

James Donald Monk

EDUCATION:

A.B. University of Chicago 1951
B.S. University of New Mexico 1956
M.A. University of California, Berkeley 1959
Ph.D. University of California, Berkeley 1961

THESIS ADVISOR: Alfred Tarski

THESIS TITLE: Studies in Cylindric Algebras

POSITIONS HELD:

Instructor: University of California, Berkeley 1961–62
Assistant Professor: University of Colorado 1962–65
Associate Professor: University of Colorado 1965–67
Professor: University of Colorado 1967–
Visiting Asst. Professor: University of California, Berkeley 1963–1964
Visiting Professor: University of California, Berkeley 1967–68
Visiting Professor: Forschungsinstitut für Mathematik, Eidgenössische Technische Hochschule, Zürich 1973–74, 1978, 1982, 1987, 1996–97, 2004.

PUBLICATIONS:

Books Published:

- [1] **Introduction to Set Theory**, McGraw-Hill, 1969 , ix + 193pp; Italian translation: **Introduzione alla teoria degli insiemi**, Boringhieri 1972, 241 pp.
- [2] (with L. Henkin, A. Tarski) **Cylindric Algebras, Part I**. North-Holland, 1971 vi + 508pp.
- [3] **Mathematical Logic**. Springer-Verlag, 1976 , x + 531pp.
- [4] (with L. Henkin, A. Tarski, H. Andréka, I. Németi) **Cylindric Set Algebras**. Springer-Verlag, Lecture Notes in Mathematics 883, 1981, 323pp.
- [5] (with L. Henkin, A. Tarski) **Cylindric Algebras, Part II**. North-Holland, 1985, 302pp.
- [6] (editor, with the cooperation of R. Bonnet) **Handbook of Boolean Algebras, vol. 1**. North-Holland, 1989, xix + 312pp.
- [7] (editor, with the cooperation of R. Bonnet) **Handbook of Boolean Algebras, vol. 2**. North-Holland, 1989, 313–716pp.
- [8] (editor, with the cooperation of R. Bonnet) **Handbook of Boolean Algebras, vol. 3**. North-Holland, 1989, 717–1366pp.
- [9] **Cardinal functions on Boolean algebras**. Birkhäuser-Verlag, 1990, 152pp.

- [10] (editor, with H. Andréka, I. Németi) **Algebraic Logic**. North–Holland, 1991, 746pp.
- [11] **Cardinal Invariants on Boolean algebras**. Birkhäuser–Verlag, 1996, 298pp.

Articles Published:

- [12] *On the representation theory for cylindric algebras*. Pacific J. Math. 11, 1961, 1447–1457.
- [13] *On pseudo-simple universal algebras*. Proc. Amer. Math. Soc. 12, 1962, 543–546.
- [14] (with A. Daigneault) *Representation theory for polyadic algebras*. Fund. Math. 51, 1963, 151–176.
- [15] (with D. Scott) *Additions to some results of Erdős and Tarski*. Fund. Math. 53, 1963, 335–343.
- [16] *Singular cylindric and polyadic algebras*. Trans. Amer. Math. Soc. 112, 1964, 185–205.
- [17] *On representable relation algebras*. Mich. Math. J. 11, 1964, 207–210.
- [18] *The substitutionless predicate calculus*. Arch. f. Math. logik und Grundlagenforschung 7, 1964, 102–121.
- [19] *Model-theoretic methods and results in the theory of cylindric algebras*. in **The Theory of Models, Proc. of a Symposium**. 1965, 238–250.
- [20] (with F. M. Sioson) *m-semigroups, semigroups, and function representations*. Fund. Math. 59, 1966, 233–241.
- [21] *Non-trivial m-injective Boolean algebras do not exist*. Bull. Amer. Math. Soc. 73, 1967, 526–527.
- [22] *Nonfinitizability of classes of representable cylindric algebras*. J. Symb. Logic 34, 1969, 331–343.
- [23] *On an algebra of sets of finite sequences*. J. Symb. Logic 35, 1970, 19–28.
- [24] *On the foundations of set theory*. Amer. Math. Monthly 77, 1970, 703–711.
- [25] *Completions of Boolean algebras with operators*. Math Nachr. 46, 1970, 47–55.
- [26] *On equational classes of algebraic versions of logic, I*. Math. Scand. 27, 1970, 53–71.
- [27] *Provability with finitely many variables*. Proc. Amer. Math. Soc. 27, 1971, 353–358.
- [28] (with F. M. Sioson) *On the general theory of m-groups*. Fund. Math. 72, 1971, 233–244.
- [29] (with R. Solovay) *On the number of complete Boolean algebras*. Algebra Universalis 2, 1972, 365–368.
- [30] (with G. Meisters) *Construction of the reals via ultrapowers*. Rocky Mountain J. Math. 3, 1973, 141–158.

