
anti-chains, 320  
anti-commutativity, 239, 241, 738  
anticipation (relation between for-  
  mulas), 625–626, 1129  
Antilogism (rule), 1205  
antisymmetric (relations), 2, 231, 583,  
894  
  uniqueness by antisymmetry, 583,  
  584

- antitone ( $\pm$  ‘with side formulas’), 490, 492, 609, 991, 996, 1049, 1076, 1190, 1259, 1264
- “any”, 808
- apodosis, 933
- Appiah, A., 271, 1055
- Applebee, R. C., 1299, 1330
- approaches (to logic), 109
- Åqvist, L., 192, 640, 803, 1017, 1020, 1021, 1051
- arbitrary consequences, method of, 387
- Ardeshir, M., 189, 370
- Areces, C., 111
- argument
  - by cases, 820–843
  - of a function, 165, 400
  - premisses-&-conclusions sense *vs.* course-of-reasoning sense, 117, 188, 1044
- Arieli, O., 1198
- Aristotelian logic, 443, 1165
- arity (of an operation or relation), 2
- ‘Arizonan-Minnesotan’ example (D. Miller), 1138
- Armour-Garb, B., 1195
- (AS) – ‘antisymmetry’ quasi-identity, 231
- “as if”, 948
- assertion (as a speech act), 209, 303, 306, 337, 512, 634, 648, 651, 773, 804, 893, 938, 940, 953, 979, 1019, 1039, 1175, 1177
  - conditional, *see* conditional assertion
- Assertion (formula, axiom, schema, rule), 159, 244, 332, 672, 1067, 1092, 1097, 1103, 1108, 1110, 1113, 1117
- asseverative (conditionals), 942
- associated with
  - consequence relation associated with a consequence operation (and vice versa), 56
  - consequence relation or gcr associated with a proof system in (SET-FMLA or SET-SET), 114, 268
  - truth-function associated with a connective on a valuation (*or* over a class of valuations), 376, 393
- associativity, 7, 498, 640, 663, 749, 755, 759, 782
- assumption classes, 977
- assumption-rigging, 120, 124, 125, 189, 190, 341, 514, 665, 789, 1256
- assumption-rules (Schroeder-Heister), 522, 527, 1077
- assumptions
  - Hilpinen’s — *vs.* statements, 1020
  - in natural deduction, 114–117
- asynchronous connectives (in linear logic), 352
- Athanasiadou, A., 1054
- atheorematic (consequence relation or gcr), 201, 205, 208, 264, 266, 459, 1070, 1077
- atomic (formulas), 48
- atoms (in a lattice), 21
- Austin, J. L., 941
- ‘Australian Plan’ *vs.* ‘American Plan’, 1194, 1198, 1200, 1203
- automorphisms, 27
- Avron, A., 354, 371, 373, 442, 475, 525, 665, 1095–1097, 1185, 1198
  - fusion as extensional conjunction, 662
  - logical frameworks, 105
  - on **RMI**, 329
  - on additive and multiplicative rules or connectives, 346
  - on an enthymematic implication definable in **RM**, 1069
  - on hypersequents, 111, 315
  - on invertible rules, 150
  - on linear logic and the relevance tradition, 342, 345
  - on relevant logic, 336
  - on the external and internal consequence relations associated with a proof system, 268
  - on three-valued logics, 273
  - unwise use of the term ‘uniform’, 206
- axiom-schemata, 156, 161
- axiomatic

- approach to logic, 104, 157  
 extension of a consequence relation, 180  
 axioms, 156, 160, 161  
   initial sequents sometimes called —, 374  
 Ayer, A. J.  
   on emotive meaning, 1051  
   on fatalism, 827  
  
*B* (implicational principle), 159, 164, 229  
**B** (modal principle), 277, 298  
**B** (relevant logic), 328  
*b* subscript ( $\rightarrow_b$ , etc.), *see*  $\#_b$   
*B'* (implicational principle), 229  
 Baaz delta, 372  
 Baaz, M., 111, 372  
 Bach, K., 634, 673, 675  
 backward (as opposed to forward)  
   along *R*-chains, 903, 1328  
 Bacon, J., 992  
 Badesa, C., 788  
 Balbes, R., 30, 43, 44  
 bands (idempotent semigroups), 737, 759  
   rectangular, 737–738, 752–757  
   varieties of, 765  
 Banfield, A., 767  
 Bar-Hillel, M., 820, 842  
 Bar-Hillel, Y., 1301  
 Barbanera, F., 673  
 Barendregt, H., 166, 1126  
 Barense, J., 483  
 Barker, J. A., 928, 944, 992, 1054, 1055  
 Barker, S. J., 812, 813, 815, 940, 944, 954, 959, 1054–1056, 1163  
 Barnes, J., 674, 783  
 Barnes, R. F., 592  
 Barres, P. E., 814  
 Barrett, R. B., 781, 816  
 barring (in Beth's semantics for *IL*), 894  
 Barwise, J., 931, 1023  
 'Basic Logic'  
   of Sambin *et al.*, 103, 151, 301, 370, 522  
   other, 370  
  
 Batens, D., 1097  
 Battilotti, G., 103, 151, 370, 522  
 Bayart, A., 297  
*bc*(·) (*BCIA*-algebra induced by an Abelian group), 1114  
*BCI* logic, 164, 166, 1119–1121  
   monothetic version of, 1108, 1122  
*BCI*-algebras, 231, 242  
*BCIA* logic, 1098, 1101–1106, 1108–1116  
   converses in (see also Conversion, rule of), 1326  
*BCIA*-algebras, 1108–1116, 1122  
*BCIW* logic, 169, 235  
*BCK* logic, 98, 168, 235, 1121  
*BCK*-algebras, 231, 236–242  
   implicative and positive implicative, 274, 1084  
 Beall, J. C., 298, 537, 846, 1195  
 Beeson, M. J., 370  
 "before", 799  
 Belding, W. R., 1250  
 belief  
   belief *vs.* assertion, 656  
   belief revision, 642, 937, 938  
   degrees of belief, 652  
   logic of, *see* doxastic logic  
 Bell, J. L., 369, 924  
 Bell, J. M., 951  
 Bellin, H., 633  
 Belnap, N. D. (*see also* Anderson–Belnap), xvi, 107, 192, 334, 916, 983, 1046  
   his criterion of relevance (variable sharing), 243, 327, 353, 355, 361, 362, 567, 1094, 1106, 1205, 1257  
   his reply to Prior on Tonk, 537, 566, 569, 576  
   on Boolean negation, 567, 1205  
   on conditional assertion, 940, 1052, 1054  
   on conservative extension, 577, 578, 1206  
   on display logic, 107, 108, 605  
   on paraconsistent logic, 1194, 1199  
   on rule completeness, 129, 131  
   on the Two Property, 1127

- on the use/mention distinction, 507
- on truth-value gaps and super-valuations, 842
- on unique characterization, 575, 586, 627, 628
- second order implicit definability (as what is involved in unique characterization), 627
- Strong *vs.* Weak Claim, 101, 389, 915, 917
- tableaux for linear logic, 345
- Belnap–Thomason formulas, 983–985
- Bencivenga, E., 81
- Bendall normal form, *see* normal forms
- Bendall, K., 189, 578, 1175, 1176, 1178–1180, 1183
- Bender, E. D., 412
- Bennett, J., 927, 932, 954, 958, 1007, 1012, 1023, 1054, 1055
- Benton, R. A., 283
- Berger, A., 628
- Bernays, P., 156, 1131, 1285
- Berry, R., 970, 1055
- Bertolotti, G., 875
- Bessonov, A. V., 578, 623–625
- Beth, E. W., 189, 304, 495, 839, 843
  - Beth Semantics for IL, 893–899, 902, 924
- between* with *or*, 807
- Bezhanishvili, M. N., 578
- Béziau, J.-Y., xvii
  - on many-valued logic, 442
  - on negation, 1211
  - on Suszko on many-valued logic, 210
  - on translations, 874
- Bhatt, R., 949, 951
- BHK interpretation of intuitionistic logic, 304, 308, 370, 512, 893
- BI** (logic of bunched implications), 349
- Białynicki-Birula, A., 1197, 1251
- Bianchi, C., 635
- biconditional, 83, 1127–1161
- Bierman, G., 346
- Bigelow, J., 1012, 1300
- Bignall, R. J., 641
- bijection, 5
- bilattices, 1198
- bimodal logics, 287
- Birkhoff, G., 16, 29, 30, 32, 36, 44, 236, 298, 369
- bisemilattices, 1050
- bivalence, 195, 196, 210, 270, 810, 830, 831, 833, 975, 1164
- Black, M., 688, 707, 819, 1138
- Blackburn, P., 111, 297
- Blakemore, D., 675
- Blamey, S. R., 107, 111, 188, 190, 249, 594, 605, 1001, 1005, 1052
- Blok, W. J., 97, 168, 220, 240, 245, 257–268, 275, 420, 483, 546, 574, 1069, 1307, 1309, 1311
  - Blok and Pigozzi’s unfortunate use of ‘normal’, 293
- Bloom, Claire, 795
- Bloom, S. L., 101, 218, 442, 1161
- Blum, A., 1049
- Blyth, T. S., 44
- BN, 1200
- BN4, 1200
- Bochvar, D., 201, 1050
- Boër, S. E., 955
- Bolc, L., 111, 210, 272
- Boldrin, L., 673
- Bolinger, D., 951
- Bonini, N., 1164
- Bonnay, D., 576
- Boole, G., 788
- boolean (*see also* negation, Boolean *and* groups, boolean)
  - algebras, 21, 31, 200, 223
  - connectives, 65
  - formula, 380
  - representability, 709
  - valuations ( $\wedge$ -boolean,  $\neg$ -boolean, etc.), 65, 82, 394
- Boolos, G., 280, 283, 297, 1214
- Booth, D., 100
- Boričić, B. R., 140, 370
- Borkowski, L., 471, 1067
- Borowik, P., 111, 210, 272
- Borowski, E. J., 630, 783
- Bosley, R., 1055
- Bostock, D., 107, 190
- Boudriga, N., 732, 765
- bounded lattices, 20

- Bowen, K. A., 605–623, 1242  
 Bowie, G. L., 1007  
 Božić, M., 296, 323  
 Brée, D. S., 942, 949, 968, 1055  
 Bradley, F. H., 816  
 Brady, R. T., 925, 1197  
   logics without contraction, 1124  
   on depth relevance, 328  
   on RM3 and BN4, 207, 1200  
   on rules in relevant logic, 1097, 1205  
 Braine, M., 960  
 branching quantifiers, 53  
 Bandom, R., 101, 535, 1170  
 Breitbart, J. J., 443  
 Brennan, A., 1164  
 Brink, C., 105  
 Brogaard, B., 1038  
 Brouwer, L. E. J., 298, 302, 304, 370, 893, 1226  
 Brown, D. J., 101, 218  
 Brown, M. A., 499  
 Brown, R., 43  
 Browne, A. C., 816  
 Brunner, A., 546, 1250  
 Brunnler, K., 108, 112, 860  
 Bryson, Bill, 649  
 Bull, R. A.  
   logics without contraction, 1124  
   on contraction, 671  
   on Galois connections, 101  
   on implicative LC, 555, 1335  
   on intuitionistic modal logic, 296  
   on modal logic, 277, 283, 297  
   on OIC, 542  
   on the implicative fragment of LC, 370  
   on Urquhart semantics and variations, 371  
 Bull, T., xvi, 1032, 1056  
 bunched implications, *see* **BI**  
 Bunder, M. W.  
   a logic not closed under Uniform Substitution, 192  
   logics without contraction, 1124  
   on *BCI*- and *BCK*- algebras, 231, 235, 243, 274, 1107  
   on ‘only’, 1055  
   on Aczel and Feferman, 1162  
   on extending *BCI*, 1106, 1107  
   on intersection types, 673  
   on paraconsistent logic, 1285  
   on the Curry–Howard isomorphism, 166  
   on the Two Property, 1053, 1127  
 Burgess, J. A., 188, 192, 269, 271, 707, 1056  
 Burgess, J. P., 577, 772  
   ‘for that reason’: a conditional reading for relevant implication, 992  
   logics of conditionals, 1007, 1027, 1030, 1032, 1055  
   on CL and IL, 305  
   on relevant logic, 371, 667, 790  
   on semantics for IL, 370  
   on tense logic, 288  
 Burks, A. W., 988, 992, 1019  
 Burris, S., 43, 44, 407, 443, 784  
 Buss, S. R., 191, 192  
 Buszkowski, W., 109, 191  
 “But”, 633, 674–676  
 Butchart, S., xvi, 578, 1108, 1125, 1127, 1213  
*BV* (class of boolean valuations for some language clear from the context), 65  
 Byrd, M., 202, 483, 701  
 Byrne, R. M. J., 814, 1055  
  
*C* (implicative principle), 164, 229  
 Cahn, S., 826  
 Caicedo, X., 447, 448, 616, 628  
 Calabrese, P., 443  
 Caleiro, C., 181, 210, 647, 874  
 Campbell, R., 826  
 cancellation  
   — conditions  
     for logical subtraction, 684–687, 1156  
     Shoemith–Smiley, 206, 214, 380, 863, 923, 1261  
   — laws (*see also* semigroups, cancellation), 19, 740  
     left and right cancellation, 415, 741, 1111  
 cancelling  
   of implicatures, 633  
   Cancelling-Out Fallacy (Geach), 707



- negation as cancellation, 540  
of intuitionistic negation, 540
- Cantrall, W. R., 935
- Cantwell, J., 842
- Carden, G., 942
- Cariani, F., 811
- Carnap, R., 72, 101, 102, 105, 190,  
192, 483, 691, 915
- Carnielli, W., 210, 1250
- Carpenter, B., 271
- Carroll, L., 525, 528
- Carston, R., 651, 674, 1163
- Casari, E., 346, 1102, 1112
- Castañeda, H.-N., 960, 965
- categorial grammar, 191, 636–638,  
676, 810  
and multigrade connectives, 783  
and treating connectives as operations, 507  
order-sensitive, noncommutative,  
1251
- Celani, S., 370
- Celce-Murcia, M., 970
- Cellucci, C., 140
- ceteris paribus* conditionals, 1017, 1019
- Chagrov, A., 191, 272, 297, 630, 863,  
874, 887, 922–924, 1159
- chains (*see also* linear ordering, *R*-  
chains), 8, 17, 30, 35, 198,  
269
- Chalmers, D., 1041
- Chandler, M., 965, 1055
- Chang, C. C., 33, 44, 197, 242
- Chapin, E. W., 874
- characteristic  
functions, *see* functions, char-  
acteristic  
matrix, 272  
preservation characteristics, *see*  
local/global, local *vs.* global  
preservation characteristics
- Chellas, B. F., 277, 278, 294, 298,  
492, 497, 508, 870, 994, 995,  
997, 998, 1055, 1203
- Cherniak, C., 529
- Chierchia, G., 816, 819
- Chisholm, R. M., 930
- Chiswell, I., 403
- choice of meta-logic: the logic used  
in the metalanguage, 243,  
311, 370, 1096, 1242
- Church disjunction, *see* disjunction
- Church, A., 101, 102, 168, 169, 214,  
235, 330, 342, 371, 406, 630,  
784, 1209, 1285  
confused use of ‘commutative’,  
499
- Chytil, M. K., 783
- Ciabattini, A., 111, 146, 150, 191,  
374
- Cignoli, R., 242, 269, 616, 628
- Čimev, K. N., 443
- Cintula, P., 372, 673
- CL, *see* classical logic
- Clark, A., 782
- Clark, B., 674
- Clark, D. M., 1301
- Clark, R., 1012
- Clarke, M. R. B., 100, 593
- classical logic, 61–102, 114–163
- classicality ( $\wedge$ -classical,  $\neg$ -classical,  
etc., consequence relations  
or gcr’s), 62, 76
- clear formulas, 983–987
- Cleave, J. P., 207, 249, 371, 629
- Clifford, A. H., 416
- Clifford, J. E., 640
- CLL** (classical linear logic), 351
- clones, 407, 409, 443
- Close, R. A., 1054
- closed sets, 10
- closure  
operations, 9  
relations, 268, 919  
systems, 10
- Cn* (consequence operation), 54
- “co-” prefix, ambiguity of, 546
- co-atoms, *see* dual atoms
- Coates, J., 1054
- Coburn, B., 189, 843
- Cocchiarella, N. B., 192
- Cohen, D. H., 1054
- Cohen, L. J., 270, 655, 673
- Cohn, P., 16, 443
- “coimplication”: a potentially con-  
fusing term, 546
- collectively equivalent, 646–649, 1068
- Collins, J. D., 937

- combinators, combinatory logic, 165, 166, 237, 274, 673, 1099, 1126
- commas
  - as distinct from semicolons within sequents, 665
  - comma connectives, *see* connectives, ‘structure connectives’
  - in connection with gcr’s, 76
  - Lemmon’s subderivation commas replaced by dashes, 116, 125, 1255
  - on left and right of “ $\succ$ ”, 151, 318
    - additive *vs.* multiplicative, 342, 349, 664, 665, 1196
    - no uniform connectival reading, 537
  - on the right of “ $\succ$ ” and “ $\vdash$ ”, 843–860
  - replaced by semicolons in listing sequents, 123
- common consequences, method of, 97, 386–388, 454, 476, 784, 845, 1167
- commutativity, 7, 498, 663, 755, 782
- compactness, 133
- comparatives, 806–808, 1102
- complementizers, 972
- complements, complementation, 14, 21, 22, 274
  - complemented lattices, 21
- completeness (other than semantic)
  - functional, *see* functional completeness
  - Halldén, *see* Halldén completeness
  - Kuznetsov, *see* Kuznetsov completeness
  - Post, *see* Post completeness
  - structural, *see* structural completeness
- completeness (semantic), 127
  - abstract (‘instant’) completeness theorem (for gcr’s), 75
  - abstract completeness theorem (for consequence relations), 59
  - completeness of a natural deduction system for classical logic, 128
  - of a modal logic (in FMLA) w.r.t. a class of frames, 283
  - of a modal logic (in FMLA) w.r.t. a class of models, 280
  - rule completeness, 129, 182, 187
    - in modal logic, 876
- complexity
  - degree of complexity of a logic, 272
  - of a formula, 48
- composition (of functions), 9, 19, 413
- compositionality, 208, 209, 211, 271, 636
  - of translations, 536
- compositionally derived, *see* derived operations
- Comrie, B., 929, 943, 1054
- ‘conceptivism’, 772, 925
- concessive (clauses, conditionals), 676, 957
- conditional assertion, 938–940, 959, 1052, 1054
- Conditional Excluded Middle, Law of, 959, 1008, 1010, 1013, 1045
- Conditional Proof (*see also* rules,  $(\rightarrow I)$ ), 81, 115
  - four forms of, 975
- conditionals, 925–1056
  - consequential, 943–944
  - indicative, 927–947, 1038–1044
    - as material implication, 926
  - projective (in Dudman’s sense: *see also* hypotheticals), 929, 932–934, 941
  - ‘sideboard’, 941, 942, 949
  - subjunctive, 802, 927–932, 935–937
    - ‘counterfactual fallacies’, 1034
    - semantics for, 987–998, 1007–1034
- conditions induced by a determinant (on a gcr or consequence relation), *see* determinant-induced conditions
- congruence (relations)
  - congruence connective, 1153
  - congruences on an algebra, 27, 220, 254, 498
  - formula-definable (Porte), 223