- [31] (with R. McKenzie) *On automorphism groups of Boolean algebras*. Proc. Erdős Symposium 1973, 951–988.
- [32] *Some cardinal functions on algebras*. Algebra Universalis 5, 1973, 76–81.
- [33] *Connections between combinatorial theory and algebraic logic*. Algebraic Logic, Math. Assoc. Amer. 1974, 58–91.
- [34] (with L. Henkin) *Cylindric algebras and related structures*. Proc. Symp. in honor of A. Tarski 1974, 105–122.
- [35] *On the automorphism groups of denumerable Boolean algebras*. Math. Ann. 216, 1975, 5–10.
- [36] *Some cardinal functions on algebras, II*. Algebra Universalis 5, 1975, 361–366.
- [37] *Some problems in algebraic logic*. Proc. Summer Logic Conf., Clermont–Ferrand, CNRS 49, 1975, 83–88.
- [38] *On free subalgebras of complete Boolean algebras*. Arch. Math. 29, 1977, 113–115.
- [39] *Omitting types algebraically*. Ann. Sci. Univ. Clermont, Ser. Math. Fasc. 16, 1978, 101–105.
- [40] (with W. Rassaach) *The number of rigid Boolean algebras*. Algebra Universalis 9, 1979, 207–210.
- [41] *A very rigid Boolean algebra*. Israel J. Math. 35, 1980, 135–150.
- [42] (with E. K. van Douwen, M. Rubin) *Some questions about Boolean algebras*. Algebra Universalis 11, 1980, 220–243.
- [43] (with L. Henkin, A. Tarski)] *Cylindric set algebras and related structures* . in **Cylindric Set Algebras**. Springer–Verlag, Lecture Notes in Mathematics 883, 1981, 1–129.
- [44] (with R. McKenzie) *Chains in Boolean Algebras*. Annals of Math. Logic 22, 1982, 137–175
- [45] *Independence in Boolean Algebras*. Periodica Mathematica Hungarica 14, 1983, 269–308.
- [46] (with S. Koppelberg) *Homogeneous Boolean algebras with very nonsymmetric subalgebras*. Notre Dame J. Formal Logic 24, 1983, 353–356.
- [47] (with G. Brenner) *Tree algebras and chains*. in Springer Lecture Notes in Mathematics 1004, 1983, 54–66.
- [48] (with B. Koppelberg, R. McKenzie) *Cardinality and cofinality of homomorphs of products of Boolean algebras*. Algebra Universalis 19, 1984, 38–44.
- [49] *Cardinal functions on Boolean algebras*. Proc. Ordered Sets Conf., Orders: Descriptions and Roles, North–Holand 1984, 9–37
- [50] *On endomorphism bases*. Algebra Universalis 20, 1985, 264–266.

- [51] (with L. Henkin, A. Tarski) *Representable cylindric algebras*. Ann. Pure Appl. Logic 31, 1986, 23–60
- [52] *Tarski's contributions to algebraic logic*. J. Symb. Logic 51, 1986, 899–906.
- [53] *The number of Boolean algebras*. in **Handbook of Boolean algebras**. North-Holland, 1989, 469–489.
- [54] *Endomorphisms of Boolean algebras*. in **Handbook of Boolean algebras**. North-Holland, 1989, 491–516.
- [55] *Automorphism groups*. in **Handbook of Boolean Algebras**. North-Holland, 1989, 517–545.
- [56] *Appendix on set theory*. in **Handbook of Boolean algebras**. North-Holland 1989 1213–1233.
- [57] *Bibliography*. in **Handbook of Boolean algebras**. North-Holland 1989, 11269–1342.
- [58] *Structure problems for cylindric algebras*. Colloq. Math. Soc. J. Bolyai 54, 1991, Budapest, Hungary, 413–429.
- [59] *Remarks on the problems in the books Cylindric Algebras, Part I and Part II and Cylindric Set Algebras*. Colloq. Math. Soc. J. Bolyai 54, 1991, Budapest, Hungary, 723–726.
- [60] *Corrections for the books Cylindric Algebras, Part I and Part II and Cylindric Set Algebras*. Colloq. Math. Soc. J. Bolyai 54, 1991, Budapest, Hungary, 719–722.
- [61] (with S. Koppelberg) *Pseudo-trees and Boolean algebras*. Order 8, 1992 359–374.
- [62] *Lectures on cylindric set algebras*. Banach Center Publications 28, 1993, 253–290.
- [63] *Problems in the set theory of Boolean algebras*. Mathematica Japonica 42, 1995, 179–185.
- [64] *Minimum-sized infinite partitions of Boolean algebras*. Mathematical Logic Quarterly 42, 1996, 537–550.
- [65] (with A. Dow) *Depth, π -character, and tightness in superatomic Boolean algebras*. Topology and its Applications 75, 1997, 183–199.
- [66] (with P. Nyikos) *On cellularity in homomorphic images of Boolean algebras*. Topology Proceedings 22, 1998, 341–362.
- [67] *The spectrum of partitions of a Boolean algebra*. Archive for Mathematical Logic 40 (2001), 243–254.
- [68] *Generalized free products*. Colloquium Mathematicum 88 (2001), 175–192.
- [69] *Continuum cardinals generalized to Boolean algebras*. J. Symb. Logic 66 (2001), 1928–1958.