- matrix congruences, 259
- congruentiality, 175, 246, 422, 484–507
  - $\leftrightarrow$ -congruential, 484
  - ‘with side formulas’, 455
  - congruential modal logics (in FMLA), 877
- Coniglio, M., 210
- conjunction, 15, 62, 631–677
  - additive *vs.* multiplicative, 347
  - deductive, 51, 773
  - generalized conjunction, 97
  - intensional (*see also* fusion), 658–661
  - probabilistic, 653
  - strong conjunction, 632, 673
  - temporal, 639–641
  - ‘theorem conjunction’, 575
- conjunctions (in the grammarians’ sense), 635
- conjunctive
  - combinations (on the left or right of a relational connection), 12, 134, 286
  - normal form, *see* normal forms
- connected (relations or frames), 855
  - weakly, 856
- connection, relational, *see* relational connection
- connectival, *see* non-connectival operations on formulas
- connectives
  - abstract *vs.* concrete conceptions of, 47–53
  - hybrids of, 461–484, 576, 750–765, 1168, 1277
  - individuation of (logical role *vs.* syntactic operation), 53, 82, 87–90, 324, 376, 379, 461, 539, 590, 617, 1206
  - multigrade, 53, 630, 783, 1150
  - ‘structure connectives’, 107, 577
  - subordinating *vs.* coordinating, 636, 933–934, 965
- connexive (logic or implication), 659, 668, 925, 959, 1048, 1056
  - ‘connexivism’, 925
- consequence operations, 54
- consequence relations, 55
  - generalized, *see* generalized consequence relations
  - maximally non-trivial, 397
  - the phrase “(generalized) consequence relations”, xv
- consequent-distributive (connectives), 173
- consequent-relative (versions of connectives in general), 572
- Consequentia Mirabilis*, 1258
- consequential, *see* conditionals, consequential
- conservation of synonymy, 1233
- conservative (operation), 479, 480
- conservative extension, 307, 335, 363, 368, 369, 439, 536–556, 566–569, 576, 577, 607, 615, 623, 624, 626, 683, 685, 687, 713, 723, 743–745, 748, 785, 838, 871, 891, 1080, 1112, 1137, 1191, 1204, 1206–1208, 1225, 1232, 1236, 1252, 1319
  - nonconservative extension involving quantifiers, 547, 626, 722
  - of a proof system *vs.* of a consequence relation, 539
  - of theories, 721
- consistent
  - proof system, consequence relation or gcr, 248, 575
  - set of formulas, 205, 281, 310
  - valuation consistent with a consequence relation, 58
  - valuation consistent with a gcr, 74
- ‘constant-valued’ logic, 91, 382, 742
- constants
  - individual, 33, 36, 443
  - ‘logical constants’, 180, 193, 511, 533
  - sentential or propositional, 48, 100, 341, 350, 371, 380, 484, 566, 622, 760, 865, 1097, 1181, 1260, 1266
- constructive (logics), 875
- content domain (Sweetser), 674, 794, 941, 970
- contexts, 424
  - n*-ary connectives *vs.* *n*-ary contexts, 49, 393, 637, 709, 995

- 1-ary — in CL and IL, 451  
 an unrelated use of the term, 347
- contingency operator, 490
- contra-classical logics, 1048, 1101, 1113, 1325  
 profoundly, 536
- ContraC (Contraction axiom), *see also* *W*, 331
- contraction  
 $\sim$ -ContraC, 1205  
 $\neg$ -ContraC, 355, 1098, 1187, 1189, 1242, 1259, 1264, 1268  
 $\neg$ -ContraC<sub>res</sub>, 1190  
 ContraC (*see also*: *W*), 331, 333, 353, 356, 359, 908  
 ContraC (for  $\Box \rightarrow$ ), 1033  
 hidden, 143, 1249  
 in belief revision, 645  
 structural rule, *see* rules, structural
- contractionless logics, 1098–1121
- contradictories, 815, 1165, 1167  
 $ctd$  operation, 49, 52, 680  
 contradictoriness as a property of formulas or propositions, rather than a relation between them, 21, 1217  
 contradictory disagreement (Grice), 790  
 contradictory negation, 1169  
 ‘the contradictory function’, 817
- contraposition  
 for conditionals, 960, 1034  
 schema, 178, 340  
 selective, 1259  
 simple, 430, 431, 1049, 1190, 1223  
 simultaneous, 207, 429, 430, 1259
- contraries/contrariety, 93, 505, 583, 849–850, 1112, 1163–1172, 1223–1225  
 compositional contrariety determinant, 438, 1165  
 contrary determinants, 382, 385
- conventional implicature, *see* implicature
- convergent (frames), *see also* piecewise convergence, 312, 856
- conversational implicature, *see* implicature
- converse  
 — proposition fallacy, 72–73, 102, 278, 284, 914  
 ‘converse effect’, 1113  
 Converse Subj(unctive) Dilemma, 1016–1022  
 implicational converses, 1325
- Conversion (rule of), 1105, 1109
- Cook, R. T., 576
- Cooper, D. E., 270, 1056
- Cooper, W. S., 192, 210, 812, 813, 940, 1044–1053, 1056, 1439
- coordination (*see also* connectives, subordinating *vs.* coordinating), 674
- Copeland, B. J., 269, 297, 336, 371, 1203
- Copi, I., 1019
- Corcoran, J., 520, 1182
- Cornish, W. H., 235, 239, 274
- correctness functions, 1176
- Corsi, G., 300
- coset-validity, 254
- Costello, F., 1164
- Cotard’s syndrome, 1164
- counterfactuals, *see* conditionals, subjunctive
- creative (definitions), 721
- Cresswell, M. J. (*see also* Hughes–Cresswell), 283, 296, 604, 924, 1046, 1154
- Cresswell, W. D’Arcy, 634
- Crolard, T., 189, 546
- cross-over property, 1, 13, 15, 16, 69, 136, 286, 730, 732, 733, 736, 1050
- Crossley, J. N., 489, 1041
- Crossman, V., xvii
- Crupi, V., 1164
- $ctd$ , *see* contradictories
- Čubrić, D., 405
- Cunningham-Green, R. A., 443
- Curley, E. M., 928
- Curry’s Paradox, 317, 1098, 1123–1127, 1129  
 biconditional variant of, 1213
- Curry, H. B. (*see also* Curry’s Paradox), 142, 169, 274, 318,

- 319, 636, 780, 860, 1121,  
1126, 1181, 1211, 1252, 1274,  
1275, 1285
- Curry–Howard isomorphism, 166, 513
- Cut Elimination, 146, 147, 191, 351,  
363, 364, 366, 515, 605, 608,  
614, 861, 1125, 1219
- cut product (of a pair of sequents),  
135, 387
- cut rule, *see* rules, structural
- cut-inductive (rules, connectives), 191,  
365–368, 374, 614, 1246
- Cutland, N. J., 301
- Cuvalay, M., 1054
- CV** (constant-valued gcr), 91, 382
- Czelakowski, J., 97, 100, 167, 172,  
175, 186, 187, 190, 215, 218,  
220, 265, 275, 456, 483, 485,  
1136, 1158
- D** (modal principle), 277
- D’Ottaviano, I., 242
- Dale, A. J.  
a subtlety concerning indepen-  
dence of axioms, 185  
on Dudman on conditionals, 932  
on Post complete extensions of  
implicational IL, 1101, 1217  
on Smiley’s matrix for relevant  
logic, 1197  
on transitivity and indicative con-  
ditionals, 992–993
- Dalla Chiara, M., 300, 369
- Dancy, J., 1055
- Dancygier, B., 943, 944, 949, 950,  
968, 971, 993, 1054, 1055
- Daoji, M., 1108, 1110, 1115
- Đapić, P., 1330
- Dardžaniá, G. K., 1124
- Dascal, M., 675
- Davey, B. A., 16
- Davies, E. C., 929, 1054
- Davies, M. K., 192, 707, 935, 1289
- Davis, W., 529, 536, 634, 673, 936
- Davoren, J., 371
- DD* (Double Disjunction logic), 64,  
599
- de Bruijn, N. G., 227, 556
- de Cornulier, B., 955
- de Jongh, D., 297, 578, 875
- de Lavalette, G. R. R., 425
- de Mey, S., 1055
- De Morgan  
De Morgan algebras (or lattices),  
22, 44, 1198  
De Morgan Logic (KC), 319  
De Morgan’s Laws, 14, 306, 310,  
319, 355, 356, 364, 475, 553,  
556, 1045, 1049, 1179, 1196  
Jennings on, 809, 810  
negation, *see* negation, De Mor-  
gan
- de Oliveira, A. G., 189
- de Paiva, V., 346
- de Queiroz, R., 111, 189
- de Rijke, M., 297
- decidable (formulas), 319
- Declerck, R., 1054
- Decontraposition (schema), 178
- Dedekind, R., 19
- deduction  
Deduction Theorem, 157, 160,  
164–180, 193, 229, 330, 1279  
for *BCIW*, *BCKW* and *BCK*  
(1.29.10), 168  
for *BCI* (1.29.9), 167  
local, 167  
of a formula from a set of for-  
mulas, 157
- deductive disjunction, 50, 335, 420,  
555, 773, 892, 1061, 1222
- ‘deep inference’, 108
- definability  
implicit second order — and unique  
characterization, 627  
modal — of a class of frames,  
284, 286, 565, 854, 856, 877  
of connectives, 418–423, 608  
in IL and LC, 419–422  
strict (Umezawa), 421  
strong (Prawitz), 421  
sequent — of a class of valua-  
tions, *see* sequents
- defined connectives: object-linguistic  
*vs.* metalinguistic view, 423–  
426, 443
- definition  
implicit, 627  
of connectives, 423–426

- of non-logical vocabulary, 720–729
  - generalized, 725
- demi-negation, 576
- Denecessitation (rule), 289, 505, 853, 873
- Dénes, J., 443, 1161
- denial, *see* rejection
- dense (relations), 281
- dependence (of function on argument), 411, 413, 718
- Depossibilitation (rule), 876
- depth relevance, 328
- derivable (rules), *see* rules, derivable
- derived objects and relations (tuple systems), 37–43
- derived operations
  - algebraically derived, 25
  - compositionally derived, 25, 43
  - $\ell$ -compositionally derived, 24, 26, 43, 403, 404, 406–408, 418, 419, 443
  - $s$ -compositionally derived, 407
- designated values (in a matrix), 199, 273
- designation-functionality, 208
- detachment (Detachment–Deduction Theorem, Rule of Detachment), 179
- determinant-induced conditions, 211, 377–402
- determinants (of a truth-function), 377–378, 442
  - notion extended to a many-valued setting, 939
  - simple, 389
- “determinately”, 196, 658, 832
- determined
  - consequence relation determined by a class of valuations, 57
  - fully determined, partially determined, completely undetermined (connective, according to a gcr), 378
  - logic determined by a class of frames, 283
  - logic determined by a class of models, 280
- Deutsch, M., 1164
- di-propositional (constants), 1260
- dialetheism, 1194
- Diaz, M. R., 168, 192, 336, 371
- Diego, A., 227, 231, 234, 235, 274, 1058
- Dienes. Z. P., 273
- Dietrich, J., 227, 1210
- DINat* (proof system for dual intuitionistic logic), 1224
- direct product
  - of algebras, 28, 29, 33, 255, 412
  - of matrices, 212–216, 271, 464
  - of models, 33, 35, 37, 44
- direct sum (of matrices), 213, 272
- Dirven, R., 1054
- discourse connectives, 638
- disjoint unions (of frames), 285, 788
- disjunction, 15, 62, 65, 767–924
  - additive *vs.* multiplicative, 349
  - Church disjunction, 235, 1069, 1129
  - connected (subsumable), 1301
  - consequent relative, 99, 572
  - Cornish disjunction, 235
  - deductive, *see* deductive disjunction
  - Dyirbal disjunction, 641, 795–798, 808, 817
  - exclusive, *see* exclusive disjunction
  - generalized disjunction, 97, 99
  - intensional, 789–790, 798, 1205
  - ‘model-disjunction’, 855
  - probabilistic, 826
  - pseudo-, *see* pseudo-disjunction
  - rule of, 873
  - ‘strong disjunction’ (Grice), 790
  - ‘theorem disjunction’, 575
  - weak disjunction, 887–888
  - whether*-disjunction, 560, 770
- Disjunction Property, 311, 312, 314, 861–862, 875, 877–893, 922, 1223, 1236, 1263, 1273, 1276
- $n$ -ary  $\Box$ -Disjunction Property, 874
- disjunctive
  - combinations (on the left or right of a relational connection), 12, 286
  - normal form, *see* normal forms

- syllogism, 341, 789, 1196, 1205, 1223
- display logic, 107, 522, 577, 1251
- distinctness implicature, 780
- 'distributes over': ambiguity of this phrase, 557
- Distribution Law (*see also* lattices, distributive), 299–301, 340, 341, 351–353
- Divers, J., 296
- Dixon, R., 796, 797, 817
- DLat* (proof system for distributive lattice logic), 248
- dominance reasoning, 826, 842
- Došen, K., xvi, 444, 646
  - axiomatics of negation, 1185
  - history of substructural logics, 1124
  - intuitionistic double negation as a single operator, 1180
  - on category theory and cut elimination, 191
  - on category theory and logic, 193
  - on intuitionistic double negation as a single operator, 323, 462, 1250
  - on intuitionistic modal logic, 296
  - on logical constants, 193
  - on logics weaker than IL, 370
  - on modal translations of IL, 874
  - on modal translations of substructural logics, 874
  - on semantics for substructural logics, 1093, 1121, 1124
  - on sequent to sequent rules, 191
  - on special logical frameworks for modal logic, 605, 860
  - on strict negation, 1169
  - on the history of relevant logic, 371
  - on two-way rules, 151
  - on unique characterization of connectives, 577, 584, 586, 600, 627
  - semantics for substructural logics, 371, 374
- Dowty, D., 641
- doxastic logic, 276, 277, 297, 483, 656
- Dragalin, A. G., 321, 370, 1125
- Driberg, T., 793
- DS, *see* disjunctive syllogism
- dual intuitionistic
  - implication, 546
  - logic, 546, 1250
  - negation, *see* negation, dual intuitionistic
- duality
  - dual atoms (in a lattice), 21
  - dual of a consequence relation, 102
  - dual of a gcr, 93
  - dual of a rule, 348
  - Galois duality, 3
  - generalized Post duality, 410
  - lattice duality, 8
  - poset duality, 3
  - Post duality, 405
- Dudek, W. A., 245
- Dudman, V., 781, 782, 790, 816, 929–935, 941, 942, 960, 993, 1041, 1054, 1056
- Dugundji, J., 891, 1159
- Dummett, M. A., 163, 186, 188, 196, 209, 210, 270, 303, 370, 940, 1174, 1175, 1250
  - 'oblique' rules, 521
  - 'pure and simple' rules, 312, 519, 1182
  - a sense in which the classical truth-tables are correct for IL, 1174
  - comparison of semantics for IL, 370, 897, 924
  - defining disjunction in Heyting arithmetic, 1182
  - LC and KC (intermediate logics), 312, 313, 319, 370, 420, 555, 874, 892
    - long-winded definition of a binary connective, 1068
  - on 'but', 674, 675
  - on 'smoothness', 882
  - on bivalence, 209, 270, 1044, 1164
  - on conditional assertion, 939, 940
  - on cut elimination, 191
  - on dual intuitionistic logic, 1226
  - on fatalism, 822, 827
  - on harmony, 525, 528

- on matrix methodology, 272
- on philosophical proof theory, 511, 519, 520, 535, 586
- on quantum logic, 299, 301, 369, 826
- on rejective negation, 1211
- on rules derived from truth-tables, 1175
- on the BHK interpretation of the language of IL, 303, 543
- on the business of logic, 189, 882
- on the rationale for many-valued logic, 209–211, 1230
- on vagueness, 271
- sympathy for IL, 303
- Duncan, H. F., 32
- Dunn, J. M., 223, 245, 263, 272–274, 342, 344, 371, 567, 665, 1046, 1054, 1097, 1098, 1110, 1121, 1194, 1197, 1200, 1201, 1207, 1208, 1210, 1336
- mistaken characterization of algebraizability, 275
- on ‘dummying in’, 1296
- on Boolean negation, 567, 1205
- on conditional assertion, 1052
- on Curry’s Paradox, 1125
- on distribution types, 551
- on Galois connections, 101
- on harmony, 528
- on LC, 319, 370
- on negation, 1186, 1211
- on residuals, 544
- on RM, 339, 362
- on the Urquhart semantics for **R**, 907, 1093, 1210
- propositions as equivalence classes, 222
- relevant logic, 332, 341, 344, 371, 668, 1094, 1203
- semantics for linear logic, 373
- the ‘American Plan’, 1195, 1198, 1199
- Durieux, J. L., 732, 765
- Dwinger, P., 30, 43, 44
- Dyckhoff, R., 321, 1125
- Dyirbal, *see* disjunction, Dyirbal
- dynamic
  - dynamics of belief, *see* belief revision
  - logic (modal logic of programs), 276, 297
  - semantics for conjunction, etc., 642
- E** (modal principle), 298
- E** (relevant logic), 342, 663, 1091, 1092, 1095, 1195, 1296, 1297, 1303
- Edgington, D., 673, 927, 931, 940, 1055
- Eells, E., 1055
- (EFQ), 119, 313, 580, 1252–1254, 1259
- (EFQ)<sub>#</sub>, 1166
- and assumption rigging, 341
- Anderson and Belnap on, 789
- “either”, 817
- El-Zekey, M. S., 53
- eliminability (and definitions), 721–725, 1288
- uniform, 418
- elimination rules, *see* rules, elimination
  - major premiss, 513
- Ellis, B., 846, 936, 938, 980, 982, 1012, 1022
- emotive meaning, 1051
- Endicott, J. G., 676
- endomorphisms, 27
- Enoch, M. D., 1164
- entailment
  - A. Avron on, 1095
  - as a binary relation, 108
  - as opposed to implicature, 952, 954
  - as strict implication, 276
  - E. J. Nelson on, 658
  - in the Gärdenfors semantics, 643
  - in the relevance tradition (*see also* **E**), 328, 663, 1091, 1195, 1304
  - tautological (or first degree), 341, 1156, 1194
- ‘entropic’ (groupoids), 1161
- epistemic logic, 276, 471, 483
- Epstein, G., 272
- Epstein, R. L., 371, 874



- equational logic, 29, 35, 43, 258, 486, 737
  - generalized, 255
- equivalence, 82–87, 1127–1161
  - equivalence relations, 3
  - frames with accessibility an equivalence relation, 286
  - generalized equivalence (in the sense of McKee), 1150
  - logical equivalence, 83
  - set of equivalence formulas, 98
- equivalential
  - algebras, 1130
  - combinations on the left/right, 16, 1131
  - double meaning of the term ‘equivalential’, 170, 1128
  - fragment of CL, 1103, 1116, 1128–1135
  - fragment of classical predicate logic, 723
  - fragment of IL, 1130
  - logics, 98, 170, 223, 264, 265, 1153
- Ernst, Z., 335
- Erteschik-Shir, N., 1055
- Ertola, R. C., 628, 1240
- Esakia, L., 321
- essentialism (about connectives), 427, 1192
- essentially  $n$ -ary (function), 411
- Esteva, F., 269
- euclidean (relations), *see also* generalized euclidean, 281
- evaluations (matrix evaluations), 199
  - as opposed to valuations, 199, 206
  - valuations induced by, 207
- “even”, 953, 957
  - “even if”, 946, 949
- Everett, C. J., 16
- Evnine, S., 529
- Ewald, W. B., 296
- Ex Falso Quodlibet*, *see* EFQ
- “except”, 678
- Exchange (structural rule), 143
- Excluded Middle
  - Law of, 119, 145, 199, 303, 306, 309, 356, 585, 827, 829, 958, 1169
  - added to ML yields LD, 1274
  - multiplicative form, 357
  - not requiring bivalence, 831
  - Weak Law of, 312, 1222, 1329
- exclusionary disjunctions, 781, 788
- exclusive conjunction, 779
- exclusive disjunction, 398, 709, 780–788
- existence of connectives with prescribed logical properties, 536–578
- existential
  - existential formulas in model theory, 33, 44
  - propositional quantifiers, 1325
  - provability as an existential notion, 128
  - quantifier ambiguous according to Paoli, 789
  - quantifier constructively interpreted, 306
  - quantifier elimination rule, 528
  - quantifier in dynamic semantics, 642
  - quantifiers and Skolem functions, 734
- expansion
  - in belief revision, 645
  - of an algebra, 18
  - structural rule, *see* rules, structural
- exponentials, 345–346, 351, 372
- extensional (consequence relations, gcr’s, connectives w.r.t.), 444–484
- extensionality on the left/right (of a relational connection), 2, 12
- extractibility (of a variable from a formula), 727–728, 765
- extraposed version (of a given connective), 554, 556
- $F$  (Church falsity constant ‘Big  $F$ ’), 342, 343, 351, 355, 358, 566, 567, 569, 1193, 1208
- F**: 1-ary constant False truth-function, 398, 406
- F**: truth-value (falsity), 57

- $f$  (Ackermann falsity constant ‘little  $f$ ’), 342–344, 350, 351, 357, 368, 567, 1102, 1193, 1203
- $f$  (temporary notation for a contravalid formula), 434
- F (tense operator), 287, 832, 1295
- $\mathcal{F}$ , *see* frames
- Faber, R. J., 842
- Faggian, C., 103, 151, 301, 370, 522
- faithful (translations), 259
- Falk, R., 820, 842
- fallacies
  - $\wedge$ -Elimination as fallacious, 660
  - affirming the consequent, 939
  - conditional fallacy, 1164
  - conjunction fallacy, 1164
  - counterfactual fallacies (strengthening the antecedent etc.), 1034–1038
  - denying the antecedent, 939
  - disjunction fallacy, 1164
  - fallacies of modality, 1091, 1304
  - fallacies of relevance, 1091, 1304
  - fallacy of suppression, 345, 1094, 1095
- fatalism, 196, 822, 826, 832, 833, 842
- Fauconnier, G., 941, 954
- Feferman, S., 193, 1162
- Fennemore, C., 765
- Fermüller, C., 111
- Ferreira, F., 820
- Ferreira, G., 820
- Field, H., 656
- Fillenbaum, S. (*see also* Geis–Fillenbaum Equivalence), 673, 770, 771, 950, 951, 955, 964, 966, 968, 1055
- Fillmore, C. J., 1054
- filters, 27
- Fine, K.
  - his treatment of disjunction, 903, 910
  - on incomplete modal logics, 283
  - on many-valued logic, 269, 270
  - on negation as failure, 1164
  - on semantics for relevant logic, 899, 1202
  - on supervaluations, 842
  - on vagueness, 830
- finite model property, 212, 228, 273, 280, 624, 884
- finitely approximable (logics), 273
- Fischer-Servi, G., 296
- Fisk, M., 779, 791, 798
- fission (*see also* additive and multiplicative rules or connectives *and* disjunction, intensional), 143, 340, 789, 798
- Fitch, F. B., 116, 190, 296, 508, 525, 546, 1000, 1077, 1251
- Fitelson, B., 335, 1102, 1128, 1164
- Fitting, M., 44, 101, 290, 298
- fixed point equivalence, 1126
- “fixedly”, 1289
- ‘flat’ (conditions), 713, 720
- Fleischer, I., 291
- $fm(\sigma)$  formula corresponding to a sequent
  - for classical logic, 127
  - for relevant logic, 331
- FMLA, FMLA–FMLA, *see* logical frameworks
- focus, 955, 1055
- Fogelin, R., 630, 1056
- Føllesdal, D., 297
- Font, J. M., 97, 179, 218, 242, 264, 265, 268, 296, 484, 1197
- Forbes, G., 296, 812
- Forder, H. G., 275, 1122
- formulas, *see* languages
- Forster, T., 291, 1008
- Foulkes, P., 659
- Fox, J., 1197
- fragment (of a language), 52
- fragments, 52
- frame consequence, 289
- frames
  - expanded — in modified Urquhart semantics, 907
  - for intuitionistic and intermediate logics, 307
  - for modal logic, 282–288
  - Gärdenfors —, 642
  - semilattices as — in Urquhart’s semantics, 906
- framework(s), logical, *see* logical frameworks

- Francescotti, R. M., 954  
 Francez, N., 676  
 Frank, W., 1139  
 Franke, M., 674  
 Fraser, B., 949, 953, 957, 1055  
 free algebras (*see also* absolutely free),  
     30, 31, 224  
 Freeman, J., 1157  
 Frege, G., 103, 104, 169, 271, 499,  
     501, 530, 675, 1177  
     axiom named after, 169  
 Fregean (consequence relations), 456,  
     1158  
 French, R., xvi  
 Friedman, K. S., 842  
 Fuhrmann, A., 296, 707  
 Fujii, S. Y., 948  
 Fujita, K.-E., 140  
 ‘full model’, 1299  
 fully modalized (formula), 295  
 functional  
     — completeness, 403–409, 442  
     strong, 403  
     — dependence (Smiley), 628  
 functionally free (algebras), 31, 45,  
     756  
 functions  
     characteristic, 11, 72, 373, 500  
     injective, 5, 417  
     surjective, 5  
     of more than one argument,  
     417, 1299  
 fundamental  
     operations, *see* operations, fun-  
     damental  
     tuples in a tuple system, 40  
 Funk, W.-P., 943, 1054  
 Furmanowski, T., 255, 874  
 fusion, 143, 340, 661–671  
     and fission in **RM**, 368  
     as strongest formula successively  
     implied by a pair of formu-  
     las, 344  
     consequent relative, 572, 671  
     idempotent in **RM**, 663  
 fuzzy logic, 197, 268–269, 370, 372,  
     667  
 $\mathcal{G}$  (Gärdenfors frame), 643  
 G (Gödel connective), 888  
 G (modal principle), 278  
 G (tense operator), 287, 832, 1295  
 G3 (Kleene sequent calculus), 152–  
     153, 321  
 Gabbay, D. M., 884, 924, 1211  
     “ $\Box_A B$ ” notation, 995  
     completeness for KC, 884  
     definability of  $\vee$  in LC, 555  
     gcr’s for IL using the Beth se-  
     mantics and the Kripke se-  
     mantics, 899  
     hypersequents, 111  
     intermediate logics with the dis-  
     junction property, 875  
     many-dimensional modal logic,  
     489  
     nonmonotonic logic, 100, 593  
     on a ‘tense logical’ intuitionis-  
     tic connective, 1250  
     on gcr’s, 100, 102  
     on IL, 370, 846  
     on KP, 923  
     on negation, 1164  
     on new intuitionistic connectives,  
     575, 607, 614–618, 898, 1223,  
     1236, 1238  
     on rules, 161  
     on unique characterization, 586  
     sequent frameworks with labels,  
     111, 188  
     weak *vs.* strong classicality, 101,  
     392–399  
 Gahringer, R., 660  
 Galatos, N., 275, 546, 1214  
 Galli, A., 628, 1102, 1240  
 Galois connections, 3, 9, 101, 283  
     antitone *vs.* monotone, 16  
 gaps (truth-value gaps), 830, 1044,  
     1199  
 García Olmedo, F. M., 213  
 Gärdenfors, P., 641–645, 936, 938,  
     1054, 1055, 1300  
 Gardner, M., 842  
 Gardner, S., xvii, 771  
 Gargov, G., 1260  
 Garson, J. W.  
     analysis of disjunction rules, 138–  
     140, 913, 914, 924  
     commenting on Belnap, 576

- Garson analysis of some rules  
for  $\rightarrow$ , 1065
- incorrectly formulated condition,  
140
- on disjunction in the Beth se-  
mantics for IL, 924
- on modularity in semantics, 919
- Weak *vs.* Strong Claim proper-  
ties, 101
- Gasking, D., 772
- Gauker, C., 1055, 1056
- Gaukroger, S., 707
- Gazdar, G., 411, 649, 673, 674, 782,  
783, 790, 816, 933
- GCn* (global consequences of a set  
of rules), 1062
- gcr*, *see* generalized consequence re-  
lations
- Geach, P. T., 14
- modal principle named after, 298
- on a non-transitive implication  
relation, 371
- on bare particulars, 779
- on cancelling out, 707
- on categorial grammar, 637, 676
- on contrariety, 1167–1168
- on Curry’s Paradox, 1125, 1206
- on many-valued logic, 270
- on the *ceteris paribus* reading  
of conditionals, 1019
- on the role of conjunction, 645,  
676
- on the syntax of negation, 1163
- on Wittgenstein’s *N*, 630
- use of ‘symmetrical’, 508
- Geis, M. L. (*see also* Geis–Fillenbaum  
Equivalence), 934, 936, 946,  
949, 955, 971, 973, 974, 1055
- Geis–Fillenbaum Equivalence, 964–  
970, 974
- Gen* (SET–SET version of Gentzen’s  
*LK*), 141–150, 152, 164, 184,  
313, 315, 349, 369, 521
- general
- frames, 291
- generality in respect of side for-  
mulas, *see* rules, general in  
respect of side formulas
- validity (on a frame), 489
- generalized
- conjunction, *see* conjunction,  
generalized
- consequence relations, xv, 55,  
72–82, 843–850, 854–860
- disjunction, *see* disjunction,  
generalized
- euclidean (relations), 857
- ‘generalized equations’, 255
- ‘generalized piecewise’, *see* *gpw*–
- generated
- clone generated by a set of func-  
tions, 407
- freely generated by, *see* free al-  
gebras
- point-generated subframe or sub-  
model, 285–286, 309, 313,  
320, 602, 745, 852–854, 861,  
872, 875, 879, 884, 1221,  
1276, 1280, 1313, 1328
- subalgebra generated by a set  
of elements, 28, 1057
- ‘generic’, *see* functionally free (alge-  
bras)
- Gentzen, G., xvi, 41, 90, 102–105,  
109, 114, 141, 142, 145, 146,  
151, 153, 189, 190, 304, 306,  
313, 314, 320, 345, 427, 511–  
513, 515, 516, 524, 535, 588,  
594, 977, 1125
- Georgacarakos, G. N., 1284
- George, H. V., 1054
- Gerhard, J. A., 765
- Ghilezan, S., 166
- Giambrone, S., 371, 1124, 1197
- Gibbard, A., 1054
- Gibbard, P., 1211
- Gibbins, P., 301, 369
- Gil, A., 200, 268
- Gil, D., 649
- Gillon, B. S., 771
- Gindikin, S. G., 405, 407, 442, 443
- Ginsberg, M., 100, 1198
- Girard, J.-Y., 107, 319, 352, 613
- his unprovoked attack on ( $\vee$ E),  
820
- linear logic, 229, 313, 327, 342,  
345–346, 351, 371, 669
- on (legitimate) connectives, 323
- on contraction and infinity, 1124

- on cut elimination, 191, 351
- on the significance of Identity and Cut, 613
- proof-nets, 189
- semantics of linear logic, 373
- unified logic, 107
- Girle, R., 817
- Giuntini, R., 300, 369
- Glivenko's Theorem, 305, 306, 316, 317, 618, 626, 743, 881, 1214–1222, 1335
  - fails for intuitionistic predicate logic, 305, 626
  - fails for ML, 1271, 1317
  - weakest supraminimal logic satisfying, 1272
- Glivenko, V., 306
- $Glo(\cdot)$ , 136, 1062
- global, *see* local/global
- gluts (truth-value gluts), 1199
- Goad, C. A., 578
- Goddard, L., 273, 442, 788, 816, 1051, 1228
- Gödel, K., 202, 211, 227, 298, 305, 874, 888, 891–893, 901, 902, 922, 1159, 1216, 1218
  - Gödel connective, 888
  - Gödel matrix, 171, 1220
- Godo, L., 269
- Goguen, J. A., 269
- Goldberg, S., 842
- Goldblatt, R., 189, 283, 297, 298, 300, 302, 874, 919–921, 1186, 1188, 1190–1192, 1197, 1285
- Goldstein, L., 818, 1125, 1164
- Goldstick, D., 1138, 1300
- Gonçalves, R., 181, 647, 874
- Gonseth, F., 270
- Goodman, Nelson, 678, 818, 991, 996, 1022, 1024, 1138
- Goodman, Nicolas, 304, 1226, 1250
- Goodstein, R. L., 405
- Goré, R., 108, 112, 551, 1250, 1251
- Gottschalk, W. H., 443
- Gottwald, S., 269, 1169
- Governatori, G., xvi
- $gp(\cdot)$  (Abelian group induced by a *BCIA*-algebra), 1114
- GPD, *see* duality (generalized Post)
  - gpw*-connected, convergent (frames), 856–859
- Graczyńska, E., 371
- Grandy, R., 577
- Grätzer, G., 16, 23, 43, 924
- greatest lower bound, 7
- Greechie, R., 300
- Green, G. M., 674
- Green, K., 270
- Greenbaum, S., 949, 969
- Grice, H. P., 632–634, 639, 673, 675, 677, 772, 782, 790, 793, 955, 980, 1038
- Griggs, R., 771, 817
- Grišin, V. N., 1124
- Groenendijk, J., 560, 641, 642, 770
- groupoids, 18, 43
- groups, 18
  - Abelian, 19, 1114–1115, 1122
  - boolean, 413, 741, 782, 1116
- grue*, 818, 1138
- Grzegorzczak, A., 304, 526, 775
- Guessarian, I., 442
- Guglielmi, A., 108, 1130
- Gunter, R., 674, 675
- Gurevich, Y., 1229, 1251
- Guzmán, F., 1084, 1086, 1325
- $H(\cdot)$  or  $H_V(\cdot)$  – set of verifying valuations (in  $V$ ), 495, 774
- H (tense operator), 287, 832, 866, 1295
- Haack, S., 269, 628, 842
- Hacking, I., 148, 193, 317, 536, 577, 614, 619, 990, 1169
- Hackstaff, L., 157
- Haegeman, L., 941, 1054
- Hähnle, R., 271, 272
- Haiman, J., 674, 933, 1054, 1055
- Hájek, A., 653
- Hájek, P., 269, 484
- Halbasch, K., 630, 783
- Hall, P., 443
- Halldén, S., 863
- Halldén-completeness, 51, 205, 763, 861–872, 923, 1276, 1278, 1281
  - global, 871
  - Kracht's sense *vs.* ours, 923
- Hallett, M., 369

- Halmos, P., 222, 273, 498, 819  
 Halpern, J. Y., 192, 298  
 Halpin, T., 1055  
 Hamblin, C. L., 641, 655, 805, 866  
 Hampton, J. A., 660, 1301  
 Hanazawa, M., 313  
 Hand, M., 629  
 Handfield, T., xvi  
 Hanson, W. H., 489  
 Hansson, S. O., 645  
 Hardegree, G. M., 101, 263, 273, 275, 300, 302  
 Hare, R. M., 978  
 Harman, G., 535, 951, 972  
 harmony, 525–528, 533, 576, 614  
 Harris, J. H., 627  
 Harris, K., 335  
 Harris, M. B., 1054  
 Harrison, J., 930, 935, 1011–1013  
 Harrop, R., 100, 179, 218, 272, 432, 862, 878, 884  
 Hart, A. M., 419  
 Hart, W. D., 576, 627, 1174  
 Hartline, A., 783  
 Hartonas, C., 1164  
 Haspelmath, M., 674  
 Hawranek, J., 272, 1278, 1279  
 Hayakawa, S. I., 1164  
 Hazen, A. P., xvi, 101, 1121  
   modal application of barring  $\dot{a}$   
   *la* Beth, 924  
   modal translations of IL, 874  
   on  $B'KW$ , 193  
   on “actually”, 489  
   on ‘assumption rules’ in Fitch, 525  
   on a need to invoke the Axiom of Choice, 45  
   on admissible propositions, 593  
   on Belnap–Thomason formulas, 983  
   on Curry’s Paradox, 1125  
   on *even if*, 958, 1055  
   on generalized natural deduction, 1075, 1077  
   on new intuitionistic connectives, 898  
   on strong negation, 1251  
   on subminimal negation, 1185, 1268, 1269  
   semantics of KC, 370  
 head-implication (relation), 1080, 1322–1325  
 head-linked (formulas), 556, 1319–1322  
 Heasley, B., 673  
 Hegarty, M., 949  
 Heintz, J., 768  
 Hellman, G., 370  
 ‘helping’ (and ‘non-hinderer’) conditionals, 944–947, 949, 992  
 Hendriks, L., 625  
 Hendry, H. E., 419, 444, 783, 1129  
 Henkin, L., 43, 53, 274, 297, 448  
 Herrlich, H., 16  
 Herzberger, H., 484, 842, 1015  
 heterogeneous  
   frame or class of frames, 866  
   logics, 111, 1185  
   sequents with labelled formulas, 977  
   strongly heterogeneous (frames), 868  
 Heyting algebras, 22, 23, 203, 224, 227, 257, 320, 1137, 1225, 1226  
 Heyting, A., 202, 302–304, 370, 1080, 1226  
 Hickman, R. C., 924  
 Higginbotham, J., 271, 802  
*Hil* and  $\vdash_{Hil}$ : axiom system and consequence relation named after Hilbert, 157–161  
 Hilbert algebras, 227, 231–235, 274, 1084  
 Hilbert, D., 103, 104, 156  
 Hilpinen, R., 297, 677, 799–804, 817, 934, 973, 1011, 1019–1022  
 Hinckfuss, I., 1056  
 Hindley, J. R., xvi, 165, 166, 274, 335, 673, 1117, 1126, 1127  
 Hinnion, R., 1212  
 Hintikka, J., 53, 271, 297, 471, 483, 774, 793, 808  
 Hinton, J. M., 797  
 Hirokawa, S., 237, 354, 358–361  
 Hiž, H., 177, 575, 577, 628, 1139  
 Hoare, C. A. R., 442  
 Hobbes, T., 707  
 Hocutt, M., 471