- [70] *An introduction to cylindric set algebras (with an appendix by H. Andréka*. Logic Journal of the IGPL 8 (2000), 451–506. (Reprint, with corrections and an added appendix, of [62].)
- [71] *Boolean algebras*. Entry in Stanford Encyclopedia of Philosophy (electronic) 2002.
- [72] *An atomless interval Boolean algebra A such that $\mathfrak{a}(A) < \mathfrak{t}(A)$* . Alg. Univ. 47 (2002), 495–500.
- [73] *The spectrum of maximal independent subsets of a Boolean algebra*. Provinces of logic determined. Ann. Pure Appl. Logic 126 (2004), no. 1-3, 335–348.
- [74] (with R. McKenzie) *On some small cardinals for Boolean algebras*. J. Symbolic Logic 69 (2004), no. 3, 674–682.
- [75] *Generalized \mathfrak{b} and \mathfrak{d}* . Notre Dame J. Formal Logic 45, no. 3 (2004), 129–146.
- [76] *The size of maximal almost disjoint families*. Dissertationes Math. 437, Warszawa 2006, 47pp.
- [77] *Towers and maximal chains in Boolean algebras*. Alg. Univ. 56 (2007), 337–347.
- [78] *Maximal irredundance and maximal ideal independence in Boolean algebras*. J. Symb. Logic 73, no. 1 (2008), 261–275.
- [79] *On the existence of towers in pseudo-tree algebras*. Order 26 (2009), 163–175.
- [80] *Leon Albert Henkin (1921–2006)*. Bull. Symb. Logic 15, no. 3 (2009), 326–331.
- [81] *Special subalgebras of Boolean algebras*. Math. Logic Quarterly 56, no. 2 (2010), 148–158,
- [82] *Maximal free sequences in a Boolean algebra*. Comment. Math. Univ. Carol. 52, 4 (2011), 593–611.
- [83] *Remarks on continuum cardinals on Boolean algebras*. Math. Log. Quarterly 58, no. 3 (2012), 159–167.
- [84] **Cardinal invariants on Boolean algebras**. Second revised edition. Birkhäuser Verlag, 573pp. (2014)
- [85] *Leon Henkin and cylindric algebras*. In **The Life and Work of Leon Henkin**, Birkhäuser Verlag, 59–66. (2014)

Computer programs:

- [A] *An on-line bibliography of Boolean algebras*. Through August 2013

Lecture Notes, and other notes:

- [A] **Foundations of Mathematics**. Lecture notes for math 4000: 1997, 1998, 1999, 2002, 2004.

[B] **Foundations of Mathematics.** Lecture notes for math 5000: 1996, 2001, 2002, 2007, 2008.

[C] **Set Theory.** Lecture notes for math 6730, 6740: 2006, 2007, 2010.

[D] *Notes on subalgebras of interval algebras.*

[E] **Boolean algebras.** Lecture notes for math 8714.

[F] **Continuum cardinals.**

[G] **Basic pcf theory.**

[H] **Model theory.** Lecture notes for math 6000.

Ph.D. THESES SUPERVISED:

1. C. Howard, 1965. (Berkeley, supervised jointly with W. Craig). **An approach to algebraic logic.**

2. R. McKenzie, 1966. **The representation of relation algebras.**

3. R. LaGrange, 1966. **Some problems concerning Boolean algebras.**

4. S. Comer, 1967. **Some representation theorems and the amalgamation property in algebraic logic.**

5. J. Johnson, 1968. **Amalgamation of polyadic algebras and finitizability problems in algebraic logic.**

6. M. Stone, 1969. *On endomorphism semigroup structure in universal algebras.*

7. D. Demaree, 1970. (Berkeley) **Studies in algebraic logic.**

8. R. Sanerib, 1973. **Ultrafilters: Some relations with group theory, set theory and logic.**

9. F. Clare, 1973. **Embedding theorems and logical properties of groups.**

10. J. Loats, 1977. **On endomorphisms semigroups of Boolean algebras and other problems.**

11. G. Brenner, 1982. **Tree algebras.**

12. M. Bekkali, 1991. **Superatomic Boolean algebras.**

13. D. Peterson, 1992/1993. **Cardinal functions on ultraproducts, and reaping numbers.**

14. R. Aragón, 1993. **Completions of the theory of Boolean algebras with a distinguished ideal.**

15. J. Brown, 2005. **Cardinal functions on pseudo-tree algebras and a generalization of homogeneous weak density.**

16. Allen Mann, 2007. **Independence-friendly cylindric set algebras.**

17. C. Bruns, 2008. **Variations of independence on Boolean algebras.**

18. R. Chestnut, 2011. **Independent partitions in Boolean algebras.**

Service on foreign doctoral committees:

P. Jurie, Clermont-Ferrand, France

R. Bonnet, Lyon, France

L. Heindorf, Humboldt Universität Berlin, East Germany, Habilitation.

Tarek Mohamed Abbas Sayed Ahmed, Cairo University.

Driss Zhani, Fez, Morocco.

RESEARCH GRANTS:

NSF research grants: 1963–1973, 1975–1976.

FELLOWSHIPS:

University of Colorado Faculty Fellowships, Spring 1966, 1973–74.

NSF grants academic year half-time, Berkeley, 1963–64, 1967–68.

Forschungsinstitut für Math., ETH Zürich, 1973–74, 1978, 1982, 1987, 1996–1997, 2004.

National Academy of Sciences Exchange Program, Prague, Czechoslovakia, February 1982.

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

American Mathematical Society

Association of Symbolic Logic

JOURNALS EDITOR:

Journal of Symbolic Logic, 1969–91

Algebra Universalis, 1971–79

Studia Logica, 1983–1992

Mathematica Japonica, 1994–

INVITED ADDRESSES:

Theory Models Symposium, 1963

Tarski Symposium, 1971

Cantor Festcolloquium, F.U. Berlin, 1974

Banach Center, Warsaw, 1978, 1991

Topology Conference, North Bay, Ontario, 1997.

Algebra and discrete mathematics, Essen, Germany, 1999.

Sixth Barcelona Logic conference, Barcelona, Spain 2000.

Tarski Centenary Conference, Warsaw, Poland 2001.

Conference in honor of Ralph McKenzie, Vanderbilt, Nashville, 2002

Conference in honor of Sabine Koppelberg, Freie Universität Berlin, June 2004.

Memorial conference for L. Kalmar and R. Peter, Budapest, August 2005.

Approximately 49 talks at other universities

DEPARTMENT COMMITTEES:

Personnel Committee (6 years)

Graduate Committee (9 years)

Library Committee (4 years)

New Appointments Committee (1 year)

Undergraduate Committee (1 year)

Research Evaluation Committee (2 years)

Computer Committee (6 years)

Executive Committee (5 years)

NEW COURSES:

Math 451, 453, 455, 571–572, 573–574, 671–672, 673–674, 696, 4000, 5000.

BOOK REVIEWS:

Ladriere, *Les Limitations Internes des Formalisms*

Sikorski, *Boolean Algebras*

Shoenfield, *Mathematical Logic*

Malcev, *Algebraic Systems*

Makkai, Reyes, *Categorical Logic*

Tarski, Givant, *A formalization of set theory without variables*

Devlin, *The Joy of Sets*

OTHER REVIEWS:

Approximately 160 for Math. Reviews, 20 for J. Symb. Logic, 10 for Computing Reviews, 50 for Zb. für Math.

REFEREEING:

Approximately 67 for Trans. AMS, Proc. AMS, Israel J. Math., J. Symb. Logic, Rocky Mountain Math. J., Pacific J. Math., Algebra Univ., Arch für math. Logik, Studia Logica, Notre Dame J. Logic, Order, Conference proceedings, Mathematical Logic Quarterly

UNIVERSITY SERVICE:

Faculty Council (4 years)

Arts and Sciences Budget Advisory Committee (1 year)

Privilege and Tenure (3 years)

College Futures Committee (5 months)

Arts and Sciences Council (1 year)

BFA library committee (3 years)

Arts and Sciences Personnel committee (3 years)

COURSES TAUGHT (Incomplete list):

M 107	large lecture
M 130	five times
M 230	four times
M 272	four times
M 282	twice
M 313	nine times
M 314	four times
M 321	three times
M 352	twice
M 413	three times
M 422	three times
M 431	twice
M 451	five times
M 453	twice
M 455	five times
M 505	twice
M 513	once
M 571-572	eight times
M 573-574	three times
M 617	once
M 671-672	three times
M 673-674	twice
M 696	ten times
M 3000	five times
M 2400	twice
M 3140	four times
M 3130	three times
M 3170	three times
M 5000	twice
M 4000	once