- Hodes, H., 111, 193, 273, 530, 629  
Hodges, W., 34, 44, 53, 271, 403, 814  
Hoeksema, J., 674, 969  
Holdcroft, D., 940, 1054  
holds  
    equation holds in an algebra, 189  
    formula holds on a boolean homomorphism, 223  
    sequent holding *vs.* ‘being true’, 189  
    sequent holds at a point in a model  
        for intuitionistic logic, 307  
        for modal logic, 293  
    sequent holds in a model  
        Gärdenfors semantics, 644  
        for intuitionistic logic, 307  
        for modal logic, 293  
        Urquhart semantics, 337  
    sequent holds on a matrix evaluation, 199  
    sequent holds on a valuation  
        for SET-FMLA, 127  
        for SET-SET, 134  
    sequent  $^m$ holds in a model, 850  
Hollenberg, M., 1229  
Holton, R., xvii  
Homič, V. I., 192, 577  
homogeneous  
    frame or class of frames, 866  
    relational connection, 2  
homomorphism, 26  
    matrix — (various notions), 597  
Hoo, C. S., 1116  
Hopper, P., 635  
Hori, R., 372  
Horn formulas, 32–37  
    metalinguistic Horn sentences of the first and second type, 64  
    strict, 35  
Horn, A., 44  
Horn, L. R., 675, 791, 808, 809, 816, 953, 1055, 1163, 1211  
Hornsby, J., 707  
Horsten, L., 781  
Hösli, B., 475  
Hosoi, T., 370, 420, 577  
Hossack, K. G., 1181, 1250  
Hu, Q. P., 1116  
Huddleston, R., 674, 950, 968  
Hudson, J. L., 678, 689, 690, 707  
Huet, G., 188  
Hughes, D., 189  
Hughes–Cresswell (G. E. and M. J.), 278, 280, 294, 297, 298, 462, 871  
    on Halldén incompleteness, 865  
Hugly, P., 1156–1157  
Humberstone, B. D., xvi, 1161  
Humberstone, J. A., 842  
Hunter, G., 946  
Hurford, J. R., 673, 817  
Hušek, M., 16  
Hutchins, E., 649, 797  
Hutchinson, L. G., 674  
hybrid logics, 111  
hybrids, *see* connectives, hybrids of  
Hyland, M., 346  
hypersequents, 111, 315, 860  
hypothetical  
    Hypothetical Syllogism (rule), 503, 992, 993, 1035  
    hypotheticals (in Dudman’s sense), 931–934, 941  
Hyttinen, T., 53  
*I* (implicational principle), 164, 229  
**I**: identity truth-function, 406, 412  
**I** (variable-identifier), 889  
Iatridou, S., 934, 949  
Ichii, T., 1161  
Ichikawa, S., 842  
(*id*) condition on models for conditional logic, 995  
Id (Identity axiom), *see also I*, 331, 340, 344  
‘Id-inductive’, 366  
ideas, individuation of, 649  
idempotence, 7, 476, 498, 501, 663, 755  
    in Menger’s sense, 501  
    strong, 758, 760  
identity  
    of indiscernibles, 259  
    identities of an algebra, 7  
    ‘identity connective’, 393, 709

- identity element (in a group or groupoid), 18
- Identity Rule, *see* rules, structural
- ‘identity-inductive’, 374
- propositional, *see* propositional identity
- truth-function, *see* **I**
- Idziak, P. M., 233
- Iemhoff, R., 879, 924
- “If”, *see* conditionals
- “if only”, 949
- “If you can’t see my mirrors”, 961
- if-then-else, 378, 442, 670
- IGen* (SET-FMLA<sub>0</sub> version of Gentzen’s *LJ*), 314–316, 605
- IL, *see* intuitionistic logic
- ILL** (intuitionistic linear logic), 351
- Imai, Y., 274
- IML (intuitionistic and minimal logic), 1282
- implication, 82–87, 925
  - additive, 349
  - enthymematic, 1098
  - in *BCI*, *BCK*, etc., *see* *BCI*, *BCK* logic
  - intuitionistic (*see also* intuitionistic logic), 1057–1088
  - linear, 345, 346
  - relevant (*see also* relevant logic), 328
  - strict, 276, 502, 503, 552, 817, 987–990, 1169
  - variably strict, 990–998, 1034
- implication formulas, set of, 97
- implicative, *see* *BCK* algebras, implicative
- implicature, 673
  - conventional, 633, 954
  - conversational, 633, 954
  - criticisms of Grice, 634
  - in cinematography, 634
- implicit
  - (implicational) converse, 1325
  - connectives, 628
  - definability, *see* definability, implicit
- importation/exportation, 269, 661
  - for subjunctive conditionals, 1034
- impurity, *see* rules, pure and simple
- INat*, 114, 304
- Inc** (inconsistent gr), 91, 92, 383
- incomplete (modal logics), 283
- independence
  - definitional, 420, 1129
  - functional, *see* functional dependence
  - of rules or axioms, 183–185, 195, 202
  - probabilistic, 657
  - relations of, 685–686
- indiscriminate validity (in an algebra), 250–257, 475, 752, 754, 755, 757
- individuation of logics, 180–188
- ‘induction loading’, 1100
- inevitable
  - informal sense: ‘now unpreventable’, 827, 833
  - strongly inevitable (formula at a point), 896, 902
  - weakly inevitable (formula at a point), 896, 902
- ‘inference ticket’, 979, 1092
- inference-determined (consequence relation), 1142, 1161
- inferential consequence, 289
- ‘inferential semantics’, 535
- inferentialism, 535
- infinite model property, 568
- initial sequents, 148
- injective, *see* functions, injective
- injectivity rule, 877
- ‘insertion’ *vs.* ‘introduction’ (rules), 143, 144
- insertion (as opposed to introduction) rules, 143
- intermediate logics, 172, 180, 297, 312–313, 318–321, 354, 370, 420, 542, 556, 623, 1217
  - fragments of, 629
  - those not finitely axiomatizable, 625
  - with the Disjunction Property, 862, 877
- internal/external
  - comparisons of connectives, 462, 483
  - consequence relations, 268
- intervals, 641



- intraposed version (of a given connective), 556
- introduction rules, *see* rules, introduction
- introductive (entailment), 516, 680
- intuitionistic logic, 302–326
  - $\neg$ -intuitionistic consequence relations, 1254
  - $\rightarrow$ -intuitionistic consequence relations, 84, 178, 326, 329, 441, 594
- intuitionistic restriction (sequent calculus), 314, 1246, 1248
  - liberal *vs.* restrictive versions, 1248–1250
- Inverse
  - Congruentiality (rule), 877
  - Monotony (rule), 876
- inverses
  - in groups/groupoids, 18
  - left and right, 18
  - left and right, for 1-ary connectives, 541, 564, 685
  - of rules, *see* rules, invertible
- Inversion Principle, 513
- invertible
  - rules, *see* rules, invertible
  - substitutions, *see* substitution, invertible
- ‘invisible contraction’, 316, 317
- ‘invited inferences’, 955
- involution, 44, 1195
- Ippolito, M., 929, 954
- Iséki, K., 239, 274, 1116
- Isaac, R., 842
- Ishii, T., 1155
- isomorphisms, 27
- isotopy, 443
  
- Jackson, F. C., 529, 657, 658, 673, 675, 770, 772, 791, 811, 842, 928, 930, 932, 978, 979, 981, 983, 1022, 1035, 1055
  - logical subtraction example, 679
- Jacobs, B., 372
- Jaeger, R. A., 679, 684, 686, 690, 707
- James, F., 773, 934, 1054
- Jankov, V. A., 51, 313, 320, 370, 1298
- Jankowski, A. W., 101
- Jansana, R., 97, 179, 218, 265, 268, 370
- Janssen, T., 271
- Jaoua, A., 732, 765
- Japaridze, G., 297
- Jaśkowski, S., 190, 202, 211, 272, 339, 1053, 1117, 1127
- Jay, N., 1164
- Jayez, J., 804, 808
- Jeffrey, R. C.
  - on conditional assertion, 939, 940, 1047, 1054
  - on dominance, 821, 822
  - proof annotations, 1184
  - tableaux, 189
- Jeffrey, W. P., 968
- Jennings, R. E., 536, 769, 779, 781, 783, 796, 798, 799, 806–810, 812–814, 816
- Jespersen, O., 951
- Ježek, J., 765, 1330
- Jipsen, P., 275, 546, 1214
- Jirků, P., 273
- Johansson, I., 189, 303, 313, 546, 690, 1181, 1257, 1263, 1272, 1284
- Johnson Wu, K., 483
- Johnson, D. L., 274
- Johnson, W. E., 981
- Johnson-Laird, P. N., 676, 814, 1055
- Johnston, D. K., 951
- join (in a lattice), 7
- join-irreducible, 11
- join-prime, 11
- ‘joint denial’, 607
- Jun, Y. B., 274
  
- $K$  (implicational principle), 229
- $\mathbf{K}$  (Kleene-inspired four-element matrix), 431
- $\mathbf{K}$  (modal logic), 277, 288, 294, 990, 1305
- $\mathbf{K}$  (universe of a Gärdenfors frame), 643
- $\mathbf{K.2}$  (modal logic), 855, 875
- $\mathbf{K.3}$  (modal logic), 855, 875
- $\mathbf{K}_1$  (Kleene matrix), 201, 249, 250, 271, 272, 429, 431, 459, 487, 1050, 1230

- K**<sub>1,2</sub> (Kleene matrix), 201, 249, 250, 271, 272, 429, 431, 459, 487, 1200  
**K4** (modal logic), 293, 294, 370, 873, 990, 1305  
**K4.3** (modal logic), 856  
**K4!** (modal logic), 553  
**K4<sub>c</sub>** (modal logic), 559  
**K<sub>t</sub>** (tense logic), 581, 1314  
 Kabziński, J., 243, 245, 274, 1077, 1102, 1128, 1136, 1161, 1162  
 Kahneman, D., 1164  
 Kalicki, J., 32, 213, 272, 754, 1116  
 Kalman, J. A., 274, 275, 1115, 1122, 1127  
 Kalmbach, G., 44  
 Kaminski, M., 148, 524, 608, 609, 613, 615, 618, 628, 630, 898  
 Kamp, H., 269, 270, 635, 799, 804, 808, 830  
 Kanger, S., 297, 467, 1278  
 Kanovich, M., 345, 358  
 Kaplan, D., 192, 297, 298  
 Kaplan, J., 674  
 Kapron, B. M., 859, 860  
 Karpenko, A. S., 271, 336  
 Karttunen, L., 560, 953  
 Kashima, R., 1125, 1127  
 Kato, Y., 808  
 Katriel, T., 675  
 Kawaguchi, M., 296  
 Kay, P., 815, 942, 956, 1055  
**KB** (modal logic), 298, 1191  
**KC** (intermediate logic), 312, 313, 318, 320, 370, 608, 624, 874, 875, 1335  
**KD** (modal logic), 800, 865, 868, 869, 891, 1305, 1313, 1314  
**KD4** (modal logic), 1305, 1314  
**KD!** (modal logic), 288  
 Kearns, J. T., 207, 1056  
 Keedwell, A., 443, 1161  
 Keefe, R., 818  
 Keisler, H. J., 33  
 Kennedy, R., 506–507  
 Ketonen, J., 1124  
 Ketonen, O., 142, 148, 314, 1249  
 Khomich, V. I., *see* Homič, V. I.  
 Kijania-Placek, K., 202, 249  
 Kim, J., 1161  
 Kimura, N., 765  
 Kiriya, E., 1124  
 Kirk, R. E., 370, 542, 875, 990  
 Kjellmer, G., 1055  
*Kle* (proof system related to *Kle*<sub>1</sub> and *Kle*<sub>1,2</sub>), 207, 249, 429, 430  
     and relevant logic, 340, 1195  
     matrix characterization of, 430  
     structural incompleteness of, 430  
*Kle*<sub>1</sub> and *Kle*<sub>1,2</sub> (proof systems for Kleene matrices), 207, 429  
     atheorematic nature of the former, 208  
     inadmissibility of contraposition for, 430  
     intersection of associated gcr's, 249  
 Kleene, S. C., 143, 151, 153, 193, 874, 1050, 1193  
     Kleene matrix, *see* **K**<sub>1</sub>, **K**<sub>1,2</sub>  
 Kneale, M., 140  
 Kneale, W., 140, 151, 537  
 Kolmogorov, A. N., 303, 304, 370, 893, 1215, 1272, 1285  
 Komori, Y., 197, 233, 234, 236, 237, 242, 274, 374, 863, 924, 1124  
 König, E., 1055  
 Koopman, B. O., 842  
 Korzybski, A., 1164  
 Koslow, A., 94, 100, 108, 587, 1301, 1336  
     simple or restricted treatment of  $\wedge$ , 629  
 Kowalski, R., 1055  
 Kowalski, T., 275, 546, 578, 1108, 1120, 1214  
**KP** (intermediate logic), 313, 630, 875, 877, 883–888, 923  
 Krabbe, E. C. W., 1007  
 Kracht, M., 297  
     his variant notion of Halldén completeness, 923  
     terminology of global Halldén completeness, 871  
 Kratzer, A., 805, 817, 956, 972, 1054  
 Kreisel, G., 304, 311, 313, 578, 616, 875, 877, 883, 923  
 Kremer, M., 190, 1054  
 Kremer, P., 49

- Krifka, M., 674, 808
- Kripke semantics  
   for intuitionistic logic, 307  
   for modal logic, 278, 291
- Kripke, S. A., 297, 304, 307, 924  
   on Halldén completeness, 864, 867  
   on supraminimal logics, 1277, 1285  
   on the ‘rule of disjunction’, 872, 923  
   relevant logic treated substructurally by disallowing Weakening, 371
- Krolikoski, S. J., 270, 484
- KT** (modal logic), 277, 283, 294, 990
- KT4** (modal logic), *see* **S4**
- KT5** (modal logic), *see* **S5**
- KT!** (modal logic), 278, 286, 472, 605, 1168, 1305
- KTB** (modal logic), 298, 1191
- KT<sub>c</sub>** (modal logic), 294, 472, 868, 1305
- Kuhn, S., 53, 296, 491, 810, 1185, 1260
- Kurucz, A., 489
- Kuznetsov completeness, 423, 444, 619
- Kuznetsov, A. V., 370, 422, 423, 444
- KVer** (modal logic), 278, 286, 472, 602, 605, 865, 868, 869, 1305
- L** (implicational principle), 197, 242
- L<sub>3</sub>** (see also Łukasiewicz, J., three-valued logic), 196
- L<sub>ω</sub>**, *see* Łukasiewicz J., infinite-valued logic
- l’Abbé, M., 448
- Ladd-Franklin, C., 964
- Ladusaw, W., 808
- Lafont, Y., 52, 371
- Lahr, C. D., 274
- Lakoff, R., 673–675, 770, 771
- lambda  
   — calculus, 165, 535, 673  
   — notation ( $\lambda$ ), 165, 406  
   with propositional variables, 425
- Lambek Calculus, 229, 372, 637, 1251
- Lambek, J., 109, 193, 372, 637, 1124, 1251
- Lance, M., 937
- Lane, D., 193
- Langton, R., 1301
- language-dependence objections, 1138–1139, 1298
- languages, 47–54
- Larsen-Freeman, D., 970
- Lat* (proof system for lattice logic), 246
- Latocha, P., 191
- lattices, 7, 16  
   distributive, 8  
   orthomodular, 302
- Lau, J., 1164
- Lavers, P., 645, 707
- Law of Excluded Middle, *see* Excluded Middle, Law of
- Law of Triple Consequents, *see* Triple Consequents, Law of
- LC** (intermediate logic), 180, 312, 313, 318–320, 322, 335, 362, 370, 420, 540, 542, 555, 624, 874, 875, 892, 1050, 1130, 1267, 1321, 1335  
   converses in, 1326  
   implicational fragment of, 555
- LCn** (local consequences of a set of rules), 1062
- LD** (Curry’s supraminimal logic), 1274
- LE**  
   Curry’s supraminimal LE, 320, 1274, 1275  
   four-valued in FMLA but not in SET-FMLA, 1277  
   Halldén-incompleteness of, 1276  
   Left Expansion (LE), 361  
   Left Extensionality condition (LE), 454
- least  
   — common thinning (of a pair of sequents), 135, 369  
   — upper bound, 7
- Leblanc, H., 101, 508, 543, 577, 656, 677, 1131
- Leech, G. N., 936, 1054
- left-prime  
   consequence relation or *gcr*, 110, 588, 755, 835, 917, 1074

- validity property, 252
- left-reductive (operations), 416
- LeGrand, J. E., 820
- Lehmke, S., 667, 673
- Lehrer, K., 819
- Leibniz, G. W., 279, 296, 731
- Leivant, D., 977
- Lejewski, C., 420
- Lemmon, E. J., 116, 119, 121, 125, 142, 181, 183, 189, 190, 277, 297, 298, 304, 306, 312, 313, 332, 336, 370, 515, 520, 543, 603, 626, 665, 722, 723, 843, 860, 872–875, 923, 976, 977, 1056, 1083, 1186, 1256, 1276, 1278, 1284
  - commas *vs.* dashes, 125
  - Lemmon-style proofs, 116
  - on “therefore”, 103
  - on Halldén completeness, 864
  - on logical relations, 503, 1166
  - source for *Nat*, 114
- Lenzen, W., 297, 1229, 1250
- Leśniewski, S., 676, 721, 1128, 1133, 1134
- Lev, I., 206, 442
- Levesque, H., 529, 1301
- Levi, I., 938
- Levin, H. D., 676
- Lewin, R. A., 1102
- Lewis, C. I., 276, 278, 330, 341, 707, 789, 1007, 1205
- Lewis, D., xvii, 707, 979, 1007, 1300
  - a problem in representing some conditional constructions in his language, 1009
  - inner and outer modalities, 1026
  - on ‘counterfactual fallacies’, 1034
  - on ‘would’ *vs.* ‘might’ counterfactuals, 1008
  - on a statement’s being about a certain subject matter, 829
  - on categorial grammar, 676
  - on Centering, 1011
  - on completeness for logics of conditionals, 1007
  - on compositional semantics, 271, 636
  - on conditional obligation, 826
  - on conditional probabilities, 567
  - on counterpart theory, 1023
  - on disjunctive antecedents, 1022
  - on implicature, 935, 1012
  - on natural properties and genuine resemblance, 1301
  - on permissibility statements, 804
  - on possible worlds, 296
  - on propositionally indexed modalities, 994
  - on Stalnaker’s Assumption, 1008, 1009, 1013, 1039
  - on subjunctive conditionals, 802, 934, 936, 962, 987, 994, 996, 1011, 1017, 1027, 1054, 1055
  - on the Limit Assumption, 1014, 1015
  - on the semantics of questions, 560, 770
  - on two-dimensional modal logic, 489
  - on vagueness and supervaluations, 830
  - on whether worlds must be comparable in respect of similarity to a given world, 1014
  - respects of similarity in the semantics of counterfactuals, 1023
  - treatment of context for counterfactuals differs from context for knowledge ascriptions, 1038
- Leśniewski–Mihailescu Theorem, 1136
- Libert, T., 1212
- Lindenbaum
  - algebras, *see* Tarski–Lindenbaum algebras
  - completeness, 1217
  - matrix (for a logic), 204, 205, 220, 1057
  - monoid, 557
  - propositions, *see* propositions, as equivalence classes of formulas
  - ’s Lemma, 60, 76, 78, 281, 310, 311, 386, 1065
- Lindenbaum, A., 204
- linear
  - linear formula, 1330

- linear logic, 52, 143, 229, 299, 313, 331, 345–358, 371, 665, 667, 1124, 1295, 1323
- linear orderings, 8, 288, 312, 639, 856, 866, 867
- Litak, T., 297, 871
- Lloyd, J. W., 34, 1164
- $Loc(\cdot)$ , 136, 1062
- local simulation, 1077
- local/global
  - global range (of a rule or set of rules), 136, 1062
  - local *vs.* global preservation characteristics, 129, 160, 290, 428, 431, 432, 435, 436, 831, 860, 895, 913, 1064
  - local range (of a rule or set of rules), 136, 1062
  - other distinctions, 325, 499
  - syntactically local conjunctions, disjunctions, etc., 94, 649, 650, 1068
  - valuationally local conjunctions, disjunctions, etc., 650
- locally
  - based (rules), 604
  - finite
    - classes of algebras, 227
    - logics, 227, 1160, 1161, 1298
    - ‘locally tabular’ (logics), 227
  - finite
    - classes of algebras, 238
    - logics, 238
- Lock, A. J., 810, 1164, 1169, 1192
- Loewer, B., 1022
- $Log(\cdot)$  consequence relation or gcr
  - determined by a class of valuations, 57, 74
- $log(\cdot)$ , logical transfer of a property of sets of valuations, 457
- $Log_{fin}(\cdot)$ , finitary version  $Log(\cdot)$ , 81
- logical frameworks, 103–109, 188
  - FMLA-FMLA, 108, 113, 189, 246–248, 251, 584, 587, 655, 754, 757, 1190
  - FMLA-SET, 214
  - MSET-FMLA, 105
  - MSET-FMLA<sub>0</sub>, 351
  - MSET-MSET, 105, 189
  - MSET-MSET<sub>1</sub>, 359
  - SEQ-FMLA, 105, 977
  - SEQ-FMLA<sub>0</sub>, 314
  - SET<sub>1</sub>-FMLA, 104, 108, 266
  - SET<sub>1</sub>-FMLA, 629
  - SET-FMLA<sub>0</sub>, 104
  - SET-FMLA, 82, 103, 757
  - SET-FMLA<sub>0</sub>, 314, 1184
  - SET-SET, 82, 102, 757
  - an ambiguity in this terminology, 106
  - duality of, 1193
  - plural conception (Oliver–Smiley), 106
- logical pluralism, 328, 537
- logical relations
  - Lemmon on, 503–507
  - traditional account of, 1166
- logical subtraction, 645, 677–708, 1138
- logics and consequence relations
  - CL,  $\vdash_{CL}$  (classical logic), 66, 320
  - IL,  $\vdash_{IL}$  (intuitionistic logic), 51, 174, 304, 320, 983
  - ML,  $\vdash_{ML}$  (Minimal Logic), 320, 1257
  - PL,  $\vdash_{PL}$  (Positive Logic), 320, 983
  - QL,  $\vdash_{QL}$  (quantum logic), 921
- logics *vs.* theories
  - defining connectives in, 428, 1181, 1211, 1212
  - different ways of drawing the distinction, 810
  - Dummett on, 189
  - Meyer on Uniform Substitution and, 188
  - variable for variable substitution and, 192
- loop**, *see* **r**
- López-Escobar, E. G. K., 370, 546, 673, 1250, 1251
- Lorenzen, P., 513
- Łoś, J., 123, 205, 206, 214, 923, 951
- Lotfallah, W., 53
- lottery paradox, 658, 677
- Lowe, E. J., 930, 1036–1037, 1042
  - on a would/might analogue for indicative conditionals, 1009
- Lucas, J. R.
  - on intuitionistic logic, 540

- on truth for future directed statements, 833
- Łukasiewicz, J., 196, 1061, 1230
  - axioms for CL due to, 185
  - choice of primitives, and Polish notation, 269
  - early attempt at modal logic using three values, 270, 470
  - effects of his concentration on FMLA, 200
  - his conjecture on intermediate logics and the Disjunction Property, 875
  - his three-valued matrix not suitably monotone, 250
  - hybrids, products and the ‘twins’ analogy, 468, 471
  - IL as an extension of CL (a bad idea), 305
  - infinite-valued logic ( $L_\omega$ ), 197, 336, 1128, 1129
  - on bivalence, 209, 827
  - on classical implication simulated in IL, 1080
  - on early natural deduction, 190
  - on many-valued logics, 168, 242, 271, 272
  - on Peirce’s Law, 1067
  - on variable functors, 463
  - products, 484
  - shortest axioms, etc., 1128
  - the  $L$ -modal system, 471–472, 484
  - three-valued logic ( $L_3$ ), 196–199, 209, 220, 242, 456, 598, 1130, 1158
- Lust, B., 633
- Lycan, W. G., 933, 936, 954, 955, 962, 966, 1055
- Lyndon, R. C., 44, 178, 274, 442
- Lyngholm, C., 451
- (M): structural rule, 59, 112
- (M): condition for being a consequence relation or gcr, 55, 73
- M** (modal principle), 278
- $ma(\cdot)$  (modal algebra induced by a frame), 290, 863
- Mabbott, J. D., 778, 779
- MacFarlane, J.
  - on logical constants, 193, 326
  - on truth for future directed statements, 833
- Mackie, J. L., 957, 1054, 1056
- Maduch, M., 273
- Maehara, S., 100
- Magari, R., 283
- majority (truth-function *maj* and connective **maj**), 916
- Makinson, D., xvii, 163, 645, 707
  - canonical model proofs in modal logic, 297
  - his use of the term ‘congruential’, 508
  - nonmonotonic logic, 100
  - on *and* and *or*, 817
  - on choice of primitives, 1139
  - on conditional probability, 653, 842
  - on De Morgan negation, 1199
  - on disjunctive permission, 799, 801, 802, 804–806
  - on intuitionistic logic, 986, 1167
  - on language dependence, 1138
  - on probabilistic consequence relations, 656
  - on rules, 520
  - on structural completeness, 163, 191, 882
  - on Uniform Substitution, 192
  - on FMLA-FMLA, 189
  - special notions of implication, 772
- Maksimova, L. L., 320, 370, 577, 630, 863, 875, 922
- Malinowski, G., 100, 210, 270–272, 306, 484, 1155, 1158, 1161
- Malinowski, J., 275
- Malmnäs, P.-E., 422, 874, 1258, 1285
- Mancosu, P., 203
- Manes, E. G., 43, 442
- many-sorted (logics), 53
- many-valued logic(s), 65, 168, 195–219, 249, 269–272, 380, 403, 443, 836, 1169, 1239
- Marcos, J., 120, 210, 491
- Marcus, P. S., 982
- Marcus, S. L., 1056
- Mares, E. D., 296, 371, 667, 924, 1186, 1201–1203, 1207, 1278

- Markov, A. A., 303, 1228  
 Martin, E. P., 371, 1203  
 Martin, J. A., 442  
 Martin, J. N., 207  
 Martin, N. M., 9, 71, 100, 436, 442, 629, 1179  
 Martin-Löf, P., 535  
 Martini, S., 673  
 Massey, G. J., 101, 389, 409, 442, 783, 915–917  
 ‘material’ implication, equivalence, etc., 83  
   ‘material disjunction’, 791  
 Mates, B., 189, 296  
 Matoušek, M., 273  
 matrices, 82, 199–245  
   full, 1299  
   generalized, 217  
   simple (or reduced), 259  
   unital, 220, 273, 458, 459, 483, 1094  
 Matsumoto, K., 369, 1090  
 maximal  
   — avoiders, 1065  
   — consistent (set of formulas), 281, 1065  
 maximum formula occurrence, 126, 334, 513  
 Mayer, J. C., 1032  
 Mayo, B., 951  
 ‘MCC’, 1278  
 McCall, S., 242, 1056, 1122, 1166–1168  
 McCarthy, J., 641  
 McCarty, C., 370  
 McCawley, J. D., 101, 508, 673, 783, 791, 949, 958–961, 966, 975, 1055, 1300  
 McCullough, D., 572, 578  
 McCune, W. M., 1122  
 McDermott, M., 1055  
 McGee, V., 193, 529, 1009  
 McKay, C. G., 227, 568, 569, 577, 629, 889  
 McKay, T., 1017, 1022  
 McKee, T. A., 1150  
 McKenzie, R., 16, 23, 43  
 McKinney, A., 492, 508  
 McKinsey, J. C. C., 1159  
   definitional independence of standard primitive connectives in IL, 419  
   Disjunction Property for IL, 922  
   fragments of IL, 227  
   Halldén completeness for modal logics, 868, 923  
   IL and topology, 620, 622  
   IL not locally finite, 227  
   modal axiom named after, 278  
   on Horn formulas, 44  
   on reducibility, 1151, 1158–1161  
   “quasi” terminology, 488  
   translation embedding IL in **S4**, 874  
 McNulty, G. F., 16, 23, 43, 765  
 McRobbie, M. A., 105, 107, 345  
 medial (law), 1133, 1148, 1161  
 Medlin, B., 500  
 Medvedev’s Logic (of finite problems), 625, 630, 888  
 Medvedev, Y., 630, 888  
 meet (in a lattice), 7  
 meet-irreducible, 11, 872  
   in a lattice of logics, 864  
   in a Lindenbaum algebra, 1295  
   in the lattice of valuations, 71  
 Meinke, K., 44  
 Meng, J., 274  
 Menger, K., 407, 408, 443, 501  
 ‘mental models’, 814  
 ‘mere followers’, 459, 597  
 Meredith, C. A., 1079–1081, 1084  
   axiomatics, 1122  
   first axiomatizes *BCIA* logic, 1098, 1101  
   his cousin David, 274  
   implicational axioms named after combinators, 166, 274  
   on *BCI* and *BCK*, 274  
   on a redundant axiom of Łukasiewicz ( $\mathbf{L}_\omega$ ), 197  
   translation embedding implicational CL into implicational IL, 335, 874, 1068, 1081–1087  
 Meredith, D., 274, 1278  
 mereological analogies, 659, 899  
 Merin, A., 804  
 Meseguer, J., 442

- Meskhi, V., 321  
 meta-ethics, 1051  
 meta-logic, *see* choice of —  
 meta-schematic letters, 155, 156, 523  
 Metcalfe, G., 111, 269, 1102  
 Mey, D., 1124  
 Meyer, J. J. C., 676  
 Meyer, R. K., xvii, 235, 245, 334–336, 345, 373, 907, 910, 925, 1056, 1101, 1121, 1122, 1124, 1196, 1197, 1200, 1201, 1203, 1207, 1210  
   axiomatizing Łukasiewicz logics, 242  
   defining connectives with propositional quantification, 421  
   disjunction property, 862, 922  
   enthymematic implication, 345, 346, 1098  
   implicational theorem of **RM** not provable in **RM0**, 335, 363  
   local finiteness and implicational **R**, 228  
   on *Ponens Modus* in Abelian logic, 1109  
   on Abelian logic (*q.v.*), 1098, 1122, 1258  
   on Boolean negation, 1205  
   on contraction, 671  
   on Curry's Paradox, 1125  
   on 'intensional implication' in **RM**, 1080  
   on intersections of logics, 923  
   on LC, 319, 370  
   on logics in FMLA *vs.* theories, 188, 192  
   on modal relevant logic, 296  
   on multisets, 105  
   on Peirce's Law, 1067  
   on 'strict substitutions', 192  
   on structural completeness, 173  
   on the infinite model property, 568  
   on the rule of Conversion in Abelian logic, 1105  
   on upper bounds for pairs of *BCI* theorems, 573  
   on upper bounds for pairs of *BCI*-theorems, 578  
   relevant equivalence property, 1296  
   semantics for *BCI*, 245  
   sentential constants in **R**, 371  
   separation property, 577  
   two views of definition, 443  
   Urquhart semantics for contractionless logics, 371  
 Michael, M., 1167  
 Michaels, A., 1161  
 Michalski, R. S., 968  
 Miglioli, P., 630, 875  
 Mihailescu, E., *see* Leśniewski–M. Theorem  
 Milberger, M., 1139  
 Mili, A., 732, 765  
 Mill, J. S., 647, 659  
 Miller, Dale, 371  
 Miller, David, 189, 688, 707, 843, 1138, 1226, 1298  
 Milne, P., 317, 371, 528  
 Minari, P., 320, 370, 629, 879, 923  
 Mingle (schema), 329, 331, 332, 335, 339, 361, 363, 369, 663, 664, 907, 1091, 1093  
 Minglers, 1307, 1335  
 Minimal Logic, 272, 303, 304, 307, 320, 381, 1257–1263, 1284, 1317  
 Mints, G. E., 120, 179, 370, 673, 860, 878, 881–883, 924, 1121  
 Mioduszewska, E., 943, 944, 950, 993, 1054  
 Miura, S., 923  
 Miyakoshi, M., 296  
 ML, *see* Minimal Logic  
 ML\* (variant of ML with biconditionally defined negation), 1271  
*MNat*, 114, 1257–1262  
   *MNat*<sub>1</sub>, 1264  
 modal algebras, 290, 863  
 modal logic(s), 275–298  
   intuitionistic, relevant, substructural, 296  
   normal (*see also* normal (modal logic)), 277  
 modalities, 462  
 modalized, *see* fully modalized  
 'modally defines', 284  
 model-consequence



- in intuitionistic logic, 309
  - in modal logic, 289, 291, 488, 850–854
  - generalized, 854–860
- models
  - characteristic, 280
  - full, *see* full model
  - in the sense of validating matrices, 272
  - Kripke models, *see* Kripke semantics
  - of an equational theory, 29
  - of Horn theories, 34, 35
- Modus Ponens*, 115, 123, 161, 529
  - horizontal form, 155
- Modus Tollens*, 121, 521, 942, 960, 1055, 1181, 1258
- Moh, S.-K., 1125
- Moisil, G., 312, 546, 1240
- Moktefi, A., 525, 1019
- monadically representable (relations), 506, 729
- “monkey’s uncle”, 942, 1181
- monoids, 18, 19
  - commutative, 1120
- monomodal logics, 288
- monothetic (logics), 221, 244, 245, 458, 493–495, 573, 1104, 1106, 1108, 1312
  - not necessary for algebraizability, 263
- monotone
  - vs.* monotonic, 490
  - connectives, 490
  - partial functions, 249
  - truth-functions, *see* truth-functions, monotone
  - with side formulas, 491, 621
- Monteiro, A., 274, 1240
- Moor, J., 1056
- Morel, A. C., 44
- Morgan, C. G., 656
- Morgan, J. L., 954
- Morgenbesser, S., 819
- Moro, G., 930, 935
- Morrill, G., 271
- Morris, C., 635
- Morriss, P., 1056
- Morsi, N. N., 53
- Mortensen, C., 1056
- Morton, A., 628
- (MP) – quasi-identity inspired by *Modus Ponens*, 231
- (*mp*) condition on models for conditional logic, 995
- MSET-FMLA, MSET-MSET, etc., *see* logical frameworks
- “much”, 966
- multigrade, *see* connectives, multigrade
- multimodal logics, 287
- multiplicative, *see* additive and multiplicative rules or connectives
- multiplicity functions, 373
- multisets, 105, 108, 373
- Mulvey, C. J., 641
- Mundici, D., 242
- Muravitskii, A., 370
- Murphy, R., 942, 970
- MV*-algebras, 242
- Myhill, J. R., 1098, 1125, 1251
- $\mathbb{N}$ , xv
- N**: negation truth-function, 398, 406, 412
- n** (converse non-implication), 605
- Naess, A., 817
- Nagayama, M., 236
- Nakatogawa, K., 296
- nand*, 388, 607
  - intuitionistic ( $\bar{\wedge}$ ), 1241
- NAT* (SET-SET natural deduction system), 140–141
- Nat* (SET-FMLA natural deduction system for CL), 66, 114–121, 124–132
- natural deduction, 89, 114–121
- ‘natural semantics’ (Garson), 915
- necessary and sufficient conditions
  - informal idea, 680, 961
  - separate clauses in the definition of truth ((N) and (S)), 610
- Necessitation (rule), 277
- negation, 49, 52, 62, 1163–1285
  - normal form, *see* normal forms Boolean, 1192, 1204, 1205
  - ‘Brouwerian negation’, 1250
  - canonical (in Abelian logic), 1113

- Church negation ( $\neg$ ), 1209  
 classical, 585, 591, 1172  
 De Morgan, 1192  
 dual intuitionistic, 92, 583, 1172  
 ‘Heyting negation’, 1250  
 in Minimal Logic, 1258–1263  
 intuitionistic, 583, 585, 591, 1214–1252  
 left —, right —, 1185  
 metalinguistic, 791  
 Moisil, 1240  
 strict negation, 1169, 1188, 1241  
 strong negation, 540, 1200, 1228  
   paraconsistent, 1230, 1235, 1251
- negative  
 — existential (claims), 1164, 1298  
 — formula (in a special sense), 1271  
 — objects on the left/right, 14, 752, 1172  
 — polarity items, 799, 806, 808, 941, 966, 967
- Negri, S., 111, 191, 371, 535  
 neighbourhood semantics, 497  
 Nelson, D., 619, 1228, 1229, 1240, 1251  
 Nelson, E. J., 658–660, 668  
 Nemesszeghy, E. A., 1272  
 Nerlich, G., 925, 961  
 neutral element, *see* identity element  
   (in a group or groupoid)  
 Newstead, S. E., 771, 817  
 Nicod, J., 630  
 Nieuwint, P., 935, 1054  
 Nishimura, H., 301  
 Nishimura, I., 227, 623  
**No** (gcr), 91, 92, 201, 382, 383  
 Nolan, D., 1041
- non-connectival operations on formulas, 49, 50, 53, 393, 681, 716  
 non-conservative extension, *see* conservative extension  
 non-creativity (as a condition on definitions), 721  
*nor*, 607  
 normal (modal logic), 187, 276–296  
   general reading on, 297  
   normal or  $\Box$ -normal consequence relation, 291, 490, 562, 832
- normal forms  
   Bendall normal form, 1180  
   conjunctive normal form, 35, 324  
   disjunctive normal form, 404  
   for natural deduction proofs, 146, 535  
   negation normal form, 1179  
   prenex normal form, 33  
 normalization of proofs, 334, 515  
 “Not” (*see also* negation), 585, 1163–1252
- Novák, V., 269, 667, 673  
 Noveck, I., 816, 819  
 Nowak, M., 177  
 nullary, *see* zero-place  
 Nute, D., 994, 1007, 1012, 1017, 1056
- O’Hearn, P., 349, 669  
 O’Neill, B., 1138, 1300  
 O-system (McKay), 568  
 oblique, *see* rules, oblique  
 Ockham algebras, 44  
 Ockham, William of, 829  
 Odintsov, S. P., 1251, 1275, 1278, 1285  
 Ohlsson, S., 1056  
 Ohnishi, M., 369, 1090  
 OIC (Bull’s intermediate implicational logic), 370, 542, 555  
 Okada, M., 345, 358, 371, 670  
 OL and  $\vdash_{OL}$  (orthologic), 301  
 Oliver, A., 106, 192  
 Olivetti, N., 111  
 OML and  $\vdash_{OML}$  (orthomodular logic), 302  
 One,Two-Property (1,2-Property), 1053, 1099, 1116, 1127  
 “only”, 950, 954–963, 1055  
   “only if”, 950–964  
 Ono, H., 147, 245, 275, 296, 370, 372, 374, 546, 924, 1121, 1124, 1125, 1214  
 Ono, K., 1181, 1278
- operations  
   derived, *see* derived operations  
   fundamental, 17  
   nullary or 0-ary, 17
- Oppy, G., xvii  
 “Or” (*see also* disjunction), 767–843

- or*-like ( $\vee$ -like) connectives, *see and*-like  
 Ord,  $\vdash_{\text{Ord}}$  (W. S. Cooper), 1044–1053  
 ordered pairs, 738–750  
 ‘Ordinary logic’ (Cooper), *see* Ord  
 Ore, O., 16  
 ortholattices, 22, 301, 1186  
 orthologic, 298–302  
 orthomodular, *see* lattices, orthomodular  
 Orłowska, E., 924  
 Osgood, C. E., 675  
 Osherson, D., 411, 1164  
  
*P* (implicational principle): *see also* Peirce’s Law, 237  
*P* (tense operator), 287, 832, 1295  
 Pahi completion (of a logic), 1334  
 Pahi, B., 313, 1299, 1330, 1332–1336  
 pair-validity, 746, 751  
 Pałasiński, M., 242  
 Palmer, F. R., 932, 1054  
 Pancheva, R., 949, 951  
 Paoli, F.  
     ambiguity claim for existential quantifier, 789  
     on Abelian logic, 268, 1102, 1112, 1162  
     on linear logic, 327  
     on paraconsistent logic, 93  
     on Quine on deviant logics, 628  
     on substructural logics, 319, 371, 374  
     on tautological entailments, 341, 772  
     terminology for the distinction between additive and multiplicative connectives, 346  
*par* (fission), 372, 798  
 paraconsistent logics, 92, 201, 1048, 1123, 1194–1206, 1257  
 paradoxes of implication  
     material, 475, 926, 980  
     strict, 658  
 Pargetter, R., 811, 1022  
 Parigot, M., 140, 166  
 Paris, J. B., 677  
 Paris, S., 927  
 Parks, Z., 335, 368, 1053  
  
 Parry, W. T., 772, 925  
 Parsons, C., 467, 1277, 1278  
 Partee, B., 271  
 partial logic, 249  
 partial order, 2  
 Pascal, B., 818  
 Passy, S., 1260  
 ‘pathological’, 384  
 Peacocke, C., 193, 528, 530, 532–536, 576, 978, 1170, 1171  
 Pearce, D., 642, 1235, 1251  
 Peetz, V., 792  
 Peirce’s Law, 177, 178, 197, 237, 238, 307, 310, 313, 427, 517, 521, 530, 534, 540, 543, 547, 556, 618, 695, 883, 986, 1057, 1059, 1061, 1068, 1080, 1083, 1085, 1117, 1127, 1217, 1258, 1272, 1275, 1276, 1278, 1317, 1326  
     (Peirce) $\#$ , (Peirce) $\neg$ , 1166  
     and  $\rightarrow$ -subcontrariety, 1060–1067  
     for head-linked formulas, 1320  
 Peirce, C. S., 630  
     use of the phrase “logical subtraction”, 707  
 Pelletier, F. J., xvii, 269, 271, 442, 781, 783, 816  
 Pendlebury, M., 1054  
 perfect (Galois connections), 4  
 Perm (Permuting antecedents), *see also C*, 159, 340, 663, 1091  
 Perrin, N. A., 970  
 persistence, 203  
     — and *QPers* for ML models, 1261  
     — relations, 914  
     a problem concerning, 611  
     a similar condition on Routley–Meyer models, 1202  
     and topoboolean conditions, 620–621  
     as a requirement for intuitionistic intelligibility, 593  
     condition and lemma ( $P_0$ ,  $P$ ) in semilattice semantics, 337  
     condition on Kripke models for IL, 307  
     in ‘plus’ (modified Urquhart) semantics, 909

- in modal logic, 309, 873
- in the Beth semantics for IL, 894
- in the possibilities semantics, 900
- inversely persistent formulas, 1328
- lemma for IL (2.32.3), 308
- one candidate for exclusive disjunction not persistent, 786
- positive and negative for IL with strong negation, 1230
- relaxing this condition on IL models, 370
- perspectives on many-valued logic, two different but both valuable, 206–207
- Peters, S., 953
- Petrus Hispanus, 809
- Pfeiffer, K., 843
- phase space semantics (for linear logic), 345
- philosophical proof theory, 371, 511–536
- phrasal (conjunction), 667, 674
- Piatelli-Palmarini, M., 842, 1164
- Piazza, M., 372
- piecewise
  - connectedness, 855
  - convergence, 313, 855
  - definability, 725
  - generalized, *see* gpw
  - weak connectedness, 856
  - weak convergence, 856
- Pietarinen, A., 53
- Pigeonhole Principle, 735, 742, 743
- Pigozzi, D., 97, 218, 220, 257–268, 275, 293, 456, 483, 1136, 1158, 1307, 1309, 1311
- Pizzi, C., 948, 1055
- PL (positive logic), 36, 320, 512–534
  - and ML, 1258–1259
  - clear formulas in, 983
  - Curry’s name LA for, 320
  - extension by McKay of, 568
  - extension by Moisil of, 1240
- Plantinga, A., 1300
- Plisko, V. E., 304, 1285
- Plotkin, G., 188, 296
- Plumwood, V. (formerly V. Routley), 925, 1164
- pluralism, logical, 537
- PNat*, 114, 512
- Poggiolesi, F., 112
- Pogorzelski, W. A., 129, 163, 169, 177, 191, 193, 775
  - translations from CL into Łukasiewicz many valued logics, 1238
- point-consequence, 289
- Połacik, T., 1336
- Polish notation, 269, 672, 745, 1122
- Pollard, S., 9, 71, 100, 436–442, 1179, 1213
- Pollock, J. L., 944, 958, 1007, 1015, 1032, 1054
- ‘polynomial(ly)’, 23, 43
- ‘*Ponens Modus*’, 1109
- Popov, V. M., 336
- Popper, K. R., 151, 526, 535, 537, 585, 626, 691
- Porębska, M., 1136
- portation, *see* importation/exportation
- Porte, J., 172, 175, 178, 184, 193, 223, 485, 876, 1101, 1161, 1270, 1276
  - on D- vs. T-independence, 184
  - on the Ł-modal system, 484
- posets, 2, 7–9, 15, 16, 307, 583, 836, 900
- Positive Logic, *see* PL
- Posner, R., 676
- Possibilitation (rule), 877
- Post duality, *see* duality, Post
- Post, E. L. (see also Post-completeness), 272, 405, 407, 409, 414, 442, 492
- Post-completeness, 248, 278, 286, 602, 1099, 1100, 1103
- Postal, P., 931, 1041
- Pottinger, G., 111, 673
- Potts, C., 634, 675
- Pr*
  - ‘primification’, 1066
  - class of prime valuations, 916
  - probability function, 652
- Pra* (Prawitz style natural deduction system), 515
- pragmatics, 634
- Prawitz, D., 115, 125, 126, 142, 146, 189, 190, 295, 420–422, 511–516, 519, 522, 534, 535, 874,

- 976, 977, 1058, 1183, 1253, 1258, 1285
- pre-order(ing)s, 2, 3, 15, 240, 246, 549, 1050
- Predelli, S., 941, 949
- Pref (Prefixing axiom), *see also* *B*, 328, 340, 1091
- premiss/conclusion contrasts: vertical *vs.* horizontal, 104
- prenex normal form, *see* normal forms
- preservation characteristics, 129
- Prešić, M. D., 31, 739
- Preston, G. B., 416
- pretabular (logics), 320, 370, 892
- Price, H., 1177, 1179, 1250
- Price, R., 630
- Priest, G., 189, 1206
  - logic of conditionals, 1055
  - on Boolean negation, 567, 1206
  - on dialetheism, 1194
  - on paraconsistent logic, 1195, 1200
  - semantics for relevant logic, 1201
- Priestley, H. A., 16
- prime
  - filters, 248
  - sets of formulas (esp. theories), 310
  - two-sidedly (*see also* left-prime, right-prime), 254, 256, 755
  - valuations, 847
- ‘primitively compelling’ (Peacocke), 529
- principal formula, 321
- Principle of Predication, 1300
- Prinz, J., 660
- Prior, A. N., 157, 274, 1080, 1087, 1122
  - a logic not closed under Uniform Substitution, 192
  - nicknames for axioms, 169
  - on *BCI* and *BCK*, 274
  - on a tensed notion of necessity, 827
  - on axiomatics, 50, 224
  - on Bull’s OIC, 370, 542
  - on contraction and Curry’s Paradox, 1125
  - on many-valued logic, 270
  - on possible worlds semantics, 297
  - on propositional identity, 1157
  - on supra-minimal logics, 1276, 1278
  - on tense logic, 287, 297, 639, 866
  - on the equivalential fragment of CL, 1103
  - on the Ł-modal system, 484
  - on three-valued logic, 269
  - on Tonk, 91, 532, 536, 537, 576, 614
- probability, 677
  - ‘probabilistic disjunction’, 826
  - and  $\wedge$ -introduction, 650–658
  - conditional
    - Lewis on, 568
  - conditional (and ( $\vee E$ )), 821–822, 824–826
  - conditional (and indicative conditionals), 770, 938, 978, 979, 1035, 1055
  - conjunction fallacy, 1164
  - probabilistic semantics, 656
- product, *see* cut product, *see* direct product
- projection functions ( $proj_k^m$ ), 24, 407
  - hybridizing the logics of, 465, 750–765
- projection-conjunction connective or condition, 392–394, 398–402
- promises, *see* threats (and promises)
- propositional
  - logic, 47
  - attitudes
    - affective, 971
    - linked to force, 1179
  - identity (as a binary connective), 274, 306, 1150–1158
  - quantifiers, *see* quantifiers, propositional
  - variables, 47
- propositions
  - as equivalence classes of formulas, 22, 73, 222, 279, 525
  - as mappings, 642
  - as sets of worlds, 279, 291, 1260
- protasis, 933
- protoalgebraic (logics), 99, 264, 265
- Prucnal, T., 172, 173, 191, 275, 630, 874, 879, 1084, 1122

- pseudo-boolean algebras, 22  
 pseudo-disjunction (*see also*  $\ddot{\vee}$ ), 555, 839, 1068, 1072–1076, 1272  
 pseudo-imperatives, 674  
 ‘pseudo-subcontraries’, 556, 1272  
 pseudo-truth-functional, 442, 451  
 pseudocomplementation, 22, 583  
 Pugmire, J. M., 442  
 Pullum, G. K., 411, 649, 674, 783, 933, 950, 968  
 Pulman, S. G., 1055  
 ‘punctuationism’, 806, 810  
 purity, *see* rules, pure and simple  
 Putnam, H., 313, 369, 823, 875, 877, 883, 923  
 Puttock, T., 819  
 Pym, D., 147, 166, 349, 669, 1125  
 Pynko, A. P., 1197
- Q** (implicational principle), 237  
**QL**, *see* Quantum Logic  
*QNat*, 299  
 quantifiers  
   branching, *see* branching quantifiers  
   generalized, 447  
   in intuitionistic predicate logic, 276, 306, 543  
   in natural deduction, 189, 543  
   nonconservativity and new —, 722–723  
   propositional (*see also* second order propositional logic), 363, 420, 615, 1101, 1325  
 quantum logic, 299, 369  
   disjunction in, 820, 918–922  
 quasi-boolean algebras, 22, 249, 1186, 1198  
   representation theorem for, 1197  
 quasi-commutative (*BCK*-algebra), 242  
 ‘quasi-connectives’ (R. Shock), 100  
 quasi-identities (quasi-equations), 35, 231, 232, 259  
 quasi-normal (modal logics), 488  
 ‘quasi-truth-functional’, 442  
 quasivarieties, 36, 44, 259  
 questions (*see also* ‘whether’), 770, 951
- Quine, W. V., 508, 585, 603, 607, 628, 630, 938, 964, 965, 1023, 1054  
   mixing up terminology for binary relations and binary operations, 499  
 quotient algebra, 27, 221, 241, 498
- ( $\mathbb{R}$ ): structural rule, 59, 112  
 (R): condition for being a consequence relation or gcr, 55, 73  
**R** (relevant logic), 52, 169, 235, 331, 663  
    $\leftrightarrow$  special in, 1307–1312  
**R** (requirement structure), 693  
**R** (accessibility constant), 1260  
**r** (reflexivity constant), 1259–1260  
*R*-chains, 308, 309, 320, 903  
 (RAA), 114  
   (RAA)<sub>#</sub>, 1166  
   for *NAT*, 141  
   purified, 520, 580  
   rigging assumption dependencies for, 341
- Rabin, M. O., 44  
 Rabinowicz, W., 303  
 Radford, C., 1054  
 Raftery, J. G., xvii, 188, 240, 245, 260, 263, 273, 546, 1122  
   on an enthymematic implication definable in **RM**, 1069  
   on definability of disjunction in **RM**, 420  
   on **RM**, 168  
   order algebraizability, 263  
   the abbreviation  $|A|$ , 574  
 Ramachandran, M., 1037  
 Ramanamurty, P. V., 1116  
 Ramsey Test (for conditionals), 937, 938, 978  
 Ramsey, F. P., 52, 937, 938, 1055  
 Rasiowa, H., 200, 273, 275, 484, 1164, 1197, 1251  
 Ratsa, M. F., 444  
 Rauszer, C., 546, 1224, 1225, 1250  
 Rautenberg, W., 172, 893  
    $\{\wedge, \neg\}$ -fragment of IL is 3-valued, 1221, 1245

- calls weakly extensional consequence relations congruential, 483
- consequence relation for hybridizing  $\wedge$  and  $\vee$ , 470, 472–474, 476
- Deduction Theorem not automatically inherited by extensions, 193
- example of  $\vee$ -classicality not preserved in extending a consequence relation, 64, 601
- extending Jankov’s result (on additions which classicize IL) to SET-FMLA, 313
- mistaken idea that adding “either” makes *or* exclusive, 817
- no detachment-deduction theorem for  $\{\wedge, \vee, \neg\}$ -fragment of IL, 179
- notions related to Rautenberg-validity, 220, 254, 257, 1161
- on clones of truth-functions, 442
- on Gärdenfors style semantics, 642
- on matrix methodology, 259
- products *vs.* hybrids, 466, 759
- strengthenings of  $\vdash_{\vee\wedge}$ , 466
- two-valued consequence relations
  - maximally non-trivial, 396, 1245
- when  $\vdash_{M_1 \otimes M_2} = \vdash_{M_1} \cap \vdash_{M_2}$  (consequence relations), 467
- Rautenberg-validity, 254
- RE
  - Right Expansion (RE), 361
  - right extensionality conditions (RE) and (RE’), 454–455
- Read, S., xvii, 112, 140, 336, 341, 342, 371, 528, 576, 665, 667, 668, 789, 798, 817
- real-world validity (on a frame), 489
- realizability, 304, 1251
- Rebagliato, J., 260
- (Recip) and (Recip) $_i^n$ , 1140–1142
- reciprocal ( $n^{\text{th}}$ -argument — function), 415, 684, 1111, 1137
- rectangular
  - bands, *see* bands, rectangular relations, 729
- Red*, *see* reducibility (of sequents to sets of sequents)
- reducibility
  - of sequents to sets of sequents, 149, 325
  - reducible and  $n$ -reducible (logics), 1158–1161
- reduct (of an algebra), 18
- Reductio ad Absurdum*, *see* (RAA)
- refinability, 900
- reflexive (relations), 2, 281
- reformulation, *or* of, 795
- refutability
  - ‘classical refutability’ (Curry’s LE), 1275
  - ‘complete refutability’ (Curry’s LD), 1274
  - of formulas, 1216
- ‘regeneration’ (of boolean algebras), 1137
- regular
  - modal operators, modal logics, 492
  - regular relations, 765
  - regular semigroup elements, 765
  - rules, *see* rules, regular
- Reichenbach, H., 633, 783
- rejection
  - à la* Łukasiewicz, 484, 1179
  - as denial or dissent, 1178, 1211
  - as distinct from assent to the negation, 303
- relational
  - connection, 1
  - between sequents and formulas, 133
  - between valuations and formulas, 69
  - structure, 2
  - system, 38
- relevant logic, 326–345, 371
  - bad response to the problem of logical subtraction, 683
  - conjunction and fusion in, 661–671
  - intensional and extensional disjunction in, 790
  - negation(s) in, 1192–1210

- relevant implication in FMLA, 1091–1098
- relevant implication in SET-FMLA, 1088–1090
- semantics for disjunction in, 905–910
- representable (*see also* boolean representability)
  - $\wedge$ -representable
    - connective or truth-function, 709
    - relations, 505, 729
  - $\leftrightarrow$ -representable
    - connective or truth-function, 709
    - relations, 729
  - $\vee$ -representable
    - connective or truth-function, 709
    - relations, 729
- representative
  - instance of a schema, 160
  - universally —, *see* universally representative
- requirement semantics (for logical subtraction), 693–707
- Rescher, N., 101, 201, 202, 272, 442, 443, 484, 655, 874, 992, 1051
- residuals, 269
- residuated (semigroups, monoids, lattices), 545
- “respectively”, 44, 744
- Restall, G., xvii, 243, 508
  - on substructural logics
    - for categorial grammar, 638
    - mixing up terminology for binary relations and binary operations, 499
  - motivating SET-SET, 846
  - on ‘coformulas’, 100
  - on ‘structure connectives’, 577
  - on BN4, 1200
  - on contraction and Curry’s Paradox, 1123
  - on Curry’s Paradox, 1125
  - on cut elimination, 191
  - on display logic, 108
  - on graph proofs, 189
  - on Hinnion and Libert’s version of Curry’s Paradox, 1211–1214
  - on intersection types in substructural logic, 673
  - on logical pluralism, 298, 537
  - on logics weaker than IL, 370
  - on logics without contraction, 1124
  - on modal sequents, 860
  - on negation in relevant logic, 1200
  - on relevant logic, 332, 371
  - on split negation, 1164
  - on substructural logics, 371, 374
  - on three-valued logic and supervaluations, 842
  - on tonicity and the calculus of structures, 1130
  - on truth-makers and disjunction, 817
  - semantics for relevant logic, 1201
- restricted
  - $\wedge$ -classicality, 629
  - $\vee$ -Elimination, *see* rules,  $(\vee E)_{res}$
  - $\wedge$  introduction, 587, 629
  - cut (for quantum logic), 301
  - generalization (Pahi), 1332
- Richard, M., 1179
- Richards, M. M., 675
- Richards, T. J., 781, 816, 1055
- Rieger, L., 273
- Rieger–Nishimura lattice, 227, 623
- right-prime (gcr), 79, 110, 755, 845
- Riguët, J., 765
- Rips, L. J., 661, 1056
- Riser, J., 149, 619, 1249
- Ritter, E., 147, 166, 1125
- (RM): structural rule, 147, 149, 166
- RM** (**R**-Mingle), 331, 334, 335, 354, 361–364, 367–369, 475, 663, 664, 667, 1053, 1058, 1069, 1080, 1091, 1119
  - converses in, 1326
  - deduction theorem, 168
- RM0**, 329, 331, 334, 363, 368, 1118, 1309
- RMNat*, a natural deduction system for relevant implication with Mingle, 329–334
- RNat*, a natural deduction system for relevant implication, 330,



- 332–339
- Robin, N., 1056
- Robinson, T. T., 1101, 1278
- robustness implicature, 980, 983  
with disjunctions, 770
- Rodenburg, P. H., 883
- Rodríguez Salas, A. J., 213, 242
- Roëlofs, H. D., 959, 964
- Roeper, P., 656, 676, 677
- Rogerson, S., xvii, 358, 1125, 1127, 1213
- Rose, A., 442
- Rose, G. F., 304, 889
- Rose, T. A., 817
- Rosen, G., xvii
- Rosenberg, I., 443
- Roth, Philip, 795
- Rott, H., 645
- Rousseau, G. F., 107, 111, 210, 444, 577, 619, 987
- Routley, R. (*see also* Sylvan, R.), 273, 345, 772, 910, 923, 925, 1051, 1056, 1094, 1125, 1158, 1195, 1197, 1198, 1200, 1201, 1203, 1207, 1229, 1251
- Routley, V. (*see also* Plumwood, V.), 1158, 1195, 1197, 1198, 1201, 1203
- Routley–Meyer semantics, 1094, 1196, 1201, 1202, 1210
- Roxbee Cox, J. W., 818
- Royse, J. R., 731
- RPref (Prefixing Rule), 159
- RSuff (Suffixing Rule), 159
- RTrans  
what relation is transitive?, 503
- RTrans (Transitivity Rule), 159
- Ruitenburg, W., 189, 370, 451
- rules
- (+ Left)<sub>ms</sub>, 349
  - (+ Right)<sub>ms</sub>, 349
  - (F Left)<sub>ms</sub>, 351
  - (T Right)<sub>ms</sub>, 351
  - (⊥E), 1254
  - (◦ Left)<sub>ms</sub>, 347
  - (◦ Right)<sub>ms</sub>, 347
  - (¬¬I), 121
  - (¬ Left), 142
  - (¬ Left)<sub>ms</sub>, 349
  - (¬ Right), 142
  - (¬ Right)<sub>ms</sub>, 349
  - (¬¬E), 114
  - (¬¬I)<sub>d</sub> ((¬I) with discharge restriction), 332–334, 336, 339, 427, 518, 975, 1088, 1118
  - (→ Left), 142
  - (→ Left)<sub>ms</sub>, 349
  - (→ Right), 142
  - (→ Right)<sub>ms</sub>, 349
  - (→E), 114
  - (→I), 114
  - (→I)<sub>Pra</sub>, 514, 518
  - (→I)<sub>ms</sub>, 1118
  - (∨ Left), 142
  - (∨ Left)<sub>ms</sub>, 349
  - (∨ Right), 142
  - (∨ Right)<sub>ms</sub>, 348
  - (∨E), 114
  - (∨E)<sub>res</sub> (restricted (∨E)), 299, 527, 586, 776, 835, 893, 918–922, 1191  
motivation for, 823  
with (∧I) uniquely characterizes ∨, 586–587
  - (∧I), 114
  - (∧ Left), 142
  - (∧ Left)<sub>ms</sub>, 347
  - (∧ Right), 142
  - (∧ Right)<sub>ms</sub>, 347
  - (∧E), 114
  - (∧I), 114
  - (∧I)<sub>rel</sub> (relevant (∧I)), 665
  - (∧I)<sub>res</sub> (restricted (∧I)), 587, 629
  - (t Left)<sub>ms</sub>, 351
  - (t Right)<sub>ms</sub>, 351
- admissible, 38, 126, 146, 148, 160, 164, 167, 177, 178, 181, 242, 289, 322, 430, 436, 516, 556, 661, 876, 878, 881, 924, 986, 1094, 1105, 1124, 1125, 1159, 1254
- contralateral, 605
- cut-inductive, *see* cut-inductive (separate entry)
- derivable, 38, 126, 181, 289, 430, 516, 876, 878, 1105
- elimination rules, 114, 522, 1284
- general in respect of constituent formulas, 521, 746

- general in respect of side formulas, 521, 527, 536, 546, 587, 1170, 1226  
 Harrop's Rule, 872, 878–883  
 introduction rules, 114, 521  
 invertible, 146–151, 322–326, 349, 352  
 ipsilateral, 605  
*Modus Ponens*, *see Modus Ponens* (separate entry)  
*Modus Tollens*, *see Modus Tollens* (separate entry)  
 oblique, 521, 544, 1167  
 pure and simple, 312, 321, 397, 519–523, 581, 586, 785, 809, 962, 998, 1131, 1178, 1182, 1246  
 (RAA), *see* (RAA) (separate entry)  
 regular (in the sense of Kamin-ski), 148–150, 366, 374, 613  
 RPref, RSuff, RTrans, *see* RPref etc. (separate entries)  
 rules of proof *vs.* rules of inference, 161, 163, 170, 187, 290, 503, 882  
 sequential, 123  
 structural, 120
  - a different use of the terminology, 129
  - Contraction, 143, 152, 316, 321, 326, 345, 353, 354, 356, 358, 361–364, 372, 571, 664, 1119, 1124–1126
  - Cut Rule (see also  $(\mathbb{T})$ ), 112, 347
  - Exchange, 230, 347, 354, 372
  - Expansion, 268, 332, 354, 361–364, 664, 1118, 1119
  - Girard's *vs.* Gentzen's terminology, 345, 347
  - Identity (see also  $(\mathbb{R})$ ), 347
  - rule of symmetry, 253, 482
  - weakening (*see also*  $(\mathbb{M})$ ), 112, 316, 354
 two-way, 151, 545, 661, 1001, 1004, 1005, 1126  
 Uniform Substitution, *see* separate entry for Uniform Substitution
- zero-premiss, 112, 115, 123, 129, 144, 153, 155, 156, 183, 526, 527, 533, 590, 595, 597–601, 605, 752, 847  
 Rumfitt, I., 774, 846, 1211  
 Rundle, B., 634, 650, 651, 675, 946  
 Russell's Paradox, 1123  
 Russell, B., 420, 555, 707, 731, 1157  
 Russell, G., xvi  
 Rybakov V. V., 924  
 Ryle, G., 772, 779, 793, 979
- S* (implicational principle), 169, 229  
 S1 (modal logic), 278  
 S13 (modal logic), 192  
 S2 (modal logic), 278  
 S3 (modal logic), 278  
 S4 (modal logic), 278, 284, 295, 307, 320, 330, 370, 552–554, 601, 604, 615, 867, 873, 874, 891, 988, 991, 1080, 1151, 1168, 1283, 1305  
 S4.2 (modal logic), 278, 855, 874, 875  
 S4.3 (modal logic), 278, 855, 856, 874, 875  
 S5 (modal logic), 278, 286, 553, 855  
 Sadock, J., 942, 1055  
 Sagastume, M., 628, 1102, 1240  
 Sahlqvist, H., 298, 564, 1313  
 Salerno, J., 1038  
 Salomaa, A., 443  
 Sambin, G., 103, 151, 283, 370, 522  
 Sanchis, L. E., 135, 191, 442  
 Sandewall, E., 968  
 Sandqvist, T., 535  
 Sandu, G., 53, 1229  
 Sanford, D. H., 442, 959, 964, 1055, 1300  
 Sankappanavar, H. P., 43, 44, 784  
 Santa Claus (is coming to town), 767  
 Sasaki hook, 300, 1192  
 Sauerland, U., 781  
 Saul, J. M., 634  
 Savile, A., 768  
 Sayward, C., 635, 1156–1157  
 Scedrov, A., 371  
 Scharle, T. W., 412  
 Schechter, E., 1102

- Schellinx, H., 346, 349, 351, 358, 372
- Schiffirin, D., 638, 674, 949
- Schmerling, S., 673
- Schnieder, B., 442
- Schock, R., 100
- Scholz, B., 649
- Schönfinkel, M., 636
- Schroeder-Heister, P., 193, 522, 525, 535, 577, 584, 600, 627, 646
- Schultz, M., 443
- Schumm, G.
  - on Halldén completeness, 863, 865, 923
  - on intersections of modal logics, 923
- Schurz, G., 192
- Schütte, K., 100, 106, 425, 613, 1331
- Schwartz, N., 635, 1164
- Schwichtenberg, H., 105, 107, 153, 191, 350, 371, 535, 1271
- SCI* (sentential calculus with identity), 1151
- Scott, D. S., 32, 74, 76, 100, 102, 134, 151, 190, 210, 277, 293, 297, 298, 304, 550, 594, 630, 754, 844, 860, 872, 873, 875, 923, 1001, 1116
  - on rules, 123
- Scroggs, S. J., 321, 488
- second-order
  - predicate logic, 730, 870, 895, 923
  - propositional logic, 420, 615, 627, 1284, 1325
- Seeskin, K. R., 250, 270
- Segerberg, K., 45, 100, 102, 157, 191, 273, 277, 283–285, 288, 293, 296–298, 311, 319, 386, 419, 442, 488, 489, 492, 508, 630, 640, 856, 870, 998, 1018, 1139, 1233, 1261, 1263, 1272, 1278, 1281, 1284, 1285, 1294
- Seiler, H., 1054
- Seki, T., 296
- Seldin, J. P., 165, 1126
- ‘self-extensional’, 508
- Seligman, J., 111
- ‘semantic pollution’, 112
- semantics (*see also* validity)
  - algebraic, *see* algebraic semantics
  - and pragmatics: a contested boundary, 635
  - Kripke, *see* Kripke semantics
  - proof-theoretic, 535
    - terminological problem, 512
    - validity in, 516–519
  - Routley–Meyer, *see* Routley–Meyer semantics
  - Urquhart, *see* Urquhart semantics
  - valuational, 57–102
- Semenenko, M. I., 906
- semicolon
  - confused reference to, 188
  - distinct from comma within sequents, 665
  - in listing sequents, 123, 266
  - in specifying algebras, 17
- semicomplementation, 1164
- semigroups, 18, 19, 416, 501, 578, 678, 683, 737, 738
  - as frames in Urquhart semantics, 1092
  - cancellation semigroups, 20, 30, 36
  - left-zero/right-zero, 753, 755, 756
- semilattice semantics (for relevant logic), *see* Urquhart semantics
- semilattices, 18
- seminegation, 1164
- Sendlewski, A., 1251
- Senft, G., 797
- sentence letters, 47
- separated, *see* separation
- separation
  - separated (condition), 714, 730
  - ‘separation of variables’ (Maksimova), 863
  - separation property (for proof systems), 547, 577, 1113, 1131, 1178, 1278
- SEQ-FMLA, SEQ-SEQ, etc., *see* logical frameworks
- sequent calculus, 142
  - approach to logic, 109
  - classical Gentzen system *Gen*, 141–150

- for linear logic, 347–369
- intuitionistic Gentzen system *IGen*, 314
- misuse of the term ‘sequent calculus’, 190
- terminating, 321
- sequents (*see also* logical frameworks), 103–114
  - sequent definable (classes of valuations), 134
  - sequent separator, misconceptions concerning, 103
- serial (relations), 281
- Sesotho, conditionals and negation in, 941
- SET-FMLA, SET-SET, etc., *see* logical frameworks
- Setlur, R. V., 131, 132, 432, 434, 484, 761, 1121
- Seuren, P., 799, 1163
- Shafaat, A., 1146
- Shafir, E., 842
- Shalack, V., 1113
- Shapiro, S., 1139
- Sharp, W. D., 442
- Sharvy, R., 959, 1055
- Sheffer functions, 405
- Sheffer stroke, 149, 388, 405, 408
  - intuitionistic analogues of, 607–615, 1241–1250
  - multiplicative and additive versions of in linear logic, 1250
  - references on, 630
- Sheffer, H. M., 630
- Shekhtman, V. B., 370, 630
- Shepherdson, J. C., 1164
- Sher, G., 193
- Shields, C., 968
- Shimojo, S., 842
- Shoesmith, D. J., *see* Shoesmith–Smiley (D. J. and T. J.)
- Shoesmith–Smiley (D. J. and T. J.), 206
  - cancellation condition, 205, 206, 923
  - consequence relations not determined by a matrix, 1260
  - gcr’s agreeing with a given consequence relation, 844, 845
  - matrix methodology, 260, 272
  - on arguments, 188
  - on generalized consequence relations, 102
  - on graph proofs, 189
  - on multiple conclusion arguments, 846
  - the authors complain about certain sentential constants, 380–381
  - Weak *vs.* Strong Claim properties, 101
- Shope, R., 1164
- Shramko, Y., 1250
- Shuford, H. R., 948
- side formulas, 144, 147, 154, 178, 347, 522, 775, 834, 991, 1249
  - generality in respect of, *see* rules, general in respect of side formulas
- Siemens, D. F., 630
- signed
  - formulas, 112, 1175
  - sequents, 1176
- Sikorski, R., 273
- Silvestre, R., 192
- Silvestrini, D., 875
- similarity type (of an algebra), 17
- Simmenauer, B., 576
- Simons, L., 977
- Simons, M., 642, 781, 794, 805, 806, 810–812, 814, 816
- Simons, P. M., 500
- Simpson’s Paradox, 842
- Simpson, A. K., 296
- singular (sequent), 358
- ‘singular’ *vs.* ‘unary’, 14
- Sinnott-Armstrong, W., 1056
- Skala, H., 443
- Skolem functions, 734
- Skolem, T., 227, 234, 1058
- Skura, T., 875
- Skvortsov, D. P., 630, 887
- Skyrms, B., 937, 1055, 1056
- Slaney, J. K., 327, 578, 707, 1098, 1101
  - his program MaGIC, 193
  - on *Ponens Modus* in Abelian logic, 1109
  - on ‘intensional implication’ in **RM**, 1080

- on a redundant axiom of Łukasiewicz ( $\mathcal{L}_\omega$ ), 197
  - on Abelian logic, 335, 373, 568, 1098, 1122, 1258
  - on BN4, 1200
  - on different modes of premiss combination, 668
  - on motivating Abelian logic, 1102
  - on sentential constants in relevant logic, 371
  - on structural completeness, 173
  - on the rule of Conversion in Abelian logic, 1105
  - semantics for logics without contraction, 1124
- Slater, B. H.
  - on counterfactual fallacies, 1037
  - on harmony, 528
  - on ‘material disjunction’, 791–792
  - on paraconsistent logic, 93
- Słomczyńska, K., 1131, 1162
- Słupecki, J., 1161
- Smetanič, Y. S., 623
- Smiley models, Smiley matrices, 218
- Smiley, T. J. (*see also* Shoesmith–Smiley), 305, 443, 874, 1166, 1176
  - abstract logics (Smiley models), 217
  - consequence relations not determined by a matrix, 204
  - four-element matrix for relevant logic, 431, 1197
  - on ‘suppression’, 1094
  - on analytic implication, 925
  - on Dana Scott’s use of many-valued logic, 210, 270
  - on denial, 1177
  - on functional dependence, 595, 597, 628
  - on signed formulas, 1175, 1178, 1183
  - on the  $\mathcal{L}$ -modal system, 484
  - on uniform substitution, 192
  - problem with McKinsey’s argument for definitional independence in  $\mathcal{IL}$ , 419
  - relative necessity, 1260
  - relevant logic treated substructurally by disallowing Weakening, 371
  - rules of inference *vs.* rules of proof, 161, 290
  - synonymy, 173, 222
  - Weak *vs.* Strong Claim properties, 101
- Smith, A., 193
- Smoryński, C., 297, 1214
- (SMP) – strengthened (MP), 231
- Smullyan, R., 133, 189
- Sobel, J. H., 1013, 1034
- Sobociński, B., 340, 442, 472, 474, 475, 1053, 1238
- Sørensen, K., 942
- Sørensen, M. H., 166
- Sorensen, R., 846
- Sorites paradox, 658
- Sotirov, V., 484
- soundness, 59, 127
  - rule soundness, 129
  - in modal logic, 876
- Sowden, L., 826
- Spasowski, M., 102
- Spielman, S., 842
- Spinks, M., xvii, 268, 275, 641, 677, 1102, 1162, 1240, 1251
- Square of Opposition, 443, 1166
- Staal, J. F., 676
- stable
  - formulas, 319
  - stability in philosophical proof theory
    - Dummett, 525
    - Zucker and Tragesser, 523–524
- Stalnaker’s Assumption, 1008, 1009, 1013, 1039, 1043
- Stalnaker, R., 931, 936, 937, 987, 991, 996, 1007, 1008, 1010, 1011, 1015, 1034, 1035, 1038–1040, 1043, 1054, 1055
  - on epistemic logic, 297
  - on fatalism, 827
  - on uniform substitution, 187, 191, 682
- Steedman, M., 676
- Stenius, E., 769, 805, 809
- Stenner, A. J., 781, 816

- Stevenson, C. L., 1049  
 Stevenson, J., 576  
 Steward, H., 948  
 Stirling, C., 296  
 Stirton, W. R., 535  
 Stokhof, M., 560, 641, 770  
 Stouppa, P., 108  
 Stove, D., 1164  
 Strassburger, L., 108, 1130  
 Strawson, P. F., 14, 509, 633, 651, 930, 992  
 Strengthening the Antecedent, or (Str. Ant.), 803, 991, 1021, 1034, 1036  
   confusedly called Weakening the Antecedent, 1056  
 strict  
   definition, *see* definability of connectives, strict  
   implication, *see* implication, strict  
   negation, *see* negation, strict  
 strong  
   *vs.* weak Kleene matrices, 1050  
   negation, *see* negation, strong  
   Strong Claim Property (of a truth-function), 402  
   Strong/Weak Claim, 64, 67, 70, 71, 77, 84, 101, 390, 391, 394, 402, 533, 632, 778, 1174, 1178  
 strongest, *see* superlative characterizations  
 strongly connected, 8  
   consequence relations, 70, 549  
 structural  
   — completeness, 191, 882–883  
   of a consequence relation, 162  
   of a proof system, 129  
   of consequence relations *vs.* of proof systems, 163, 882  
   — nonconservativity, 369  
   — rules, *see* rules, structural  
 structures  
   as a liberalization of Kripke models, 1001  
   ‘calculus of structures’, 108, 1130  
   groupoids for use in model theory, 1092  
   in the sense of display logic, 107  
   models for first order languages, 33  
 Stuart, D., 942  
 subalgebra, 28  
 subconnective (relation), 397, 461, 481–483, 590, 625, 666, 701, 1207, 1245  
 subcontraries/subcontrariety, 93, 503, 505, 583, 686, 690, 697, 815, 848–850, 1060, 1061, 1112, 1163–1172, 1224, 1225, 1227  
   (Subc)<sub>#</sub>  
     # 1-ary, 1166  
     # binary, 1064  
   (Subc)<sub>→</sub> and (Peirce), 695, 1060–1067  
   compositional subcontrariety determinant, 437, 1060, 1165  
 subdisjunction, 918  
 subformula property, 141, 145, 363, 547, 1124, 1193  
 Subj(unctive) Dilemma, 1015, 1027, 1028  
 subjunctive  
   conditionals, *see* conditionals, subjunctive  
   mood, 800  
 submatrix, 598  
 subminimal (negation), 1185, 1268  
 subordination, *see* connectives, subordinating *vs.* coordinating  
 substitution  
   as endomorphism, 49  
   invertible, 192, 1303  
   variable-for-variable, 188, 192, 688, 1303  
 substitution-invariant  
   consequence relations or gcr’s, 60, 120, 203, 426  
   rules, 120, 122, 332  
 substructural (logics), 101, 111, 143, 146, 191, 229, 326, 370, 373, 1125, 1240, 1250  
   noncommutative, 372  
 subtraction  
   as a name for dual intuitionistic implication, 546  
   logical, *see* logical subtraction  
 succedent, 129, 190, 191

- successively (imply), 662  
 Sugihara matrices, 339  
 Sugihara, T., 566  
 Sundholm, G., 370, 535, 577, 614  
 supercover (Simons), 769, 810  
 superdependence (of function on argument), 413, 1141  
     strengthened version, 414, 416  
 superintuitionistic logics, 1217  
 superlative characterizations (strongest, weakest), 344, 526, 527, 583, 584  
 superposition (of functions), 25  
 supervalid (sequent), 832  
 supervaluations, 101, 269, 830–833, 842, 1011  
 supervenience, 1144, 1161  
     — determined (consequence relation), 1142–1147  
     Troelstra–McKay supervenience, 590, 629  
 Suppes, P., 116, 142, 189, 677, 720–722  
 supposition  
     supposing *vs.* updating, 937  
     suppositional accounts of conditionals, 977, 998–1007, 1056  
 suppression, *see* fallacies  
 supraminimal logics, 1274  
 Surarso, B., 372  
 surjective, *see* functions, surjective  
 Surma, S. J., 420, 1121  
     axiomatizing equivalential CL, 1128  
     Galois connections, 101  
     on a variant of the Deduction Theorem for equivalential CL, 170, 1132  
     on Henkin style recipes for axiomatizations, 448  
     on Jaśkowski matrices for IL, 211  
 Suszko matrices, 1153  
 Suszko, R., 100, 101, 120, 123, 192, 204–206, 210, 214, 218, 271, 274, 306, 951, 1151, 1153, 1155, 1161  
 Sweetser, E., 674, 675, 771, 791, 794, 795, 807, 808, 941, 949, 960, 970, 993, 1054  
 Swenson, D. F., 780  
 Sylvan, R. (formerly R. Routley), 305, 1020, 1175, 1201, 1250  
 symmetric  
     *vs.* commutative, 499, 500, 508, 640  
     *vs.* symmetrical, 76, 102, 508  
     gcr's, 256, 384  
     and indiscriminate validity, 253  
     and pair validity, 752  
     hybrid of  $\wedge$  with  $\vee$ , 482  
     pure negation fragment of CL, 1172  
     relations, 3, 14, 281  
 symmetric-intuitionistic logic, *see* negation, Moisil  
 synchronous connectives (in linear logic), 352  
 synonymy, 173, 220  
 syntax, 635  
 Szatkowski, M., 630  
 Szostek, B., 1250  
  
 $T$  (Church truth constant 'Big  $T$ '), 342–344, 351, 355, 546, 566, 910, 1097, 1205, 1296  
     semantic treatment of, 1097  
 ( $\mathbb{T}$ ): structural rule, 59, 112  
 ( $\mathbb{T}^+$ ): condition for being a consequence relation or gcr, 55, 73  
 ( $\mathbb{T}$ ): condition on consequence relations or gcr's, 55, 73  
 $\mathbf{T}$  (modal principle), 277, 278, 284, 289  
 $\mathbf{T}$  (relevant logic), 229, 328, 1091, 1092  
 $\mathbf{T}$ : truth-value (truth), 57  
 $t$  (Ackermann truth constant 'little  $t$ '), 342–344, 351, 364, 367–369, 546, 567, 906, 910, 1097, 1112  
 $\mathbf{t}$  (temporary notation for a valid formula), 434  
 t-norms, 269  
 $\mathbf{T}!$  (modal principle), 278  
 $\mathbf{T}_c$  (modal principle), 278  
 tableaux, 189  
 tabular (logics), 211, 228, 272, 313, 320, 475, 888, 889, 891, 1159

- Taglicht, J., 957, 1055  
 tail-linked (formulas), 1319  
 Tait, W., 106  
 Takahashi, M., 210  
 Takeuti, I., 237  
 Tanaka, K., 1251  
 Tanaka, S., 274  
 Tannen, D., 675  
 Taoripi, 797  
 Tarski algebras, *see* BCK algebras, implicative  
 Tarski, A. (*see also* Tarski–Lindenbaum algebras), 43, 45, 57, 100, 132, 193, 227, 443, 620, 622, 775, 843, 874, 922, 1061, 1099–1101, 1151, 1158–1161  
 Tarski–Lindenbaum algebras, 31, 221, 224, 238, 256, 267, 497, 741, 1137, 1299  
 Tarski-style conditions (on connectives), 63, 526, 775  
 tautological  
     consequence, 66  
     entailment, *see* entailment, tautological  
 tautologous (sequent), 127  
 tautology, 66, 433  
 Tax, R. E., 1131  
 Taylor, J. R., 948  
 Taylor, W., 16, 23, 43, 45, 1330  
*tb* subscript (*see also* topoboolean conditions), 620  
 ten Cate, B., 111  
 Tennant, N., 535, 536, 576, 577, 586, 619, 630  
     mistaken claim about ML, 1271  
     on  $\perp$  as exclamatory, 1182–1185  
     on harmony, 527, 533  
     on his intuitionistic relevant logic, 371, 528  
     on natural deduction, 126, 189  
     on philosophical proof theory, 519  
     on rules derived from truth-tables, 1175  
     on sequent calculus, 1184  
     on simple rules for the Sheffer stroke, 1182  
     on the Sheffer stroke, 630  
     strongest or weakest formulas satisfying given conditions, 525–526  
 tense logic, 279, 287, 288, 297, 483, 562, 563, 581, 639, 641, 676, 832, 858, 866, 901, 1294  
 Tentori, K., 1164  
 terms and term functions, 24  
 Terui, K., 146, 191, 345, 358, 374  
 Terwijn, S., 924  
 Thatcher, J. W., 16  
 “then”, 933, 934, 948, 949, 981  
 theories (*Cn*-theories,  $\vdash$ -theories), 56, 647  
 Thomas, I., 448, 1238  
 Thomason, R. H., 129, 131, 192, 543, 679, 832, 983, 1000, 1011, 1229, 1251  
 Thomason, S. K., 283, 288, 291, 295, 370  
 Thompson, S. A., 674  
 threats (and promises), 771  
 ticket entailment, *see* **T** (relevant logic)  
*times* (fusion), 372  
 Tinchev, T., 1260  
 Tindell, R., 442  
 Tokarz, M., 163, 205, 420, 628, 874, 1238  
 Tomaszewicz, A., 405, 443  
 ‘tone’, 675, 770  
 ‘Tonk’, 86, 90, 532, 537, 538, 575–576  
     sequent calculus rules for, 614  
 tonoids, 263  
 topoboolean  
     conditions, 308, 324, 620, 621, 787, 986  
     formulas (in IL), 986, 987  
 topology, 9, 100, 622  
 Torrens, A., 200, 242, 268, 269, 274, 1069  
 Tovina, L., 804, 808  
 Townsend, A. V., 188, 249  
 $Tr(\cdot)$  – set of formula true on a valuation or over a class of valuations, 775  
 Tragesser, R. S., 322, 522–524, 527, 572, 579, 584, 586, 627, 1077  
 transitive (relations), 2, 281



- translations
  - between interpreted formal languages, 688, 1138, 1298
  - between natural languages, 796
  - compositional, 536
  - ‘translation lore’, 1009
  - translational embeddings, 181, 536, 873–875, 1081–1088, 1191, 1238, 1258
- transplication (Blamey), 1052
- Traugott, E. C., 635, 675, 1055
- Trethowan, W. H., 1164
- triangular norms, *see* t-norms
- Triple Consequents
  - Law of, 239, 672, 1081, 1316, 1320, 1324, 1336
  - Veiled Law of, 672, 677
- Triple Negation, Law of, 305, 452, 540, 672, 1180, 1216, 1263, 1273, 1299, 1316
- trivial
  - ‘Trivial’ modal logic, 278, 553
  - algebra, 20
  - consequence relation or gcr, 70, 92, 208, 383, 397, 460
  - equational theory, 32
- Troelstra, A. S., 107, 153, 191
  - his notation in linear logic, 352
  - his terminology for multiplicative and additive rules, 347
  - on ‘Additive Cut’, 350
  - on ‘negative’ formulas in ML, 1271
  - on contexts, 425
  - on cut elimination, 351
  - on defining a connective in a non-logical theory, 1182
  - on intuitionism, 370
  - on linear logic, 346, 349, 350, 371, 665, 1127
  - on new intuitionistic connectives, 578
  - on normalization and  $\lambda$ -calculus, 535
  - on the history of IL, 1285
  - on Troelstra–McKay supervenience, 629
  - prefixing rather than infixing use of “ $\vdash$ ” with sequents, 105
  - semantics for linear logic, 373
- Trojan horse
  - classical disjunction as a, 587
  - classical negation as a, 586
- truth (*see also* bivalence)
  - inductive truth-definitions, 279
  - valedictory (Lucas), 833
- truth-functions, 376
  - ‘alternating’, 414
  - ‘linear’, 414
  - monotone, 250, 414, 621
- truth-set
  - as set of points in a model, 279
  - as set of valuations, 495
  - truth-set functionality, 411, 495
- Tsitkin, A. I., 924
- Tucker, J. V., 44
- Tulenheimo, T., 53
- tuple system, 40
- “turn(ed) out”, 928
- Turquette, A. R., 202, 273, 312, 546, 1241
- Tversky, A., 842, 1164
- ‘Twin Ace’ paradox, 826, 842
- ‘twins’ (Łukasiewicz), 471, 484
- two-dimensional (modal logic), 489, 940, 1017, 1043, 1052, 1260
- Two-Property (2-Property), 1053, 1099, 1116–1118, 1127, 1135
- U.S., *see* Uniform Substitution
- ubiquitous (formulas), 1095
- Uchii, S., 1012
- Ueno, T., 296
- “uh” (Stenius), 806
- Ulrich, D., 884, 990, 1108, 1128
- Umbach, C., 676
- Umezawa, T., 312, 421
- Ungar, A., 140, 191, 513, 515, 535
- Uniform Substitution, *see also* substitution invariant, 191–193, 612
  - admissible *vs.* derivable, 160
  - as a rule of proof, 161
  - for sequents, 120, 203
  - not substitution invariant, 123
  - variable for variable, 188
- ‘uniformity’ as a name for cancellation *à la* Shoesmith and Smiley, 206
- unipotency, 740

- unique
  - characterization, 88, 186, 545, 575, 578–626
  - of negation in Minimal Logic, 1193, 1262, 1263
  - of negation in relevant and linear logic, 1192
  - predecessor condition, 563, 1313
  - readability, 48, 100, 393, 681
- uniqueness
  - by antisymmetry, 583, 584, 627
  - of identity element in a group, 18
  - of inverse in a group, 20
- unital, *see* matrices, unital
- universal
  - algebra, 17, 23, 28, 43, 49, 407, 443
  - decision elements, 442
  - relations, 280, 286
- universally representative (connectives), 566, 1287–1301
  - universally representative all by itself, 1289
- universe (of an algebra), 17
- “unless”, 964–975
  - “unless if”, 975
  - does not mean *if not*, 966–968
  - treated as 1-ary, 968
- unravalled (frames), 1313
- Urbach, P., 102, 1138
- Urbas, I., 1250
- Urquhart semantics, 336–339, 343, 345, 906–911, 1092–1093, 1260
- Urquhart, A., 189, 197, 201, 206, 210, 215, 227, 269, 271, 272, 334, 336–338, 342, 343, 371, 442, 637, 663, 664, 668, 906, 908, 1089, 1093, 1121, 1124, 1200, 1201, 1208, 1210, 1336
- Urzyczyn, P., 166
- USHil* (*Hil* with Uniform Substitution), 160
- Uspensky, V. A., 1285
- $\forall$  (imagined Venusian connective), 593
- V**: 1-ary constant True truth-function, 406
- $v_F$  (constant-false valuation), 81, 90, 205, 383
- $v_T$  (constant-true valuation), 59, 68, 70, 90
- $v_h$  valuation induced by the evaluation  $h$ , 207
- Väänänen, J., 53
- Vakarelov, D., 189, 1211, 1236, 1238, 1251
- $Val(\cdot)$  class of valuations consistent with a consequence relation or *gcr*, 58, 74
- $val(\cdot)$ , class of valuations on which a set of sequents hold, 133
- validity
  - 1-validity *vs.*  $\leq$ -validity, 247
  - at a point (in a frame), 289
  - in a matrix, 200
  - indiscriminate, *see* indiscriminate validity (in an algebra)
  - on a general frame, 291
  - on a Kripke frame
    - intuitionistic logic, 308
    - modal logic, 282
  - on a Routley–Meyer frame, 1202
  - proof-theoretic, 517–519
  - $V$ -validity, for  $V$  a class of valuations, 136, 396
- valuations, 11, 57
- Valuations (with a capital ‘V’), 278
- van Alten, C. J., 273, 546, 1122
- van Bendegem, J. P., 1097
- van Benthem, J., 109, 111, 192, 193, 283, 288, 290, 297, 298, 338, 637, 638, 676, 801, 866, 870, 883, 887, 923, 924, 1033, 1034
- van Dalen, D., 370, 425, 1182
- Van der Auwera, J., 793, 797, 940, 951, 955
- van der Hoek, W., 676
- van Dijk, T., 638, 675, 808
- van Fraassen, B., 101, 133, 272, 305, 369, 593, 598, 656, 700, 707, 708, 817, 830, 839, 842, 843, 939, 1011, 1052, 1056
- van Inwagen, P., 1017, 1022

- van Oirsouw, R. R., 674  
 van Polanen Petel, H., xvii  
 Vardi, M., 298  
 variable  
   propositional, *see* propositional variables  
   ‘variable functor’, 463, 1157  
   variable-identifier, 889  
   ‘variable-like’ (formulas), 1331  
 variety (of algebras), 29  
   equationally complete *or* minimal, 31  
 Varlet, J. C., 44  
 Varzi, A., 842  
 Vaughan, H. E., 1161  
**VB** (modal principle), 871  
 veiled, *see* Triple Consequents, Law of  
 Veldman, W., 311  
 Veltman, F., 192, 336, 641, 936, 942, 1232, 1251  
 Venema, Y., 297, 372, 489  
 Venneri, B., 673  
**Ver** (modal principle), 277  
 Verdú, V., 200, 264, 268  
 Verhoeven, L., 781  
 verisimilitude, 1138  
 Veroff, R., 268, 1102, 1162, 1240, 1251  
 Vickers, J., 1007  
 ‘visibility’ (in Basic Logic), 522  
 Visser, A., 370  
 von Fintel, K., 958, 969, 1055  
 von Kutschera, F., 192, 525, 1251  
 von Neumann, J., 369  
 von Plato, J., 191, 535  
 von Wright, G. H., 297, 471, 639–641, 676, 709, 817, 930, 1054  
 Vorob’ev, N. N., 1251  
 Vučković, V., 1238  
  
*W* (implicational principle), 229  
 Wagner, E. G., 16  
 Wagner, G., 1235, 1251  
 Wagner, S., 530, 576  
 Wajsberg’s Law, 1059, 1064, 1067, 1121, 1273, 1317  
 Wajsberg, M., 197, 271, 578, 1128  
   defining connectives using propositional quantifiers, 420  
 Wajszczyk, J., 640  
 Wakker, G., 942, 1054  
 Wälchli, B., 674, 797  
 Walker, R., 673  
 Walton, D., 792, 798  
 Wang, H., 146, 184  
 Wansing, H.  
   on (modal) display logic, 108  
   on dual intuitionistic implication, 546  
   on dual intuitionistic negation, 1250  
   on information based semantics, 370  
   on intuitionistic modal logic, 578  
   on negation, 1211  
   on numerous conceptions of sequent, 111, 860  
   on proof-theoretic semantics, 525  
   on the notion of constructivity, 875  
   on Tonk, 576  
 Warmbröd, K., 193, 1015, 1022  
 Warner, R. G., 638  
 warnings  
    $v(\Delta) = F$  not the negation of  $v(\Delta) = T$ , 74  
   ambiguity in the notion of logical framework, 106  
   atomic formulas do not correspond to atoms in the Lindenbaum algebra, 225  
   Boolean and De Morgan negation notations reversed, 1192  
   ‘danger: hidden contraction’, 1249  
   different meanings of ‘contrary’, 1165  
   double horizontal lines in proof figures – two meanings, 151  
   double use of ‘ $v(\Gamma)$ ’, 255  
   double use of “*V*”, xvi, 279  
   eliminability – not to be confused with elimination rules, 326  
   non-standard notation for De Morgan and Boolean negation, 1192  
   notions of homogeneity for frames, 866

- on different classifications of Uniform Substitution w.r.t. the local/global preservation contrast, 290
- on the label **.3**, 278
- on the terms ‘trivial’ and ‘inconsistent’, 92
- other uses of the phrase *logical framework*, 188
- two notions of global Halldén completeness, 923
- Wasilewska, A., 1161
- Wason, P. C., 939
- Wasserman, H. C., 45
- Watari, O., 296
- Waugh, A., 926
- Weak Claim, *see* Strong/Weak Claim
- Weakening (*see* rules, structural)
  - Weakening, 1082
  - ‘Weakening the Antecedent’, 1056
- weakest, *see* superlative characterizations
- weakly
  - connected, *see* connected, weakly
  - extensional (connective, consequence relation), 455, 456, 1158
  - left-prime (consequence relation or *gcr*), 110
- Weatherston, B., xvii, 243, 275, 1056, 1107
  - anticipation rules nonconservative over intuitionistic predicate logic, 626
  - on ‘only’, 954, 956, 962
  - on conditionals, 529, 949, 954, 1041, 1043–1044
- Webb, P., 630, 1182
- Wechler, W., 44
- Weinstein, S., 370
- Weintraub, R., 842
- Weir, A., 528, 1194
- Wekker, H., 1054
- Welding, S. O., 500
- Wen-li, K., 948
- Wertheimer, R., 959, 961
- West, M., 676
- Westerståhl, D., 193, 271
- Wheeler, R. F., 443
- “whether”, 560, 770, 807, 945, 948, 950, 951
  - supervenience and knowing whether, 1144
- Whitaker, S. F., 964, 968–970, 1055
- White, A. R., 829, 842
- White, W. H., 937
- Whitlock, H., 443
- Wideker, D., 829
- Wierzbicka, A., 674, 947, 1054
- Wijesekera, D., 296
- WIL (weak intuitionistic logic), 1279
- Wille, R., 16
- Williamson, C., 443
- Williamson, T., xvii, 660, 1301
  - admissible modal rules, 876, 923
  - ‘no litmus test for understanding’, 528, 529, 536
  - on conditionals, 1043
  - on contexts, 425
  - on identity, 603
  - on inverses, 565, 566, 685, 877
  - on unique characterization, 627
  - on vagueness, 269, 842
  - rule of disjunction, 923
- Winston, P. H., 968
- Wiredu, J. E., 604, 1154
- Wittgenstein, L., 630
- Wójcicki, R., 98, 100, 120, 196, 217, 220, 265, 271, 272, 483, 508, 578, 1164
  - on definitional equivalence, 1238
  - on degree of complexity, 272
  - on duals of consequence relations, 102
  - on generalized matrices, 217
  - on meet irreducibles and maximal avoiders, 71
  - on referential semantics, 497
  - on Suszko and *SCI*, 1152, 1161
  - on translations between logics, 874, 1238
  - on Łoś and Suszko, 206
  - ‘purely inferential’ terminology, 205
- Wojtylak, P., 173, 184, 191, 775, 874, 1068, 1131
- Wolniewicz, B., 707, 817
- Wolter, F., 546, 871, 874
- Wood, M., 676

- Woodruff, P., 1272, 1285  
 Woods, J., 660, 792, 798  
 Woods, Jack, xvii  
 Woods, M., 1055  
 Woolf, V., 768  
 Wos, L., 335, 1128  
 Wright, C., 1171  
 Wright, J. B., 16  
 Wroński, A.  
   class of *BCK*-algebras not a variety, 236, 238  
   on *BCK*-algebras, 242  
   on disjunctive consequents in intermediate logics, 879  
   on equivalential algebras, 1077, 1162  
   on equivalential logics, 275  
   on fragments of intermediate logics, 629  
   on Halldén completeness, 923  
   on intersections of logics, 923  
   on Jaśkowski matrices for *IL*, 211  
   on matrices for  $\vdash_{IL}$ , 371  
   on matrix methodology (errors in Urquhart), 272  
   on Tax's conjecture (concerning the  $\leftrightarrow$  fragment of *IL*), 1131  
   on the  $\{\leftrightarrow, \neg\}$  fragment of *IL*, 1136  
   on the Deduction Theorem for intermediate logics, 173  
   on the disjunction property in intermediate logics, 922  
   on the Veiled Law of Triple Consequents, 677  
*WWIL* (doubly weak intuitionistic logic), 1279
- Yablo, S., 708  
 Yamanashi, M.-A., 942, 1054  
 Yashin, A. D., 578, 623  
**Yes** (gcr), 91, 201, 382, 383  
 Yourgrau, W., 451
- z** (Zucker–Tragesser ternary connective), 322–324, 524–525, 1077–1079
- z** (nullary connective for a ‘mere follower’, *q.v.*), 596  
 Zach, R., 111  
 Zachorowski, S., 211  
 Zadeh, L., 269  
 Zaefferer, D., 945, 951  
 Zakharyashev, M., 191, 297, 630, 863, 874, 887, 922–924, 1159  
 Zamansky, A., 150  
 Zeman, J. J., 923, 1168, 1169, 1227–1229  
 Zepp, R. A., 941  
 zero element (two-sided, left, right), 20  
 zero-place  
   connectives, *see* constants, sentential or propositional  
   operations or functions, 17, 24, 403  
 zero-premiss rules, *see* rules, zero-premiss  
 Zielonka, W., 109, 372, 1251  
 Zimmer, L. E., 826  
 Zimmermann, T. E., 793–794, 797, 817  
 Zolin, E., 462, 483, 765, 874  
 Zucker, J. I., 322, 522–524, 527, 572, 579, 584, 586, 627, 1077  
 Zwicky, A., 955  
 Zygmunt, J., 44, 217, 272, 1278